Richfield Field Office Resource Management Plan & Environmental Impact Statement

Vols. I-III: Alternatives & Analysis, Appendices & Maps

Draft

BUREAU OF LAND MANAGEMENT | UTAH

Richfield Field Office

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

BLM-UT-PL-07-008-1610
UT-050-2007-090 EIS
DES-07-47

October 2007

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Utah State Office
P.O. Box 45155
Salt Lake City, UT 84145-0155
http://www.blm.gov

TAKE PRIDE® IN AMERICA

Dear Reader:

Enclosed for your review is the Draft Resource Management Plan (DRMP) and Draft Environmental Impact Statement (DEIS) for the Utah Bureau of Land Management (BLM) Richfield Field Office. This document was prepared by the BLM in consultation with cooperating agencies, and in accordance with the National Environmental Policy Act of 1969 (NEPA), the Federal Land Policy and Management Act of 1976 (FLPMA), implementing regulations, BLM's land use planning handbook (H-1601-1), and other applicable law.

The planning area consists of about 5.4 million acres of land in Sanpete, Sevier, Piute and Wayne counties and portions of Garfield County. There are also 21,500 acres of Kane County within the planning area. However, these acres lie entirely within Glen Canyon National Recreation Area so no decisions within this Draft RMP/EIS will govern those lands. Within the planning area about 2.1 million acres of public lands are managed by the Richfield Field Office. When approved, this RMP will replace the 1977 Forest Management Framework Plan (MFP), 1982 Mountain Valley MFP, 1982 Henry Mountain MFP, 1982 Parker Mountain MFP, 1986 Cedar-Beaver-Garfield-Antimony RMP, and the 1991 San Rafael RMP. The overall intent of the revised RMP is to develop a land use plan that will guide the management of public lands administered by the Richfield Field Office into the future. The Richfield DRMP/DEIS and supporting information is available on the project web site at:

http://www.blm.gov/ut/st/en/fo/richfield/planning.html

The BLM encourages you to provide information and comments pertaining to the analysis presented in the Richfield DRMP/DEIS. Of particular importance is feedback concerning the adequacy and accuracy of the five proposed alternatives, the analysis of their respective management decisions and any new information that would help the BLM produce a Proposed Plan. In developing the Proposed RMP/Final EIS, which is the next phase of the planning process, the decision maker may select various management decisions from each of the alternatives analyzed in the DRMP/DEIS for the purpose of creating a management strategy that best meets the needs of the resources and values in this area under the multiple use and sustained yield mandate. Your timely comments will help formulate the Proposed RMP/Final EIS

Public meetings to provide an overview of the document, respond to questions, and take public comments will be held subsequent to the release of the draft. These meetings will be announced by local media and public mailings. Public meetings will be held in Richfield, Loa, Junction, Manti, Panguitch, and Salt Lake City, Utah.

Comments may be submitted electronically at: UT_Richfield_Comments@blm.gov. Comments may also be submitted by mail to: Richfield Field Office RMP Comments,

Bureau of Land Management, Richfield Field Office, 150 East 900 North, Richfield, Utah 84701. To facilitate analysis of comments and information submitted, we strongly encourage you to submit comments in an electronic format.

Your review and comment on the content of this document are critical to the success of this planning effort. If you wish to submit comments on the DRMP/DEIS, we request that you make them as specific as possible. Comments will be more helpful if they include suggested changes, sources, or methodologies, and reference to a section or page number. Comments containing only opinions or preferences will be considered and included as part of the decision making process, although they will not receive a formal response from the BLM. Comments will be accepted for ninety (90) calendar days following the Environmental Protection Agency's (EPA) publication of its Notice of Availability in the Federal Register. The BLM can best utilize your comments and resource information submissions if received within the review period.

It is the BLM's practice to make comments, including names and addresses of respondents, available for public review. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations and businesses, will be available for public inspection in their entirety.

The BLM would like to thank our cooperating agency partners that have worked so hard to help us complete this document. They have provided support and expertise to facilitate focusing the issues and developing alternatives to help resolve the many compelling resource concerns that face the Richfield Field Office. We would like to particularly recognize Sanpete, Sevier, Piute, Wayne and Garfield Counties, the State of Utah and its agencies, as cooperating agencies on this DRMP/DEIS. Their experience and dedication has made this a better process and the BLM looks forward to continuing to work with them. We also extend thanks to those individuals and organizations that have provided extensive information and many excellent ideas that have been considered during this process.

Copies of the DRMP/DEIS have been sent to affected Federal, State, and local government agencies. Copies of the DRMP/DEIS are available for public inspection at the Richfield, Panguitch and Manti public libraries. Copies are also available for public inspection at the following BLM locations:

Richfield Field Office
150 East 900 North
Richfield, UT 84701

Henry Mountains Field Station
380 South 100 West
Hanksville, UT 84734

Utah State Office, BLM
440 West 200 South, Suite 500
Salt Lake City, UT 84101

Thank you for your continued interest in the Richfield Field Office Resource Management Plan. We appreciate the information and suggestions you have contributed to the planning process.

Sincerely,

Selma Sierra
State Director, Utah

Bureau of Land Management (BLM)
Richfield Draft Resource Management Plan
Draft Environmental Impact Statement (DRMP/DEIS)

Lead Agency:

Bureau of Land Management
Richfield Field Office
Richfield, Utah

Cooperating Agencies:
State of Utah
Garfield, Piute, Sanpete, Sevier and Wayne Counties, Utah

For Further Information, Contact:

Wayne Wetzel
Bureau of Land Management
Richfield Field Office
150 East, 900 North
Richfield, Utah 84701
(435) 896-1500
Email: UT_Richfield_Comments@blm.gov
Web Page:
http://www.blm.gov/ut/st/en/fo/richfield/planning.html

Abstract

The Richfield Draft Resource Management Plan/Draft Environmental Impact Statement (DRMP/DEIS) identifies and analyzes five alternatives for future management of the public lands and resources and the effect of those management alternatives on land administered by the Bureau of Land Management's (BLM's) Richfield (Utah) Field Office (RFO). Alternative B is the preferred alternative. The planning area includes 2.1 million acres of public land and 95,000 subsurface acres where the surface rights belong to the state or private parties (split estate lands) wholly within Sanpete, Sevier, Piute, and Wayne counties and partially within Garfield and Kane counties. The DRMP/DEIS was prepared in cooperation with the Garfield, Piute, Sanpete, Sevier, and Wayne county governments; the State of Utah; the U.S. Fish and Wildlife Service; and other Federal agencies.

The planning area encompasses mountains, canyons, plateaus and deserts of the Great Basin and Colorado Plateau physiographic provinces, including the Henry Mountains, Parker Mountain, the Sevier, Fremont and Dirty Devil Rivers, North and South Caineville Mesas and Factory Butte. The public lands border portions of Glen Canyon National Recreation Area, Capitol Reef and Canyonlands National Parks, and the Dixie, Fishlake, Manti-LaSal, and Uinta National Forests.

The DRMP/DEIS fulfills the legal requirements set forth in the National Environmental Policy Act (NEPA), the Federal Land Policy and Management Act (FLPMA), and other Federal laws, regulations and policies. The public lands are currently managed under six different land use plans adopted between 16 and 30 years ago. Major issues identified during scoping and addressed in the DRMP/DEIS include off-highway vehicle (OHV) use, energy development, scenery and recreation, and special designations. Five alternatives have been considered. Alternative N would continue existing management (no action). Alternatives A, B, C, and D represent variations from existing management, and include a range from emphasizing resource use and development to emphasizing conservation and protection of natural and sensitive resources. Alternative B is the BLM's preferred alternative. This alternative would provide a

balanced approach of protecting and conserving the public land and resources while providing for commodity production and mineral extraction. Alternative B would also apply special designations and restrictive management prescriptions anywhere needed to protect threatened or otherwise important resources.

Publication of the DRMP/DEIS will be followed by a 90-day public comment period, preparation of a final EIS and proposed RMP, governor's consistency review, protest period and, finally, a record of decision (ROD) and approved resource management plan (RMP). Comments on this DRMP/DEIS must be received within 90 days following the date the Environmental Protection Agency publishes its notice of availability in the Federal Register. Comments should be addressed to the Richfield Office at the address above. The BLM's Utah State Director will be the deciding official for the ROD.

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

DRAFT RESOURCE MANAGEMENT PLAN AND DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE RICHFIELD FIELD OFFICE

PREPARED BY THE
RICHFIELD FIELD OFFICE

OCTOBER 2007

Selma Sierra
State Director, Utah

TABLE OF CONTENTS

EXECUTIVE SUMMARY ES-1

CHAPTER 1 INTRODUCTION 1-1
1.1 INTRODUCTION 1-1
1.2 PURPOSE AND NEED 1-1
1.2.1 Purpose 1-1
1.2.2 Need 1-2
1.3 DESCRIPTION OF THE PLANNING AREA 1-3
1.4 PLANNING PROCESS 1-3
1.5 DECISION FRAMEWORK 1-5
1.5.1 Planning Issues 1-6
1.5.1.1 Issues to be Addressed in the Richfield RMP 1-6
1.5.1.2 Issues Considered But Not Further Analyzed 1-9
1.5.2 Planning Criteria 1-11
1.6 RELATIONSHIP TO OTHER PROGRAMS, PLANS, AND POLICIES 1-12
1.6.1 Other Related Plans 1-12
1.6.2 Energy Policy and Conservation Act 1-13
1.6.3 Tar Sands Programmatic EIS 1-14
1.6.4 Energy Corridor Programmatic EIS 1-14
1.6.5 Utah Land Use Plan Amendment for Fire and Fuels Management 1-15
1.6.6 Wind Energy Programmatic EIS 1-15
1.7 CONSULTATION AND COORDINATION 1-15
1.7.1 Consultation with American Indian Tribes 1-15
1.7.2 Cooperating Agencies 1-16
1.7.3 Consultation with USFWS 1-16
CHAPTER 1 MAPS

CHAPTER 2 ALTERNATIVES 2-1
2.1 INTRODUCTION 2-1
2.2 ALTERNATIVE COMPONENTS 2-1
2.2.1 Desired Outcomes (Goals and Objectives) 2-1
2.2.2 Allowable Uses and Management Actions 2-2
2.3 ALTERNATIVES CONSIDERED IN DETAIL 2-2
2.3.1 Overview of the Alternatives 2-2
2.3.2 Comparison of Alternatives Summary 2-3
2.4 ADAPTIVE MANAGEMENT 2-9
2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS 2-9
2.5.1 No Grazing Alternative 2-9
2.5.2 SUWA Alternative 2-10
2.6 ALTERNATIVE DECISION TABLES 2-10
2.6.1 Natural, Biological and Cultural Resources 2-11
2.6.1.1 Air Quality 2-11
2.6.1.2 Soil Resources 2-11
2.6.1.3 Water Resources 2-12
2.6.1.4 Vegetation 2-14
2.6.1.5 Cultural Resources 2-17
2.6.1.6 Paleontological Resources 2-21
2.6.1.7 Visual Resources 2-23

2.6.1.8 Special Status Species 2-24
2.6.1.9 Fish and Wildlife 2-26
2.6.1.10 Wild Horses and Burros 2-33
2.6.1.11 Fire and Fuels Management 2-34
2.6.1.12 Non-WSA Lands with Wilderness Characteristics 2-37
2.6.2 Resource Uses 2-38
2.6.2.1 Forestry and Woodland Products 2-38
2.6.2.2 Livestock Grazing 2-40
2.6.2.3 Recreation 2-43
2.6.2.4 Travel Management 2-63
2.6.2.5 Lands and Realty 2-75
2.6.2.6 Minerals and Energy 2-81
2.6.3 Special Designations 2-90
2.6.3.1 Wilderness Study Areas 2-90
2.6.3.2 Wild and Scenic Rivers 2-91
2.6.3.3 Areas of Critical Environmental Concern 2-98
2.6.4 Transportation 2-121
2.6.5 Health and Safety 2-122
2.7 IMPACTS SUMMARY TABLE 2-124
CHAPTER 2 MAPS

CHAPTER 3 AFFECTED ENVIRONMENT 3-1
3.1 INTRODUCTION 3-1
3.2 OVERVIEW OF THE PLANNING AREA 3-1
3.2.1 Physiography 3-1
3.2.2 Topography and Drainage 3-2
3.3 PHYSICAL, BIOLOGICAL, AND CULTURAL RESOURCES 3-2
3.3.1 Air Quality 3-2
3.3.2 Soil Resources 3-5
3.3.3 Water Resources 3-6
3.3.4 Vegetation 3-10
3.3.4.1 Desert Shrub 3-10
3.3.4.2 Sagebrush Steppe 3-11
3.3.4.3 Forests and Woodlands 3-12
3.3.4.4 Riparian Resources 3-15
3.3.4.5 Invasive, Nonnative Species 3-16
3.3.5 Cultural Resources 3-18
3.3.5.1 Site Types 3-19
3.3.5.2 National Register of Historic Places 3-20
3.3.5.3 Cultural History Overview 3-21
3.3.5.4 Cultural Relationships 3-23
3.3.5.5 Cultural Resource Condition and Trend 3-23
3.3.5.6 Consultation 3-23
3.3.5.7 Native American Religious Concerns 3-24
3.3.5.8 Tribal Interest 3-25
3.3.6 Paleontological Resources 3-25
3.3.7 Visual Resources 3-27
3.3.7.1 Visual Resource Inventory 3-28
3.3.7.2 Visual Resource Management 3-28
3.3.8 Special Status Species 3-29
3.3.8.1 Species Listed Under the Endangered Species Act 3-30

3.3.8.1.1 Bald Eagle 3-30
3.3.8.1.2 California Condor 3-31
3.3.8.1.3 Mexican Spotted Owl 3-31
3.3.8.1.4 Southwestern Willow Flycatcher 3-32
3.3.8.1.5 Utah Prairie Dog 3-32
3.3.8.1.6 Colorado River Fish 3-32
3.3.8.1.7 Wright Fishhook Cactus 3-34
3.3.8.1.8 Barneby Reed-Mustard 3-34
3.3.8.1.9 San Rafael Pediocactus 3-34
3.3.8.1.10 Winkler Pincushion Cactus 3-35
3.3.8.1.11 Last Chance Townsendia 3-35
3.3.8.1.12 Ute Ladies'-Tresses 3-35
3.3.8.1.13 Maguire Daisy 3-35
3.3.8.2 BLM Sensitive Species 3-36
3.3.8.2.1 Mollusks 3-37
3.3.8.2.2 Amphibians 3-37
3.3.8.2.3 Birds 3-38
3.3.8.2.4 Mammals 3-40
3.3.8.2.5 Fish 3-41
3.3.8.2.6 Plants 3-42
3.3.9 Fish and Wildlife 3-45
3.3.9.1 Fish and Fisheries Habitat 3-45
3.3.9.2 Wildlife and Wildlife Habitat 3-46
3.3.9.3 Wildlife Species of Interest 3-48
3.3.9.4 Migratory Birds 3-50
3.3.9.5 Raptors 3-51
3.3.10 Wild Horses and Burros 3-51
3.3.11 Fire and Fuels Management 3-52
3.3.12 Non-WSA Lands with Wilderness Characteristics 3-58
3.4 RESOURCE USES 3-61
3.4.1 Forestry and Woodland Products 3-61
3.4.2 Livestock Grazing 3-63
3.4.3 Recreation 3-65
3.4.4 Travel Management 3-69
3.4.4.1 Off-Highway Vehicles 3-70
3.4.5 Lands and Realty 3-71
3.4.5.1 Land Tenure Adjustment 3-72
3.4.5.2 Withdrawals 3-73
3.4.5.3 Rights-of-Way 3-74
3.4.5.4 Leases and Permits 3-75
3.4.5.5 Renewable Energy 3-76
3.4.6 Minerals and Energy 3-77
3.4.6.1 Leasable Minerals 3-77
3.4.6.1.1 Oil and Gas 3-78
3.4.6.1.2 Geothermal Resources 3-79
3.4.6.1.3 Oil Shale and Tar Sands 3-80
3.4.6.1.4 Coal 3-81
3.4.6.1.5 Non-Energy Solid Leasable Minerals 3-82
3.4.6.2 Locatable Minerals 3-83
3.4.6.3 Salable Minerals 3-85
3.5 SPECIAL DESIGNATIONS 3-87

3.5.1 Wilderness Study Areas 3-87
3.5.2 Wild and Scenic Rivers 3-89
3.5.3 Areas of Critical Environmental Concern (ACECs) 3-90
3.5.3.1 Existing Areas of Critical Environmental Concern 3-91
3.5.3.1.1 North Caineville Mesa ACEC (2,200 acres) 3-91
3.5.3.1.2 South Caineville Mesa ACEC (4,100 acres) 3-91
3.5.3.1.3 Gilbert Badlands Research Natural Area (RNA) ACEC (3,680 acres) 3-91
3.5.3.1.4 Beaver Wash Canyon ACEC (4,800 acres) 3-92
3.5.3.2 Potential Areas of Critical Environmental Concern 3-92
3.5.3.2.1 Badlands Potential ACEC (Includes North and South Caineville Mesas and Gilbert Badlands Existing ACECs) (88,900 acres) 3-93
3.5.3.2.2 Bull Creek Archaeological District Potential ACEC (4,800 acres) 3-93
3.5.3.2.3 Dirty Devil/North Wash Potential ACEC (includes existing Beaver Wash Canyon ACEC) (205,300 acres) 3-93
3.5.3.2.4 Fremont Gorge/Cockscomb Potential ACEC (34,300 acres) 3-94
3.5.3.2.5 Henry Mountains Potential ACEC (288,200 acres) 3-94
3.5.3.2.6 Horseshoe Canyon Potential ACEC (40,900 acres) 3-94
3.5.3.2.7 Kingston Canyon Potential ACEC (22,100 acres) 3-95
3.5.3.2.8 Little Rockies Potential ACEC (49,200 acres) 3-95
3.5.3.2.9 Lower Muddy Creek Potential ACEC (16,200 acres) 3-95
3.5.3.2.10 Old Woman Front Research Natural Area Potential ACEC (330 acres) 3-95
3.5.3.2.11 Parker Mountain Potential ACEC (107,900 acres) 3-96
3.5.3.2.12 Quitchupah Potential ACEC (180 acres) 3-96
3.5.3.2.13 Rainbow Hills Potential ACEC (4,000 acres) 3-96
3.5.3.2.14 Sevier Canyon Potential ACEC (8,900 acres) 3-96
3.5.3.2.15 Thousand Lake Bench Potential ACEC (500 acres) 3-96
3.5.3.2.16 Special Status Species Potential ACEC (15,100 acres) 3-97
3.6 SOCIAL AND ECONOMIC CONDITIONS 3-97
3.6.1 Social Background 3-97
3.6.1.1 County Perspectives 3-99
3.6.1.2 Population 3-99
3.6.2 General Economic Characteristics 3-100
3.6.2.1 Employment and Earnings by Industry 3-101
3.6.2.2 Government Revenue from Natural Resources 3-104
3.6.3 Environmental Justice 3-113
3.7 HEALTH AND SAFETY 3-114
3.7.1 Introduction 3-114
3.7.2 Hazardous Materials 3-115
3.7.3 Abandoned Mines 3-115
CHAPTER 3 MAPS

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES 4-1
4.1 INTRODUCTION 4-1
4.2 ANALYSIS BACKGROUND 4-1
4.2.1 Approach to the Analysis 4-1
4.2.2 Impact Analysis Terminology 4-2
4.2.3 Assumptions for Analysis 4-2
4.2.4 Availability of Data and Incomplete Information 4-3
4.3 IMPACTS TO PHYSICAL, BIOLOGICAL AND CULTURAL RESOURCES 4-3
4.3.1 Air Quality 4-3
4.3.2 Soil Resources 4-8

4.3.3 Water Resources 4-24
4.3.4 Vegetation 4-38
4.3.5 Cultural Resources 4-59
4.3.5.1 Native American Religious Concerns 4-60
4.3.6 Paleontological Resources 4-80
4.3.7 Visual Resources 4-95
4.3.8 Special Status Species 4-115
4.3.9 Fish and Wildlife 4-153
4.3.10 Wild Horses and Burros 4-185
4.3.11 Fire and Fuels Management 4-191
4.3.12 Non-WSA Lands with Wilderness Characteristics 4-203
4.4 IMPACTS TO RESOURCE USES 4-260
4.4.1 Forestry and Woodland Products 4-260
4.4.2 Livestock Grazing 4-269
4.4.3 Recreation 4-283
4.4.4 Travel Management 4-296
4.4.5 Lands and Realty 4-307
4.4.6 Minerals and Energy 4-317
4.4.6.1 Leasable Minerals 4-317
4.4.6.1.1 Oil and Gas 4-317
4.4.6.1.2 Geothermal Resources 4-341
4.4.6.1.3 Tar Sands 4-342
4.4.6.1.4 Coal 4-342
4.4.6.1.5 Non-Energy Solid Leasable Minerals 4-351
4.4.6.2 Locatable Minerals 4-352
4.4.6.3 Salable Minerals 4-362
4.5 IMPACTS TO SPECIAL DESIGNATIONS 4-363
4.5.1 Wilderness Study Areas 4-363
4.5.2 Wild and Scenic Rivers 4-367
4.5.3 Areas of Critical Environmental Concern 4-383
4.5.3.1 Existing ACECs 4-386
4.5.3.1.1 North Caineville Mesa ACEC 4-386
4.5.3.1.2 South Caineville Mesa ACEC 4-389
4.5.3.1.3 Beaver Wash Canyon ACEC 4-392
4.5.3.1.4 Gilbert Badlands RNA ACEC 4-396
4.5.3.2 Potential ACECs 4-399
4.5.3.2.1 Badlands Potential RNA ACEC 4-399
4.5.3.2.2 Bull Creek Potential ACEC 4-410
4.5.3.2.3 Dirty Devil/North Wash Potential ACEC 4-411
4.5.3.2.4 Fremont Gorge/Cockscomb Potential ACEC 4-417
4.5.3.2.5 Henry Mountains Potential ACEC 4-421
4.5.3.2.6 Horseshoe Canyon Potential ACEC 4-428
4.5.3.2.7 Kingston Canyon Potential ACEC 4-431
4.5.3.2.8 Little Rockies Potential ACEC 4-434
4.5.3.2.9 Lower Muddy Creek Potential ACEC 4-438
4.5.3.2.10 Old Woman Front Potential ACEC 4-441
4.5.3.2.11 Parker Mountain Potential ACEC 4-443
4.5.3.2.12 Quitchupah Potential ACEC 4-445
4.5.3.2.13 Rainbow Hills Potential ACEC 4-447
4.5.3.2.14 Sevier Canyon Potential ACEC 4-450
4.5.3.2.15 Special Status Species Potential ACEC 4-451

4.5.3.2.16 Thousand Lake Bench Potential ACEC 4-453
4.6 IMPACTS TO THE SOCIAL AND ECONOMIC ENVIRONMENT 4-455
4.6.1 Social and Economic Conditions 4-455
4.6.2 Impacts to Population 4-479
4.6.3 Impacts to Community Services 4-480
4.6.4 Environmental Justice 4-480
4.6.5 Public Health and Safety 4-481
4.7 CUMULATIVE IMPACTS 4-481
4.7.1 Methodology 4-481
4.7.2 Past and Present Actions 4-482
4.7.3 Reasonably Foreseeable Future Actions 4-484
4.7.4 Cumulative Impacts of the Alternatives 4-486
4.7.4.1 Cumulative Impacts by Resource Category 4-486
4.7.4.1.1 Air Quality 4-486
4.7.4.1.2 Soil and Water Resources 4-486
4.7.4.1.3 Vegetation 4-487
4.7.4.1.4 Cultural Resources 4-487
4.7.4.1.5 Paleontological Resources 4-488
4.7.4.1.6 Visual Resources 4-489
4.7.4.1.7 Special Status Species 4-489
4.7.4.1.8 Fish and Wildlife 4-490
4.7.4.1.9 Wild Horses and Burros 4-490
4.7.4.1.10 Fire and Fuels Management 4-491
4.7.4.1.11 Non-WSA Lands with Wilderness Characteristics 4-491
4.7.4.1.12 Forestry and Woodland Products 4-492
4.7.4.1.13 Livestock Grazing 4-492
4.7.4.1.14 Recreation 4-492
4.7.4.1.15 Travel Management 4-493
4.7.4.1.16 Lands and Realty 4-493
4.7.4.1.17 Minerals and Energy 4-494
4.7.4.1.18 Special Designations 4-494
4.7.4.1.19 Socioeconomic Environment 4-495
4.8 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES 4-496
4.9 UNAVOIDABLE ADVERSE IMPACTS 4-497
4.10 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES AND LONG-TERM PRODUCTIVITY 4-498
CHAPTER 4 MAPS

CHAPTER 5 PUBLIC INVOLVEMENT, CONSULTATION AND COORDINATION 5-1
5.1 INTRODUCTION 5-1
5.2 PUBLIC INVOLVEMENT 5-1
5.2.1 Scoping 5-1
5.2.2 Mailing List 5-2
5.2.3 Planning Posts 5-2
5.2.4 Web Site 5-3
5.2.5 Informal Communication 5-3
5.3 COORDINATION AND COOPERATION 5-3
5.3.1 Coordination with other Federal Agencies 5-4
5.3.2 Cooperating Agencies 5-4
5.4 CONSULTATION 5-5
5.4.1 Consultation with American Indian Tribes 5-5
5.4.2 State Historic Preservation Office 5-7

5.4.3 U.S. Fish and Wildlife Service 5-7
5.4.4 Environmental Protection Agency 5-8
5.5 ADMINISTRATION OF GRAZING ALLOTMENTS IN NATIONAL PARK SERVICE UNITS 5-9
5.5.1 Glen Canyon National Recreation Area 5-10
5.5.2 Capitol Reef National Park 5-10
5.6 DISTRIBUTION LIST 5-10
5.7 LIST OF PREPARERS 5-12

GLOSSARY G-1

ACRONYMS AND ABBREVIATIONS AC-1

REFERENCES R-1

INDEX I-1

EXECUTIVE SUMMARY

INTRODUCTION

The Richfield Draft Resource Management Plan/Draft Environmental Impact Statement (DRMP/DEIS) identifies and analyzes five alternatives for future management of the public lands and resources administered by the Bureau of Land Management's (BLM's) Richfield Field Office (RFO). The Federal Land Policy and Management Act of 1976 (FLPMA) requires developing, maintaining, and, as appropriate, revising land use plans for public lands. The purpose, or goal, of the land use plan is to ensure lands administered by the BLM are managed in accordance with FLPMA and the principles of multiple use and sustained yield.

Revising existing land use plans is a major Federal action for the BLM. The National Environmental Policy Act (NEPA) of 1969, as amended, requires Federal agencies to prepare an Environmental Impact Statement (EIS) for major Federal actions including the development of new and revised land use plans for the BLM's management of its public lands. Thus, this DRMP/DEIS is a combined document.

PURPOSE AND NEED

The planning area is located in south-central Utah and includes all of Sanpete, Sevier, Piute, and Wayne counties and portions of Garfield and Kane Counties, an area totaling 5.4 million acres. Of this, the BLM manages a 2.1 million acre surface and subsurface (mineral) estate, additional Federal mineral resources underlying the national forests (1.5 million acres) and 95,000 acres of split-estate lands where the mineral estate is held by the Federal government but the surface rights belong to the state or private parties. The planning area is administered from a headquarters field office (FO) in Richfield and a field station in Hanksville. Decisions in this resource management plan (RMP) apply only to BLM-administered public lands (surface and subsurface) and resources.

The purpose of the RMP is to provide a comprehensive framework for managing the public lands and allocating resources administered by the RFO under the principles of multiple use and sustained yield in accordance with the intent of Congress as stated in FLPMA. This new RMP is needed to respond to changing conditions and demands on public lands, and to provide a single updated plan for managing lands and resources currently addressed in six different land use-planning documents, which were adopted between 16 and 30 years ago. While the BLM can make decisions related only to public lands and its resources, the BLM is responsible for collaboratively planning with adjacent jurisdictions and the public to encourage compatible land uses within a regional context, and for considering potential impacts on all resources within the planning area, regardless of ownership and jurisdiction.

ALTERNATIVES

The DRMP/DEIS identifies and analyzes five alternatives for future management of the public lands and resources administered by the RFO. They are—

- **Alternative N (No Action)** would continue to manage the land and resources according to direction prescribed in the five existing land use plans as modified by subsequent law, regulation and policy. This alternative would least restrict cross-country off-highway vehicle (OHV) use, designate the most miles of open routes, continue the designation of four areas of critical environmental concern (ACECs, 14,780 acres), continue identification of one special recreation management area (SRMA, 120 acres) and manage all 12 eligible wild and scenic river segments (135 miles) to protect their outstandingly remarkable values.

- **Alternative A** would manage the land and resources with an emphasis on providing motorized access and encouraging commodity production—mining, grazing, commercial recreation, commercial woodland products harvesting, and energy development including oil and gas—using the minimum restrictions required to meet legal, regulatory and policy mandates. This alternative relies on existing laws, regulations and policies, rather than special management prescriptions or special designations, to protect resources. This alternative would least restrict oil and gas leasing and mining, designate no ACECs, recommend no suitable wild and scenic river segments and identify five SRMAs totaling 516,400 acres.
- **Alternative B (Preferred Alternative)** would manage the land and resources relying primarily on existing law, regulation and policy, applying special designations and restrictive management prescriptions only where needed to protect threatened or otherwise important resources. This alternative would eliminate overlapping WSA/ACEC designations, designate two ACECs (2,530 acres), recommend two suitable wild and scenic river segments (Dirty Devil and Fremont Gorge [59 miles]) and identify five SRMAs (838,700 acres).
- **Alternative C** would manage the land and resources with more emphasis on protecting special and sensitive natural resources. This alternative would protect all 12 eligible river segments as suitable wild and scenic rivers, designate all 16 potential ACECs (886,810 acres), identify four SRMAs (928,550 acres) and prohibit cross-country off-highway vehicle use.
- **Alternative D** would manage the land and resources with the most emphasis on protecting special, important, and sensitive resources by applying special designations and restrictive prescriptions. This alternative would recommend all 12 eligible river segments as suitable wild and scenic rivers, designate all 16 potential ACECs (886,810 acres), identify seven SRMAs (1,358,200 acres) and provide the greatest protection to scenic values and non-WSA lands with wilderness characteristics (682,600 acres). This alternative would prohibit cross-country OHV use, designate the fewest miles of routes open to motor vehicles, and impose the greatest restrictions on off-highway vehicles, oil and gas leasing, and mining.

The alternatives are described in detail in Chapter 2 of the DRMP/DEIS and analyzed in Chapter 4. Based on the Chapter 4 analysis, Alternative N was determined to have the greatest overall environmental impact, followed by Alternatives A, B and C, respectively. Alternative D would have the least environmental impact and provide the greatest protection for most elements of the affected environment. Conversely, Alternative A would provide the greatest opportunities with the least restrictions for developing energy and mineral resources, while Alternative N would least restrict off-highway vehicle use.

MAJOR ISSUES

The alternatives were developed to respond to issues identified during scoping for the DRMP/DEIS. Major issues summarized here include visual resources (scenery), wilderness characteristics, livestock grazing, recreation, travel management (off-highway vehicles), minerals and energy resources, and special designations. These and other issues are discussed in detail in the DRMP/DEIS.

Visual Resources (Scenery)

Scenic resources within the planning area include internationally-recognized landscapes such as the Dirty Devil River canyons, Henry Mountains, and Factory Butte. The BLM manages scenery by designating all public lands in one of four Visual Resource Management (VRM) Classes in resource management plans that allow varying degrees of change to scenic values—

- VRM Class I: This management class preserves the existing character of the landscape.
- VRM Class II: This management class retains the existing character of the landscape.

- VRM Class III: This management class partially retains the existing character of the landscape.
- VRM Class IV: This management class provides for management activities that require major modification of the existing character of the landscape.

VRM Classes I, II and III protect scenic values but can restrict other land uses to varying degrees. Class IV accommodates other uses at the expense of the scenic values. VRM classes in the alternatives are consistent with the themes of the alternatives (see Table 1).

Table 1. Visual Resource Management Classes

	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
VRM Class I (Preservation)	0 ac 0%	446,900 ac 21%	446,900 ac 21%	446,900 ac 21%	1,129,600 ac 53%
VRM Class II (Retention)	529,500 ac 25%	0 ac 0%	209,000 ac 10%	230,600 ac 11%	66,700 ac 3%
VRM Class III (Partial Retention)	569,000 ac 27%	392,800 ac 18%	410,800 ac 19%	509,100 ac 24%	355,100 ac 17%
VRM Class IV (Modification)	1,029,500 ac 48%	1,288,300 ac 61%	1,061,300 ac 50%	941,400 ac 44%	576,600 ac 27%

Non- WSA Lands with Wilderness Characteristics

Management of non-WSA lands with wilderness characteristics is an issue in its own right (separate from WSAs) that is addressed in the RMP. Within the RFO, BLM identified 682,600 acres in 29 areas as meeting the criteria for "non-WSA lands with wilderness characteristics" (see Chapter 3).

The BLM Planning Handbook (H-1601-1) guides the consideration of non-WSA lands with wilderness characteristics in land use planning. It provides that although BLM may not establish new WSAs, it may consider information on non-WSA lands with wilderness characteristics in land use planning. Considering wilderness characteristics in the resource management planning process may result in several outcomes, including but not limited to:

- Emphasizing other multiple uses as a priority over protecting wilderness characteristics,
- Emphasizing other multiple uses while applying management restrictions to reduce impacts to some or all of the wilderness characteristics, or
- Emphasizing the protection of some or all of the wilderness characteristics as a priority over other multiple uses.

Considering wilderness characteristics in the resource management planning process would not result in the designation of new WSAs. In Chapter 2, goals and land use allocations and prescriptions for protecting and preserving the non-WSA lands with wilderness characteristics are identified under Alternative D. Chapter 4 discloses both (1) the impacts that proposed decisions in Chapter 2 would have on the non-WSA lands with wilderness characteristics identified in Chapter 3, and (2) the impacts that proposed decisions to protect wilderness characteristics under Alternative D would have on other elements of the affected environment. Table 2 displays a summary of selected proposed decisions, by alternative, that occur within the 29 areas of non-WSA lands with wilderness characteristics.

Table 2. Selected RMP Decisions within Non-WSA Lands with Wilderness Characteristics (figures expressed in acres and % of total Non-WSA lands with wilderness characteristics in the 29 areas.)

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Off-Highway Vehicles	Open Areas	656,400 ac 96%	221,600 ac 32%	1,100 ac <1%	0 ac 0%	0 ac 0%
	Limited Areas	5,000 ac 1%	461,000 ac 68%	646,900 ac 95%	472,700 ac 69%	0 ac 0%
	Closed Areas	21,200 ac 3%	0 ac 0%	34,600 ac 5%	209,900 ac 31%	682,600 ac 100%
Oil and Gas Leasing	Standard	577,600 ac 85%	329,300 ac 48%	239,600 ac 35%	201,700 ac 30%	0 ac 0%
	CSU/Timing	90,000 ac 13%	353,300 ac 52%	350,900 ac 51%	267,200 ac 39%	0 ac 0%
	No Surface Occupancy	6,000 ac 1%	0 ac 0%	86,800 ac 13%	105,600 ac 15%	0 ac 0%
	Closed to Leasing	9,000 ac 1%	0 ac 0%	5,300 ac 1%	108,100 ac 16%	682,600 ac 100%
Scenery	VRM I	0 ac 0%	0 ac 0%	0 ac 0%	0 ac 0%	682,600 ac 100%
	VRM II	161,300 ac 24%	0 ac 0%	148,300 ac 22%	163,900 ac 24%	0 ac 0%
	VRM III	144,900 ac 21%	213,300 ac 31%	135,200 ac 20%	153,000 ac 22%	0 ac 0%
	VRM IV	376,400 ac 55%	469,300 ac 69%	399,100 ac 58%	365,700 ac 54%	0 ac 0%
Proposed Withdrawals		0 ac 0%	0 ac 0%	11,200 ac 2%	110,900 ac 16%	682,600 ac 100%

Livestock Grazing

Range management and issues associated with livestock and grazing management were raised during scoping. Comments represented a spectrum of opinions about livestock grazing, ecosystem integrity, impacts to vegetation, soils and riparian resources, invasive species, wild horses, and the importance of grazing to the local economy and lifestyle.

Generally, the management direction for livestock grazing is prescribed by the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration (43 Code of Federal Regulations [CFR] Subpart 4180) and other BLM policy and is common to all alternatives.

Recreation

Recreation was a frequently mentioned issue in the public scoping comments and recreational issues were identified by the agency and cooperators as well. Comments covered a wide-range of topics including—

- Provide more motorized and non-motorized trails, including horse trails
- Protect opportunities for primitive recreation
- Make special recreation permits easier to obtain
- Provide more law enforcement
- Provide better signing
- Reduce conflicts between different user groups

BLM policy requires that all public land within the RFO be identified as either a special recreation management area (SRMA) or extensive recreation management area (ERMA) in the RMP. SRMAs are identified where emphasis would be beneficial to highlight important recreational opportunities or where problems exist, such as conflicts between users or impacts on other resources. Public lands not identified as SRMAs are, by default, ERMAs, where recreation management is generally not a focal point. SRMAs can be established for a variety of purposes ranging from cross-country OHV use to areas for backcountry hiking and backpacking. SRMAs proposed under each alternative are consistent with the theme of the respective alternative. Table 3 identifies selected proposed decisions by alternative for recreation management areas.

Table 3. Recreation Management Areas

	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Extensive Recreation Management Area (ERMA)	2.1 million acres	1.6 million acres	1.3 million acres	1.2 million acres	769,800 acres
Special Recreation Management Areas (SRMAs)	**1 SRMA, 120 acres** A small portion of Yuba Reservoir (Management of Yuba SRMA is deferred to the Fillmore FO in all alternatives)	**5 SRMAs, 516,400 acres** Motorized Recreation Emphasis: • Factory Butte • Big Rocks • Sahara Sands Dispersed Recreation Emphasis: • Dirty Devil • Otter Creek	**5 SRMAs , 838,700 acres** Motorized Recreation Emphasis: • Factory Butte • Big Rocks Dispersed Recreation Emphasis: • Henry Mountains • Dirty Devil • Capitol Reef Gateway	**4 SRMAs, 928,550 acres** Dispersed Recreation Emphasis: • Henry Mountains • Dirty Devil • Capitol Reef Gateway • Sevier Canyon	**7 SRMAs, 1,358,200 acres** Primitive/Semi-Primitive Recreation Emphasis: • Henry Mountains • Dirty Devil • San Rafael Swell • Little Rockies • Labyrinth Canyon Primitive/Semi-Primitive and Dispersed Recreation Emphasis: • Capitol Reef Gateway • E. Fork Sevier River

Travel Management (Off-Highway Vehicles)

Management of off-highway vehicles is one of the most controversial issues addressed in the DRMP/DEIS. It is related to the special designation and wilderness characteristic issues (discussed in this Executive Summary) and the county road claims issue (outside the scope of the DRMP/DEIS). Concerns raised during scoping include (1) OHV users value the access their vehicles provide to public lands and fear losing access due to closures and other regulations, and (2) OHV use—particularly cross-country travel and user-created trails—is adversely affecting resources such as wildlife habitat, livestock grazing, vegetation, water, soils, scenery and wilderness characteristics. In particular, the Factory Butte area near Caineville has been the focus of controversy.

Alternatives for OHV area and route designations are proposed in the DRMP/DEIS. OHV play areas are also addressed in the establishment of SRMAs.

OHV Area Designations

By BLM policy, the RMP will designate each acre of public land as open, limited or closed to OHV travel. Area designations are defined as follows—

- Open: Areas where vehicles are allowed to travel cross-country without restriction.
- Limited: Areas where vehicle use is allowed but is restricted, usually to designated routes. Vehicle use of the designated routes may be further restricted seasonally or to certain sizes or kinds of vehicles.
- Closed: Areas where motorized vehicle use is prohibited

Table 4 summarizes the acres of public lands that would be open, limited or closed to motorized use by alternative.

Table 4. OHV Area Designations (figures expressed in acres and percent of RFO)

	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	1,636,400 ac 77%	449,000 ac 21%	8,400 ac <1%	0 ac 0%	0 ac 0%
Limited	277,600 ac 13%	1,679,000 ac 79%	1,909,200 ac 90%	1,445,000 ac 68%	972,800 ac 46%
Closed	214,000 ac 10%	0 ac 0%	210,400 ac 10%	683,000 ac 32%	1,155,200 ac 54%

Over three-quarters of the RFO is currently open to cross-country OHV use as reflected in the No Action Alternative. Any of the action alternatives would greatly reduce the amount of open area, diminishing both OHV recreational opportunities and the off-route impacts on other resources. Alternative A proposes 18 open areas totaling 449,000 acres including currently used play areas, new play areas, and areas where OHVs have traditionally been used for activities such as prospecting and firewood gathering. Alternative B proposes five open areas totaling 8,400 acres, providing continued opportunities for cross-country riding in some of the most popular areas, but minimizing acreage affected by cross-country travel. Alternatives C and D propose no open areas for cross-country travel, limiting the impacts of OHV use to designated routes. Alternative D proposes closing over half of the RFO to OHV use.

Route Designations

Within the limited area designation, inventoried routes would be designated for motorized use or closed. In some cases, designated routes would be closed seasonally or restricted by vehicle size/width. It should be noted that route designations are implementation decisions and that the resulting transportation network could change over time. Detailed route inventory maps by alternative will be available for review at the Richfield Field Office and on the project website for the Richfield DRMP/DEIS at http://www.blm.gov/ut/st/en/fo/richfield/planning.html. Work on a route inventory and route designations is ongoing and will be refined between the Draft EIS and Final EIS. Comments on the route inventory and proposed routes designations are invited during the DRMP/DEIS comment period.

Proposed route designations vary by alternative as displayed in Table 5 below.

Table 5. OHV Route Designations

	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Designated Routes	4,315 mi	4,063 mi	3,693 mi	2,601 mi	2,493 mi
Designated Routes with Seasonal Closures or Size/Width Restriction	0 mi	249 mi	483 mi	591 mi	550 mi
Closed Routes	65 mi	68 mi	204 mi	1,188 mi	1,242 mi

Minerals and Energy Resources

Interest in energy resources within the RFO has increased dramatically since the discovery of oil in the Sevier Valley in May 2004. The issue was framed during scoping by those who support oil, gas, and other mineral development on public lands and others who are concerned that such development could have adverse impacts on resources such as soils, vegetation, water quality, wildlife habitat and wilderness characteristics. Several background reports on minerals, prepared as part of developing the DRMP/DEIS, provide information about the mineral potential and likelihood of development within the planning area. They are:

- Coal Resource Evaluation of Henry Mountains Coal Field, Garfield and Wayne Counties, Utah, July 2004
- Coal Resources of the BLM Richfield Planning Area, July 2004
- Mineral Potential Report, March 2005
- Draft Coal Unsuitability Report ,Wasatch Plateau and Emery Coal Fields, Richfield Field Office, BLM, Sanpete and Sevier Counties, Utah, March 2005
- Draft Coal Unsuitability Report, Henry Mountains Coal Field, Richfield Field Office, BLM, Garfield and Wayne Counties, Utah, March 2005
- Reasonably Foreseeable Development Scenario for Oil and Gas Development, March 2005.

Fluid Minerals

The Reasonably Foreseeable Development Scenario (RFD, Appendix 12) estimates that over the next 15 years, 454 oil and gas wells could be drilled within the planning area: 360 in the Sevier and Sanpete valleys, 49 on the Wasatch Plateau (primarily coal bed methane wells on the national forests) and 45 exploratory wells elsewhere. Direct surface impacts from oil and gas exploration and development would affect an estimated 8,180 acres: 5,100 acres from geophysical exploration and 3,080 acres from drilling.

In the RMP, all public lands will be designated as either open or closed to oil and gas leasing. The core of closed lands under all alternatives is the 446,900 acres of WSAs that are closed to oil and gas leasing by law. Additional areas are closed in Alternative C, primarily to protect scenic values and in Alternative D to protect non-WSA lands with wilderness characteristics. Within open areas, stipulations are applied to protect other resource values, as follows—

- Areas open to oil and gas leasing under standard lease terms.
- Areas open to leasing subject to controlled surface use (CSU) and/or timing limitations.
- Areas open to leasing subject to no surface occupancy (NSO).

It is important to note that much of the land within the planning area where there is high interest in oil and gas is already leased. Development of leased lands would be done according to the terms of the existing leases rather than existing land use plans. Table 6 summarizes the availability of land within the RFO for oil and gas leasing, by alternative.

Table 6. Availability of Land for Oil and Gas Leasing (figures expressed in acres and percent of RFO)

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open to Leasing	Standard lease terms	1,236,500 ac 58%	860,600 ac 40%	545,000 ac 26%	491,900 ac 23%	290,200 ac 14%
	Controlled surface use or timing limitations	409,200 ac 19%	820,500 ac 39%	1,021,600 ac 48%	901,100 ac 42%	634,000 ac 30%
	No Surface Occupancy	22,600 ac 1%	0 ac 0%	110,900 ac 5%	148,700 ac 7%	43,300 ac 2%
	Total Open	1,668,300 ac 78%	1,681,100 ac 79%	1,677,500 ac 79%	1,541,700 ac 72%	967,500 46%
Closed to leasing		459,700 ac 22%	446,900 ac 21%	450,500 ac 21%	586,300 ac 28%	1,160,500 ac 54%

Coal

Coal resources are identified in three locations within the planning area: the Wasatch Plateau, Emery, and Henry Mountains coal fields. Only the Wasatch Plateau coal field is currently being mined and mining is expected to continue there for several more decades. Land use planning for coal leasing requires an

evaluation to determine the coal resources that have development potential by surface or underground mining methods, then a subsequent evaluation under the coal unsuitability criteria as defined at 43 CFR 3461.5 to determine the coal resources that are acceptable for further consideration of leasing.

Alternative N

For Alternative N, the coal evaluations and unsuitability reports were completed as part of the Management Framework Plans (MFPs). In the Wasatch Plateau and Emery coal fields, 73,952 acres of Federal mineral estate are identified as acceptable for consideration of leasing with 43,567 acres subject to NSO. In the Henry Mountains coal field, 107,414 acres of Federal mineral estate are identified as acceptable for consideration of leasing by underground mining with 19,255 acres subject to no surface facilities.

Alternatives A-D

For Alternatives A-D, the coal resources in these three fields were evaluated in two resource reports in 2003-2004 (Appendix 8) to delineate coal with development potential that would be mined by underground or surface mining methods, based on parameters and assumptions presented in the coal evaluation reports. The coal resources that were determined to have development potential were additionally analyzed by applying the unsuitability criteria (see Coal Unsuitability Reports, Appendix 8).

In the Emery coal field, 9,624 acres of BLM and 3,542 acres of National Forest are identified as having development potential by underground mining methods, with no acres acceptable for consideration by surface mining methods. In the Henry Mountains coal field, 50,512 acres of BLM lands are identified as having development potential by underground mining methods, 36,028 acres of which are acceptable for consideration of leasing by surface mining methods.

Federal regulations provide detailed guidance for addressing coal resources in BLM land use plans. Appendix 8 to the Richfield DRMP/DEIS includes draft coal unsuitability reports, providing regulation for the three coal fields. Public comment is invited on the draft coal unsuitability reports during the comment period for the DRMP/DEIS.

Coal resources within the Wasatch Plateau are within the Fishlake and Manti-La Sal National Forests. The unsuitablility report addresses which coal resources within the national forests are available for consideration for coal leasing. However, Alternatives A-D for this DEIS do not analyze impacts of coal leasing on national forests nor does this DEIS analyze impacts of other resource management on coal resources within the national forests.

Special Designations

Wilderness Study Areas (WSAs)

During scoping, the RFO received more comments regarding wilderness, WSAs and related issues than on any other topic. Commenters either strongly favored or strongly opposed the designation of new WSAs in the RMP. Respondents favoring wilderness often suggested that areas included in America's Redrock Wilderness Act, pending before Congress, be designated WSAs. However, a BLM policy change in September 2003 (IM 2003-275) prohibits consideration of new WSAs in RMPs. Likewise, because WSAs were established through Section 603 of FLPMA, 43 U.S.C. 1782, the BLM has no authority to change or eliminate previously identified WSAs through planning. Hence, this DRMP/DEIS does not address expanding, reducing or otherwise changing existing WSAs. The designation of WSAs or other public lands as Wilderness is a Congressional decision that is beyond the scope of this RMP and the authority of the BLM. (See also "Non-WSA Lands with Wilderness Characteristics" above.)

There are 11 WSAs on public lands within the RFO, totaling 446,900 acres.

- Bull Mountain – 13,200 acres
- Dirty Devil - 72,100 acres
- Fiddler Butte – 74,000 acres
- Fremont Gorge – 2,800 acres
- French Spring/Happy Canyon – 24,300 acres
- Little Rockies – 40,700 acres
- Mount Ellen/Blue Hills – 81,400 acres
- Mount Hillers – 19,300 acres
- Mount Pennell – 77,100 acres
- Horseshoe Canyon (south) – 39,900 acres
- Portion of the Horseshoe Canyon (north) – 2,040 acres

Under all alternatives, WSAs must be managed in a manner that protects their suitability for designation as wilderness based on the following legal and policy guidance—

- BLM Handbook H-8550-1, Interim Management Policy for Lands Under Wilderness Review (IMP), FLPMA Section 603 (c). Includes direction that WSAs be closed or limited to OHV use.
- Onshore Oil and Gas Leasing Act of 1987 closes all WSAs to oil and gas leasing.
- IM-2000-096 directs that WSAs be managed as VRM Class I.

The BLM's discretion to make planning decisions on management of WSAs is limited to designating them as VRM Class I and determining if the WSAs will be limited or closed to OHV use.

Wild and Scenic Rivers

Over 300 named drainages within the RFO were evaluated for their potential eligibility under the Wild and Scenic Rivers Act. On March 1, 2004, a *Wild and Scenic River Preliminary Eligibility and Tentative Classification Report for the Richfield Field Office* was released for 60 days of public comment. The RFO received seventy-six comments. Following an evaluation of those comments, BLM determined that 12 river segments totaling 135 miles containing one or more "outstandingly remarkable values" were eligible wild and scenic rivers (see Appendix 2, *Summary of Wild and Scenic River Evaluation*). Suitability determinations vary by alternative as reflected in Table 7. "Suitable" rivers represent BLM's recommendations to Congress. The final decision on which rivers are added to the National Wild and Scenic River System (NWSRS) rests with Congress and is outside the scope of planning.

Table 7. Eligible and Suitable Wild and Scenic Rivers

Eligible	Suitable		
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred)**	**Alternatives C and D**
Make no suitability determination. Manage all eligible river segments to protect their outstandingly remarkable values (12 segments, 135 miles)— • Dirty Devil River (54 miles, wild)	Recommend no eligible river segments as suitable for inclusion in the National Wild and Scenic River System (0 segments, 0 miles). Provide no special management for outstandingly remarkable	Recommend and manage the following eligible rivers as suitable for inclusion in the National Wild and Scenic River System (2 segments, 59 miles)— • Dirty Devil River (54 miles, wild) • Fremont Gorge (5	Recommend and manage the following eligible rivers (all eligible segments) as suitable for inclusion in the National Wild and Scenic River System (12 segments, 135 miles)— • Dirty Devil River (54 miles, wild)

Eligible	Suitable		
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred)**	**Alternatives C and D**
• Beaver Wash Canyon (6.8 miles, wild) • Larry Canyon (4 miles, wild) • No Mans Canyon (7.1 miles, wild) • Robbers Roost Canyon (31 miles, wild) • Sam's Mesa Box Canyon (9.5 miles, wild) • Twin Corral Box Canyon (9 miles, wild) • Fish Creek (1/4 mile, scenic) • Fremont Gorge (5 miles, wild) • Fremont River below Capitol Reef National Park to Caineville Ditch Diversion (4 miles, recreational) • Maidenwater Creek (3 miles, scenic) • Quitchupah Creek (1.4 miles, recreational).	values.	miles, wild)	• Beaver Wash Canyon (6.8 miles, wild) • Larry Canyon (4 miles, wild) • No Mans Canyon (7.1 miles, wild) • Robbers Roost Canyon (31 miles, wild) • Sam's Mesa Box Canyon (9.5 miles, wild) • Twin Corral Box Canyon (9 miles, wild) • Fish Creek (1/4 mile, scenic) • Fremont Gorge (5 miles, wild). • Fremont River below Capitol Reef National Park to Caineville Ditch Diversion (4 miles, recreational) • Maidenwater Creek (3 miles, scenic) • Quitchupah Creek (1.4 miles, recreational)

Areas of Critical Environmental Concern

FLPMA mandates that the BLM "give priority to the designation and protection of areas of critical environmental concern" in developing or revising land use plans (43 USC § 1714 (c)(3)). Thirty areas totaling 1.6 million acres were nominated as ACECs during scoping. BLM evaluated the nominations and identified 16 areas totaling 886,810 acres meeting relevance and importance criteria as potential ACECs (see Appendix 1, ACEC Evaluation Report and Table 8 below). Comments on the ACEC Evaluation Report are invited during the DRMP/DEIS comment period.

Table 8. Areas of Critical Environmental Concern

Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Continue designation and management of four existing ACECs (14,780 acres)— • Beaver Wash Canyon (4,800 acres) • North Caineville Mesa (2,200 acres) • South Caineville	Designate no ACECs.	Designate and manage two areas (one existing, one new) as ACECs (2,530 acres)-- • North Caineville Mesa (2,200 acres) • Old Woman Front (330 acres)	Designate and manage 16 areas as ACECs (886,810 acres)— • Badlands (88,900 acres including North and South Caineville Mesa ACECs and Gilbert Badlands RNA ACEC) • Bull Creek Archaeological District (4,800 acres) • Dirty Devil (includes Beaver Wash Canyon ACEC) (205,300 acres) • Fremont Gorge/Cockscomb (34,300 acres) • Henry Mountains (includes No Man Mesa	

Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Mesa (4,100 acres) • Gilbert Badlands Research Natural Area (RNA) (3,680 acres)			potential ACEC, 288,200 acres) • Horseshoe Canyon (RFO portion only, 40,900 acres) • Kingston Canyon (22,100 acres) • Little Rockies (49,200 acres) • Lower Muddy Creek (RFO portion only, 16,200 acres) • Old Woman Front (330 acres) • Parker Mountain (107,900 acres) • Quitchupah (180 acres) • Rainbow Hills (4,000 acres) • Sevier Canyon (8,900 acres) • Thousand Lakes Bench (500 acres) • Special Status Species (15,100 acres)	

ENVIRONMENTAL CONSEQUENCES

Environmental consequences potentially resulting from each of the five alternatives were analyzed relative to meaningful direct, indirect, short-term, and long-term impacts. The impacts of each alternative are summarized in Table 2-25 and described in Chapter 4. Also included in Chapter 4 is a discussion of cumulative impacts that could result from the incremental impacts of each alternative when added to other past, present, and reasonably foreseeable future actions.

CONSULTATION

During the planning process, BLM coordinated with Indian tribes, cooperating agencies, and the public.

- **Coordination with American Indian Tribes:** The BLM is required by law to coordinate with Indian tribes in developing RMPs, be consistent with tribal plans and protection of treaty rights, and observe specific planning coordination authorities. In developing the Richfield DRMP/DEIS, BLM representatives met with representatives of the Hopi, Navajo, Paiute, and Ute tribes.
- **Cooperating Agencies:** In preparing the Richfield DRMP/DEIS, BLM invited other Federal agencies and state and local governments to participate as cooperating agencies. The State of Utah and Garfield, Piute, Sanpete, Sevier, and Wayne Counties each signed cooperating agency agreements and participated as members of the DRMP/DEIS interdisciplinary team. Other Federal agencies, including the U.S. Forest Service, the National Park Service (NPS), and the U.S. Fish and Wildlife Service, also participated in the interdisciplinary team meetings.
- **Other Consultation:** The field manager, land use planner, and other staff communicated regularly with a variety of groups and individuals interested in the RMP. Such communication will continue through the record of decision (ROD) and plan implementation.

FINAL EIS, RECORD OF DECISION AND RMP

Public comment on the Richfield DRMP/DEIS will be accepted for 90 days following its release. The comments will then be analyzed and a Proposed Final Resource Management Plan and Final Environmental Impact Statement (FEIS) prepared, followed by a protest period and governor's consistency review. Finally, a ROD and Approved RMP will be issued.

The Approved RMP will provide overarching guidance for all subsequent site-specific decisions and implementation and activity plans within the RFO for the next 15 to 20 years. Certain decisions will be effective immediately and will require no additional planning or NEPA analysis, including—

- Visual Resource Management class designations
- Off-highway vehicle area designations
- Areas closed and open to oil and gas leasing and the stipulations applied to leases within the open areas
- Wild and Scenic River suitability recommendations
- Area of Critical Environmental Concern designations

CHAPTER 1 INTRODUCTION

1.1 INTRODUCTION

In accordance with the Federal Land Policy and Management Act of 1976 (FLPMA), the Bureau of Land Management (BLM) is responsible for management of public lands and its resources based on the principles of multiple use and sustained yield. Management direction is provided by land use plans, which determine appropriate multiple uses, allocate resources, develop strategies to manage and protect resources, and establish systems to monitor and evaluate the status of resources and effectiveness of management. Land use plans are intended to guide management, allowing continuing uses of public land over extended time periods.

The Richfield Draft Resource Management Plan/Draft Environmental Impact Statement (DRMP/DEIS) identifies and analyzes five alternatives for future management of the public lands and resources administered by the BLM's Richfield Field Office (RFO). This DRMP/DEIS addresses the future management of 2.1 million surface/mineral estate acres of public land and an additional 95,000 acres of Federal mineral estate (underlying private or state surface) in Sanpete, Sevier, Piute, and Wayne counties, as well as portions of Garfield County. (There are also 21,500 acres of Kane County within the planning area. However, these acres lie entirely within Glen Canyon National Recreation Area (NRA), which is managed by the National Park Service (NPS), so no decisions within this DRMP/DEIS will affect those lands.) This DRMP/DEIS was prepared in cooperation with the five affected county governments, the State of Utah, several American Indian tribes, and other Federal agencies.

1.2 PURPOSE AND NEED

Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] 1502.13) require the purpose and need of an environmental impact statement (EIS) to "briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives." The purpose and need section of this DRMP/DEIS provides a context and framework for establishing and evaluating the reasonable range of alternatives described in Chapter 2.

1.2.1 Purpose

Section 102 of FLPMA sets forth the policy for periodically projecting the present and future use of public lands and their resources using the land use planning process. Sections 201 and 202 of FLPMA establish the BLM's land use planning requirements. BLM Handbook H-1601-1, *Land Use Planning Handbook*, provides guidance for implementing the BLM land use planning requirements established by Sections 201 and 202 of FLPMA and the regulations in 43 CFR 1600.

The purpose, or goal, of the land use plan is to provide a comprehensive framework for the BLM's management of the public lands within the planning area, and to ensure these public lands are managed in accordance with FLPMA and the principles of multiple use and sustained yield. The purpose of this plan revision is to consolidate the existing land use plans and their amendments, and to reevaluate, with public involvement, existing conditions, resources, and uses and reconsider the mix of resource allocations and management decisions that are designed to balance uses with the protection of resources pursuant with FLPMA and other applicable law. This Resource Management Plan (RMP) revision will address the growing needs of the planning area and result in selection of a management strategy that best achieves a combination of the following:

- Employ a community-based planning approach to collaborate with Federal, state, and local cooperating agencies.
- Resolve multiple use conflicts or issues between resource values and resource uses. The resulting RMP will establish consolidated guidance and updated goals, objectives, and management actions for the public lands in the RFO. The RMP will be comprehensive in nature and will address issues that have been identified through agency, interagency, and public scoping efforts.
- Establish goals and objectives (desired outcomes) for management of resources and resource uses within the approximately 2.1 million surface/mineral estate acres and an additional 95,000 acres of Federal mineral estate (underlying private or state surface) administered by the BLM's RFO in accordance with the principles of multiple use and sustained yield.
- Identify land use plan decisions to guide future land management actions and subsequent site-specific implementation decisions.
- Identify management actions and allowable uses anticipated to achieve the established goals and objectives and reach desired outcomes.
- Provide comprehensive management direction by making land use decisions for all appropriate resources and resource uses administered by the RFO.
- Provide for compliance with applicable tribal, Federal, and state laws, standards, implementation plans, and BLM policies and regulations.
- Recognize the Nation's needs for domestic sources of minerals, food, timber, and fiber, and incorporate requirements of the Energy Policy and Conservation Act (EPCA) Reauthorization of 2000.
- Retain flexibility to adapt to new and emerging issues and opportunities and to provide for adjustments to decisions over time based on new information and monitoring.
- Strive to be compatible with existing plans and policies of adjacent local, state, tribal, and Federal agencies and be consistent with Federal law, regulations, and BLM policy.

1.2.2 Need

Management of the public lands within the planning area is currently guided by the following six land use plans.

- Forest Management Framework Plan (MFP) - approved in 1977
- Mountain Valley MFP – approved in 1982
- Henry Mountain MFP – approved in 1982
- Parker Mountain MFP – approved in 1982
- Cedar-Beaver-Garfield-Antimony RMP – approved in 1986
- San Rafael RMP – approved in 1991

The BLM identified the need, or requirement, to revise these six land use plans through a formal evaluation completed in February 2001. Since completion of these land use plans, considerable changes have occurred within the planning area. Heightened public awareness, increased public demand for use of the lands, and increases in conflict between competing resource values and land uses continue to challenge the BLM's management goals and objectives. The RFO is facing a wide variety of issues affecting local communities, regional and state interests, and the health of the public lands. This, along with emerging issues and changing circumstances, resulted in the need to revise the existing plans. Given the nature of the issues that face the RFO and their overlap between Federal, tribal, state, and local jurisdictions, the RFO will combine the six existing land use plans into one planning document - the Richfield RMP.

There are a number of new issues (such as new Federal species listings), higher levels of controversy around existing issues, and new (unforeseen) public land uses and concerns that have arisen over the years which were not included or not adequately addressed in the existing plans. These and other select examples of new data, new and revised policies, and emerging issues and changing circumstances demonstrate the need to revise the existing plans.

1.3 DESCRIPTION OF THE PLANNING AREA

The planning area, located in south-central Utah, includes all of Piute, Sanpete, Sevier, and Wayne counties and portions of Garfield and Kane counties, an area totaling 5.4 million acres (see Map 1-1). The BLM administers 2.1 million acres of public land surface and mineral estate, and an additional 95,000 acres of Federal minerals where the surface estate is in non-Federal (state or private) ownership. The BLM also has administrative responsibility for 2,082,865 acres of mineral estate where the surface is managed by other Federal agencies (U.S. Forest Service and National Park Service). On these lands, leasing of Federal minerals is subject to management as directed by the surface managing agency, and the decisions of this RMP will pertain only to the BLM's role in administering the minerals. RMP decisions apply only to BLM-administered public lands and resources. Table 1-1 summarizes the surface land ownership within the planning area. In this document, the term "planning area" applies to all lands within the five-county area, regardless of surface ownership. It is important to note that the BLM may only make decisions that affect public lands and resources, but it is responsible for collaborative planning with the public and adjacent jurisdictions so as to consider the impacts of its actions on all resources in the region.

Table 1-1. Land Ownership – Richfield Planning Area

Ownership	Acres	Percent of Planning Area
Public lands (BLM administered)	2,128,200	39
National forests	1,476,400	27
National parks and recreation areas	608,500	11
Private	803,600	15
State of Utah School and Institutional Trust Lands Administration (SITLA)	385,300	7
Other state, county, city, wildlife, park, and outdoor recreation areas	36,700	1
Tribal lands	1,200	<1
Total	**5,439,900**	**100**

1.4 PLANNING PROCESS

FLPMA requires the BLM to use land use plans as tools by which "present and future use is projected" (43 U.S.C. 1701 (a)(2)). FLPMA's implementing regulations for planning, 43 CFR Part 1600, state that land use plans are a preliminary step in the overall process of managing public lands, "designed to guide and control future management actions and the development of subsequent, more detailed and limited scope plans for resources and uses" (43 CFR Part 1601.0-2). Public participation and input are important components of land use planning.

Revision of existing land use plans is a major Federal action for the BLM. The National Environmental Policy Act (NEPA) of 1969, as amended, requires Federal agencies to prepare an EIS for major Federal actions (USDI Departmental Manual Part 516 Chapter 11.4A(1)); thus, this DEIS accompanies the

revision of the existing plans. This DRMP/DEIS analyzes the impacts of five alternative scenarios for management of the public lands and resources within the planning area, including the No Action Alternative. The No Action Alternative reflects current management (the existing plans). NEPA requires analysis of a No Action Alternative.

The BLM uses a nine-step planning process (see Figure 1-1) when developing and revising RMPs, as required by 43 CFR 1600 and planning program guidance in the BLM Land Use Planning Handbook H-1601-1. The planning process is designed to help the BLM identify the uses of BLM administered lands desired by the public and to consider these uses to the extent they are consistent with the laws established by Congress and the policies of the executive branch of the Federal government.

The planning process is issue-driven (Step 1). The plan revision process is undertaken to resolve management issues and problems as well as to take advantage of management opportunities. The BLM utilized the public scoping process to identify planning issues to direct (drive) the revision of the existing plans. The scoping process was also used to introduce the public to preliminary planning criteria, which set limits to the scope of the RMP revision (Step 2).

As appropriate, the BLM used existing data from a variety of sources and collected new data as necessary to address planning issues and to fill data gaps identified during public scoping (Step 3). Using these data, the planning issues, and the planning criteria, the BLM conducted an Analysis of the Management Situation (AMS) (Step 4) to describe current management and identify management opportunities for addressing the planning issues. Current management reflects management under the existing plans and management that would continue through selection of the No Action Alternative. The existing affected environment is summarized from the AMS into Chapter 3 of the DRMP/DEIS. The AMS is included as part of the Administrative Record for this plan and is available in the RFO and on the RFO's planning website (at www.blm.gov/ut/st/en/fo/richfield/planning.html).

Results of the first four steps of the planning process clarified the purpose and need and identified key planning issues that need to be addressed in the new RMP. Key planning issues reflect the focus of the RMP revision and are described in more detail in the Planning Issues section of this DRMP/DEIS.

Alternatives constitute a range of management actions which are anticipated to achieve identified goals or objectives. During alternative formulation (Step 5), the BLM collaborated with cooperating agencies to identify goals and objectives (desired outcomes) for resources and resource uses in the planning area. These desired outcomes addressed the key planning issues, were constrained by the planning criteria, and incorporated the management opportunities identified by the BLM. Details of the alternatives were developed through the identification of management actions and allowable uses anticipated to achieve the goals and objectives. The alternatives represent a reasonable range for managing resources and resource uses within the planning area under the multiple use and sustained yield mandate of FLPMA. Chapter 2 of this document describes and summarizes the alternatives.

This DRMP/DEIS also includes an analysis of the impacts of each alternative in Chapter 4 (Step 6). With input from cooperating agencies and BLM specialists, and in consideration of planning issues, planning criteria, and the impacts of the alternatives, the BLM has identified a Preferred Alternative (Alternative B) from among the five alternatives (Step 7). This is documented in the DRMP/DEIS, which will be distributed to the public for review and comment (also Step 7).

Step 8 of the land use planning process will occur following receipt and consideration of public comments on the DRMP/DEIS. In preparing the Proposed RMP/Final EIS, BLM will consider all comments received during the public comment period. In developing the Proposed RMP/Final EIS, the Utah BLM State Director, who is the decision maker for this plan revision, has the authority and discretion to select

an alternative in its entirety or to combine components of the various alternatives presented to prioritize differing resources and/or uses consistent with the multiple use and sustained yield mandate. The regulations at 43 CFR Part 1610 provide, prior to the approval of the proposed RMP, a 60-day period for the Governor of Utah for "consistency review" and a 30-day period to protest the Proposed RMP to the BLM Director for "any person who participated in the planning process and has an interest which is or may be adversely affected by the approval" of the Proposed RMP/Final EIS. Step 9, Monitoring and Evaluation, occurs after a Record of Decision (ROD) is issued and the Approved RMP is being implemented.

Figure 1-1. Nine Step Planning Process

Step 1 Scoping and Identification of Issues.*

Step 2 Development of Planning Criteria.*

Step 3 Inventory Data and Information Collection.

Step 4 Analysis of the Management Situation.

Step 5 Formulation of Alternatives.

Step 6 Estimation of Effects of Alternatives.

Step 7 Selection of Preferred Alternative. This step includes preparation and public distribution of the DRMP/DEIS for public review and comment.

Step 8 Selection of the RMP. This step involves preparation and public distribution of the Proposed RMP/Final EIS.*

Step 9 Monitoring and Evaluation.**

*Public participation is invited throughout the planning process but is formally requested at these steps.
**The RMP will be revised as necessary based on monitoring and evaluation findings, new data, new or revised policy, and changes in circumstances consistent with applicable laws and regulations.

1.5 DECISION FRAMEWORK

As stated in the previous section, identifying the planning issues and developing planning criteria are the first steps in defining the scope of the RMP revision. The planning issues and criteria provide the framework in which planning decisions are made. Planning decisions refer to what is established or determined by the approved RMP. The RMP provides guidance for planning decisions according to the following categories:

- Physical, biological, and cultural resources
- Resource uses
- Special designations

In the context of these categories, management strategies were developed to provide viable options for addressing planning issues. The management strategies provide the building blocks from which general management scenarios and the more detailed resource management alternatives were developed. The resource management alternatives reflect a reasonable range of management options that fall within limits set by the planning criteria. The planning issues and planning criteria used to revise the existing plans are described in the following sections.

1.5.1 Planning Issues

The BLM conducted an early and open scoping process to determine the scope, or range, of issues to be addressed in this DRMP/DEIS. Scoping identifies the affected public and agency concerns, defines the relevant issues and alternatives that will be examined in detail in the RMP/EIS, and eliminates those that are not significant. The BLM's Handbook H-1601-1 *Land Use Planning Handbook* defines planning issues as "…disputes or controversies about existing and potential land and resource allocations, levels of resource use, production, and related management practices."

Public scoping was designed to meet the public involvement requirements of FLPMA and NEPA. This cooperative process included soliciting input from interested state and local governments, tribal governments, other Federal agencies and organizations, and individuals, to identify the scope of issues to be addressed in the plan and to assist in the formulation of reasonable alternatives. The scoping process was an excellent method for opening dialogue between the BLM and the general public about management of the public lands and for identifying the concerns of those who have an interest in the area.

As part of the scoping process, the BLM also requested that the public submit nominations for potential Areas of Critical Environmental Concern (ACECs) and nominations of rivers for potential inclusion in the National Wild and Scenic Rivers System (NWSRS).

The scoping period for the Richfield RMP began on November 1, 2001 with publication of the Notice of Intent (NOI) in the Federal Register, and ended on April 1, 2002. Scoping included open-house meetings in five communities (Richfield, Junction, Manti, Loa, and Salt Lake City, Utah). In addition, news releases were used to notify the public regarding the scoping period and the planning process and to invite the public to provide written comments. The RFO received written comments via email, fax, and regular mail. Comments obtained from the public during the scoping period were used to define the relevant issues that would be addressed by a reasonable range of alternatives.

For the Richfield planning process, scoping comments received were placed in one of three categories:

- Issues to be resolved in the DRMP/DEIS;
- Issues addressed through other policy or administrative action (and therefore not addressed in the DRMP/DEIS);
- Issues eliminated from detailed analysis because they are beyond the scope of the DRMP/DEIS.

Some important issues to be addressed in the RMP were identified by the public and other agencies during the scoping process. The Richfield RMP/EIS Scoping Report (available for review on the RMP planning web page at www.blm.gov/ut/st/en/fo/richfield/planning.html) summarizes the scoping process. The issues identified in the Scoping Report fall into one of 12 broad categories. Other resource and use issues are identified in the BLM Planning Handbook (H-1601-1). All of these issues were considered in developing the alternatives brought forward in this DRMP/DEIS.

1.5.1.1 Issues to be Addressed in the Richfield RMP

Those planning issues determined to be within the scope of the EIS are used to develop one or more of the alternatives or are addressed in other parts of the EIS. For example, as planning issues were refined, the BLM collaborated with cooperating agencies to develop a reasonable range of alternatives designed to address and (or) resolve key planning issues, such as what areas, if any, contain unique or sensitive resources requiring special management. A reasonable range of alternatives provides various scenarios for how the BLM and cooperating agencies can address this and other key planning issues, including the management of resources and resource uses in the planning area. In other words, key planning issues

serve as the rationale for alternative development. The key planning issues identified for developing alternatives in this DEIS are listed below:

Issue 1: ***Where and to what extent can transportation and access be managed to satisfy public demand while protecting natural and cultural resource values?***

Use of the public lands in southern Utah (for recreation, commercial uses, and general enjoyment) has grown in popularity in recent years. With this popularity has come a demand for greater variety and availability of access opportunities, including off-highway vehicle (OHV) use. With the number of visitors growing, resource and user conflicts are becoming more common. OHV use needs to be managed, including identifying areas to be restricted or closed for the protection of other resource values.

Issue 2: ***What areas should be designated for special management (e.g., ACECs and Wild and Scenic Rivers) and how should these areas be managed?***

FLPMA and BLM policy require the BLM to give priority to designation and protection of ACECs during the land use planning process. The Wild and Scenic River (WSR) Act directs Federal agencies to consider the potential for including watercourses into the National Wild and Scenic Rivers System during the land use planning process. The alternatives analyzed in this DRMP/DEIS include a range of management prescriptions for managing the potential ACECs, as well as for managing the eligible rivers as suitable WSRs.

Issue 3: ***Where should non-wilderness study area (WSA) lands with wilderness characteristics be managed?***

The RFO includes lands outside of designated WSAs that contain the wilderness characteristics of naturalness, outstanding opportunities for solitude, and outstanding opportunities for primitive or unconfined recreation. The DRMP/DEIS will analyze alternative decisions and levels of protection for non-WSA lands with wilderness characteristics.

Issue 4: ***How should recreation activities be managed to satisfy public demand while protecting natural and cultural resource values?***

Recreation in southern Utah has grown in popularity in recent years. With this popularity has come a demand for a greater variety and availability of recreation opportunities such as motorized and non-motorized trails (including equestrian trails), climbing, mountain biking, hiking, and camping. With the number of visitors growing, resource and user conflicts are becoming more common. Recreational use needs to be managed, including identifying special recreation management areas (SRMAs) where management attention is needed to highlight important recreational opportunities or deal with problems such as conflicts between users or impacts on other resources.

Issue 5: ***What areas will be available for mineral development, and what restrictions should be imposed?***

Mineral development is considered a major issue for the planning area not only for economic reasons but also for the degree to which it can potentially affect other resources (including soils, vegetation, water quality, wildlife habitat and naturalness, solitude, and opportunities for primitive or unconfined recreation). Throughout this DRMP/DEIS, energy and mineral development will be analyzed in the context of the need for protection of other resources. BLM has management discretion in four areas, and the alternatives include a range of options for each:

- Areas closed or open to oil and gas leasing and the stipulations on leasing within the open areas
- Areas closed or open to disposal of salable minerals (mineral materials)
- Areas proposed for withdrawal from entry under the mining laws
- Areas available for further consideration for coal leasing (coal unsuitability)

Issue 6: ***What areas will be available for livestock grazing, in light of resource conflicts?***

The Secretary of the Interior, through the BLM, manages approximately 264 million acres of public rangelands throughout the Western U.S. The Taylor Grazing Act of 1934, FLPMA, and the Public Rangelands Improvement Act of 1978 together guide the BLM's management of livestock grazing on public lands. The objectives for grazing administration regulations are to: "promote healthy sustainable rangeland ecosystems; accelerate restoration and improvement of public rangelands to properly functioning condition; efficiently and effectively administer domestic livestock grazing; and provide for the sustainability of the Western livestock industry and communities that are dependent upon productive, healthy public rangelands" (43 CFR § 4100.0-2).

This DRMP/DEIS will review and update the status of lands available or unavailable for livestock grazing, as referred to in 43 CFR 4130.2. When rangeland health assessment, monitoring data, inventory data, or other inputs indicate changes are needed for resource improvement, these changes will be pursued at the implementation level on a site-specific basis, as per the BLM's Land Use Planning Handbook (H-1601-1).

Issue 7: ***How can resources such as vegetation, soils, and wildlife be protected, maintained, or restored?***

Some resource uses (e.g., grazing, mineral development, OHV use, and recreation) can affect the natural function and condition of plant communities that provide habitat for wildlife. A healthy cover of perennial vegetation stabilizes the soil, increases infiltration of precipitation, reduces runoff, provides clean water to adjacent streams, and minimizes noxious weed invasion. Healthy plant communities provide habitat for a variety of wildlife species, including special status species.

The alternatives address wildlife and wildlife habitat in terms of the interactions of other resources and resource uses (such as oil and gas leasing, OHV area and route designations, and development of rights-of-way [ROWs]) with wildlife and their habitat.

The management of habitat for plant and animal species listed under the Endangered Species Act (ESA), such as the Mexican spotted owl, Wright fishhook cactus, and the Utah prairie dog, as well as other species considered sensitive, such as the greater sage grouse and the pygmy rabbit, were raised as issues by the BLM, other Federal and state agencies, and the public. In recognition of their importance, the alternatives address special status species separately from other wildlife species.

Issue 8: ***Where is fire desired and not desired, and in what areas could fire be utilized as a management tool for vegetative treatments?***

Drought and beetle infestation in southern Utah have contributed to hazardous fuel loading, increasing the threat of wildfires. Areas of pinyon die-off and dry grasslands have also created areas of higher risk for fire hazard and could require treatment. A fire management plan is to be developed to address high risk areas, fire prevention, prescribed burns, rehabilitation and restoration, hazardous fuels reduction, and the protection of life and property.

Issue 9: ***What lands within the planning area should be identified as targets for acquisition, disposal or withdrawal?***

As mandated by Section 102 (a)(1) of FLPMA (43 U.S.C. § 1701), public lands are retained in Federal ownership, the exception being those public lands that have future potential for disposal (e.g., sale or exchange), as described under Section 203(a) and Section 206 of FLPMA (43 U.S.C. §§ 1713 and 1716).

Public lands cannot be effectively administered without legal and physical access. Therefore, public lands have potential for disposal when they are isolated and/or difficult to manage. Lands identified for disposal must meet public objectives, such as community expansion and economic development. Disposals would be accomplished using a variety of methods, including land sales, land exchange, sale or lease under the Recreation and Public Purposes Act of 1926 (R&PP), etc. Public lands can be considered for disposal, other than via FLPMA sale, on a case-by-case basis. Disposal actions are usually in response to a public request or an application and result in a title transfer, wherein the lands leave the public domain. In addition, the BLM will consider acquisition of non-Federal lands that meet resource management objectives through negotiated purchase, donation, or exchange from willing sellers. In a withdrawal of lands, an area of public land is withheld from settlement, sale, location, or entry, for the purpose of limiting activities in order to maintain other public values.

Although specific decisions on social and economic factors are not included as part of the DRMP/DEIS, the impacts of the management actions contained within the alternatives are analyzed for their impacts on socioeconomic conditions. Social and economic factors are identified in Chapter 3 (Affected Environment) and analyzed in Chapter 4 (Environmental Consequences). There are also other issues related to resources and resource uses that are required to be considered during land use planning efforts in accordance with BLM's Land Use Planning Handbook (H-1610-1) and NEPA regulations and policy. These include decisions for soil and water, management of rights-of-way (ROWs), environmental justice, and air quality.

1.5.1.2 Issues Considered But Not Further Analyzed

1.5.1.2.1 Issues Addressed Through Policy or Administrative Action

Policy or administrative actions include those actions that are implemented by the BLM because they are standard operating procedure, because Federal law requires them, or because they are BLM policy. Administrative actions do not require a planning decision to implement. They are, therefore, issues that are eliminated from detailed analysis in this planning effort. The following issues can be addressed by policy or administrative actions:

- Compliance with existing laws and policies (e.g., FLPMA, NEPA, Endangered Species Act, American Antiquities Act, Clean Air Act, Clean Water Act, National Historic Preservation Act [NHPA]).
- The allocation of forage between livestock and wildlife, and the application of specific management practices on allotments within the RFO is provided for through the application of Utah's Standards for Rangeland Health, Guidelines for Livestock Grazing Management, and supporting monitoring data. When monitoring and inventory data indicate a need, changes to the allocation of forage for livestock and wildlife are made after coordination with permittees, the Utah Division of Wildlife Resources, and other affected interests in order to assure that resource objectives are met. Livestock grazing management practices may also be adjusted to assure that grazing practices are compatible with other uses of the public lands. These allocation and management adjustments are implementation decisions according to the BLM's Land Use Planning Handbook (H-1601-1), and are done on an allotment or other site-specific basis.

- Education, enforcement/prosecution, vandalism, and volunteer coordination.
- Assist in resolving, to the extent possible, inconsistencies between Federal and non-Federal agency plans, and to be consistent with state and local plans to the maximum extent, consistent with Federal law and the purposes of FLPMA.
- Management of cultural resources, which includes up-to-date inventories, non-disclosure of sensitive sites, proposal of cultural sites for the National Register of Historic Places (NRHP), and Native American consultation.
- Management of the RFO's 11 existing WSAs (approximately 348,800 acres) under the Interim Management Policy (IMP) for Lands Under Wilderness Review (BLM Handbook H-8550-1). The BLM is statutorily (FLPMA Section 603(c)) required to manage these areas to protect their suitability for Congressional designation into the National Wilderness Preservation System unless and until Congress either designates an area as wilderness or releases it from further consideration. The BLM's discretion to make planning decisions on management of WSAs is limited to designating WSAs as visual resource management (VRM) Class I and determining if the WSAs will be limited or closed to OHV use.
- Completion of inventory of riparian and wetland areas and the use of monitoring and mitigation to help protect these resources.
- Recreation management improvements, including a comprehensive sign system and maps.
- Administration of existing mineral leases, permits, and other authorized uses.
- Administration of valid existing rights.
- Monitoring wildlife and biodiversity.
- Monitoring air quality.
- Mitigation measures for site-specific projects.
- Noxious weed control.
- Eligibility standards for specially designated areas.
- Protection of threatened, endangered, or sensitive species.
- Coordination with local, state, and Federal agencies.
- Cooperation with user groups.

1.5.1.2.2 Issues beyond the Scope of the RMP

Issues beyond the scope of the RMP process include all issues not related to decisions that would occur as a result of the planning process. They include decisions that are not under the jurisdiction of the RFO or are beyond the capability of the BLM to resolve as part of the planning process. Issues identified in this category include:

- Settlement of RS 2477 claims. The State of Utah and Garfield, Piute, Sanpete, Sevier and Wayne counties may hold valid existing highway rights-of-way across public lands in the planning area pursuant to Revised Statute (RS) 2477, Act of July 26, 1866, chapter 262, § 8, 14 Stat. 251, 253, *codified at* 43 USC § 932. This RMP does not adjudicate, analyze, or otherwise determine the validity of claimed RS 2477 rights-of-way. Nothing in this RMP extinguishes any valid right-of-way, or alters in any way the legal rights the State of Utah and Garfield, Piute, Sanpete, Sevier and Wayne counties have to assert and protect RS 2477 rights, and to challenge in Federal court or other appropriate venue any use restrictions imposed by the RMP that they believe are inconsistent with their rights. Once a claimed right-of-way is recognized by the BLM through an administrative determination, or a right-of-way is determined to be valid by a court of law, any use restriction imposed by this RMP shall no longer apply to it.
- New proposals for WSAs or wilderness.

- Activities and uses beyond the jurisdiction of the BLM.
- Changing existing laws, policies, and regulations.
- Availability of funding and personnel for managing programs.

1.5.2 Planning Criteria

BLM planning regulations (43 CFR 1610) require the preparation of planning criteria as preliminary to the development of all RMPs. Planning criteria are the standards, rules, and guidelines that help to guide the planning process. These criteria influence all aspects of the planning process, including inventory and data collection, developing issues to address, formulating alternatives, estimating impacts, and selecting the Preferred Alternative. In conjunction with the planning issues, planning criteria ensure that the planning process is focused and incorporates appropriate analyses. Planning criteria are developed from appropriate laws, regulations, and policies as well as from public participation and coordination with cooperating agencies, other Federal agencies, state and local governments, and American Indian tribes.

Planning criteria used in the development of this RMP are:

- The RMP will recognize the existence of valid existing rights.
- The RMP will comply with applicable laws, regulations, executive orders, and BLM supplemental program guidance.
- Planning decisions will cover BLM-administered public lands, including split-estate lands where the Federal government has retained the sub-surface mineral estate.
- Planning decisions will use and observe the principles of multiple use and sustained yield set forth in FLPMA and other applicable law (43 United States Code [USC] 1701 (c)(1)).
- The BLM will use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences (43 USC 1701 (c)(2)).
- Areas potentially suitable for ACEC or other special designations will be identified and, where appropriate, brought forward for analysis in the EIS (43 USC 1701 (c)(3)).
- The BLM will rely, to the extent it is available, on the inventory of public lands, their resources, and other values (43 USC 1701 (c)(4)).
- The BLM will consider present and potential uses of the public lands (43 USC 1701 (c)(5)).
- The BLM will consider the relative scarcity of the values involved and the availability of alternative means (including recycling) and sites for the realization of those values (43 USC 1701 (c)(6)).
- The BLM will consider the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity.
- Decisions in the RMP will comply with applicable pollution control laws, including state and Federal air, water, noise, or other pollution standards or implementation plans (43 USC 1701 (c) (8)).
- To the extent consistent with the laws governing the administration of the public lands" (FLPMA 202 b(9)), BLM will be consistent with existing officially adopted and approved resource-related plans, policies, or programs of other Federal agencies, state agencies, American Indian tribes, and local governments that may be affected (43 CFR 1610.3-1 (c) (9)).

1.6 RELATIONSHIP TO OTHER PROGRAMS, PLANS, AND POLICIES

1.6.1 Other Related Plans

FLPMA requires that the BLM, when developing or revising land use plans, shall—

> *…to the extent consistent with the laws governing the administration of the public lands, coordinate the land use inventory, planning, and management of activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of the States and local governments within which the lands are located…and assure that consideration is given to those State, local and tribal land use plans for public lands [and] assist in resolving, to the extent practical, inconsistencies between Federal and non-Federal Government plans…*(43 U.S.C. S 1712 (c) (9))

The BLM must keep apprised of the many ongoing programs, plans, and policies that are being implemented in the planning area by other Federal, state, local, and tribal governments. The BLM will seek to be consistent with or complementary to other management actions whenever possible. Plans that need to be considered during the RFO's planning effort are identified in Table 1-2.

Table 1-2. Plans to be Considered in the Richfield Resource Management Plan

Plan Types	Specific Plans
County Plans	Garfield County General Plan, 1998 General Plan for Piute County, 1994 Sanpete County General Plan, 1997 Sevier County General Plan, 1998 General Plan for Wayne County, 1994 Utah Comprehensive Wildlife Conservation Strategy (State Wildlife Action Plan), 2005
State of Utah	Statewide Comprehensive Outdoor Recreation Plan (SCORP), 2000 Utah Water Quality Plan
National Forest Plans	Manti-LaSal National Forest Land and Resource Management Plan Dixie National Forest Land and Resource Management Plan Fishlake National Forest Land and Resource Management Plan Uinta National Forest Land and Resource Management Plan
National Park Service Plans	Capitol Reef National Park General Management Plan, 1988 Glen Canyon National Recreation Area General Management Plan Glen Canyon National Recreation Area Grazing Management Plan Canyonlands National Park General Management Plan

Plan Types	Specific Plans
Habitat Plans	Parker Mountain Habitat Management Plan Henry Mountains Desert Bighorn Sheep Habitat Management Plan Antimony Habitat Management Plan
Threatened and Endangered Species Recovery Plans	Maguire Daisy Recovery Plan, 1995 Mexican Spotted Owl Recovery Plan, 1995 Utah Reed-Mustards Recovery Plan, 1994 Last Chance Townsendia Recovery Plan, 1993 Northern States Bald Eagle Recovery Plan, 1983 Wright Fishhook Cactus Recovery Plan, 1985 Southwest Willow Flycatcher Recovery Plan, 2001 Utah Prairie Dog Recovery Plan, 1991 Utah Prairie Dog Interim Conservation Strategy, 1997
BLM Programmatic Environmental Analyses	Programmatic Environmental Impact Statement on Oil Shale and Tar Sands Leasing Energy Corridor Programmatic EIS Utah Land Use Plan Amendment for Fire and Fuels Management, 2005 Wind Energy Programmatic Environmental Impact Statement, 2005 Vegetation Treatments on BLM lands in 17 Western States Programmatic Environmental Report, 2007 Vegetation Treatments Using Herbicides in 17 Western States Programmatic Environmental Impact Statement, 2007

Consistency with national forest plans is ongoing because three of the four national forests that share boundaries with the RFO are revising their land use plans. In developing their respective management plans, the U.S. Forest Service (USFS) and BLM have coordinated OHV area and route designations, potential wild and scenic rivers evaluations, and other resources of mutual concern.

1.6.2 Energy Policy and Conservation Act

In May 2001, the Bush administration's Comprehensive National Energy Policy was issued, which directed the Secretary of the Interior to:

> … examine land status and lease stipulation impediments to Federal oil and gas leasing, and review and modify those where opportunities exist (consistent with the law, good environmental practice and balanced use of other resources).

Under this directive, the Assistant Secretary of the Interior for Land and Minerals Management delivered to Congress an inventory of U.S. oil and gas resources in five western basins, as well as the extent and nature of any restrictions or impediments to their development. This report was prepared at the request of Congress under the provisions of the 2000 Energy Policy and Conservation Act.

In April 2003, the BLM Washington Office (WO) specified the following four EPCA integration principles to be incorporated into planning:

1. Environmental protection and energy production are both desirable and necessary objectives of sound land management practices and are not to be considered mutually exclusive priorities.
2. The BLM must ensure appropriate accessibility to energy resources necessary for the nation's security, while recognizing that special and unique non-energy resources can be preserved.
3. Sound planning will weigh the relative resource values, consistent with FLPMA.
4. All resource impacts, including those associated with energy development and transmission, will be mitigated to prevent unnecessary or undue degradation.

1.6.3 Tar Sands Programmatic EIS

The RFO contains areas of tar sands resources. This resource has been, and currently is, available for lease under the Combined Hydrocarbon Leasing Act of 1981 and in accordance with the decisions in the existing BLM land use plans.

The major tar sand resources lie only in Utah within 11 designated Special Tar Sands Areas (STSAs) managed by the BLM's Vernal, Price, Richfield, and Monticello Field Offices (FOs). The RFO manages one of these STSAs.

When the Richfield RMP was initiated in 2001, there was no reasonably foreseeable development (RFD) expectation for tar sands over the life of the plan. The mineral report identified this resource, but did not foresee any leasing or development due to prevailing and anticipated economic factors.

Since the start of this RMP revision, Congress enacted the Energy Policy Act of 2005. Section 369 of the Energy Policy Act requires the Secretary of Interior to "complete a programmatic environmental impact statement for a commercial leasing program for oil shale and tar sands resources on public lands, with an emphasis on the most geologically prospective lands within each of the States of Colorado, Utah, and Wyoming." On December 13, 2005 the BLM published a Notice of Intent in the *Federal Register* initiating a Programmatic Environmental Impact Statement (PEIS) to support a commercial oil shale and tar sands leasing program on Federal lands in these three states.

In light of this statutory requirement, all decisions related to tar sands leasing in this RMP are being deferred to the ongoing Oil Shale and Tar Sands Leasing PEIS and subsequent Record of Decision. The Record of Decision on the final PEIS will amend the existing land use plans by changing allocation decisions on whether or not to allow leasing and future development of tar sands on public lands for those areas where the resource is present. Additional opportunities for public involvement and comment will occur when the PEIS becomes available in draft form. Site-specific requirements will be addressed in future NEPA analysis for specific project applications after the PEIS is completed. This RMP will, however, develop allocation decisions for conventional oil and gas leasing in the STSAs.

1.6.4 Energy Corridor Programmatic EIS

Section 368 of the Energy Policy Act of 2005 (designation of West-wide energy corridors) is being implemented through the current development of an interagency PEIS. The PEIS will address numerous energy corridor related issues, including the utilization of existing corridors (enhancements and upgrades), identification of new corridors, supply and demand considerations, and compatibility with other corridor and project planning efforts. It is likely that the identification of corridors in the PEIS will affect the RFO, and the decisions in the approved PEIS will be carried forward into the Approved RMP, or depending on timing, the PEIS will amend the RFO RMP.

1.6.5 Utah Land Use Plan Amendment for Fire and Fuels Management

The decisions reached through the *Utah Land Use Plan Amendment for Fire and Fuels Management* process, approved in September 2005, are common to all alternatives and the analysis is incorporated by reference. The fire plan amendment:

- Established landscape-level, fire management goals and objectives.
- Described desired wildland fire conditions (DWFC) by Fire Regime Condition Class (FRCC) and the management strategies and actions to meet DWFC and land use allocations.
- Described areas where fire may be restored to the ecosystem through wildland fire use for resource benefit and areas where wildland fire use is not appropriate.
- Identified criteria that would be used for establishing fire management priorities.
- Identified maximum burned areas and treatment acres for wildland fire, wildland fire use for resource benefit, prescribed fire treatments, non-fire fuel treatments, and emergency stabilization and rehabilitation (ESR) actions.

1.6.6 Wind Energy Programmatic EIS

The Record of Decision for the *Wind Energy Development Programmatic Environmental Impact Statement*, which implements a comprehensive wind energy development program to administer the development of wind energy resources on BLM-administered public lands in 11 western states (including Utah), was approved in December 2005. The decisions reached through the Wind Energy Development Programmatic Environmental Impact Statement process are common to all alternatives in the Richfield RMP and the analysis is incorporated by reference. The decision established policies and best management practices (BMPs) for the administration of wind energy development activities and established minimum requirements for mitigation measures.

1.7 CONSULTATION AND COORDINATION

This section describes specific actions taken by the BLM to consult and coordinate with American Indian tribes, government agencies, and interest groups, and to involve the interested public during preparation of the DRMP/DEIS. A Notice of Intent published in the *Federal Register* (FR) on November 1, 2001 formally announced the intent of the BLM to revise the existing plans and prepare the associated EIS. Publication of the NOI initiated the scoping process and invited participation of affected and interested agencies, organizations, and the general public in determining the scope and issues to be addressed by alternatives and analyzed in the EIS. Additional detail regarding actions taken by the BLM to involve the public and consult and coordinate with American Indian tribes, government agencies, and interest groups is provided in Chapter 5.

1.7.1 Consultation with American Indian Tribes

Consultation with American Indian tribes is part of the NEPA scoping process and a requirement of FLPMA. RMPs must address consistency with tribal plans and protection of treaty rights and must observe specific planning coordination authorities, including complying with relevant portions of the National Historic Preservation Act, American Indian Religious Freedom Act, Executive Order 13007 (*Indian Sacred Sites*), and Executive Order 12898 (*Environmental Justice*). In developing the Richfield DRMP/DEIS, BLM representatives have met with representatives of several American Indian tribes to inform them of the planning process and solicit information on potential issues and concerns. Tribal

consultation on the RMP revision began in May of 2002 and is still ongoing. American Indian tribes and organizations consulted to date include:

- Hopi Tribe (Kykotsmovi, Arizona)
- Ute Tribe (Ft. Duchesne, Utah)
- Southern Ute Tribe (Ignacio, Colorado)
- Ute Mountain Ute Tribe (Towaoc, Colorado)
- Navajo Nation (Window Rock, Arizona)
- Kaibab Band of Paiute Indians (Pipe Springs, Arizona)
- Paiute Indian Tribe of Utah (Cedar City, Utah)
- Navajo Utah Commission (Montezuma Creek, Utah)
- Moapa Paiute Tribe (Moapa, Nevada)
- Utah Division of Indian Affairs, Salt Lake City, Utah

A more detailed discussion of consultation with American Indian tribes can be found in Chapter 5 of this DRMP/DEIS.

1.7.2 Cooperating Agencies

CEQ requirements contained in 40 CFR 1501.6 and 1508.5 implement the NEPA mandate that Federal agencies responsible for preparing NEPA analysis and documentation do so "in cooperation with state and local governments" and other agencies with jurisdiction by law or special expertise (42 USC 4331(a), 4332(2)). In support of this mandate, the BLM invited local, county, state, and tribal agencies to participate as cooperating agencies in the development of the Richfield RMP. Cooperating agency status offers the opportunity for interested agencies to assume additional roles and responsibilities beyond the collaborative planning processes of attending public meetings and reviewing and commenting on plan documents. Six agencies accepted the invitations to become formal cooperating agencies in developing the RMP and signed cooperating agency agreements: the State of Utah; and Garfield, Piute, Sanpete, Sevier, and Wayne counties. Other Federal agencies, including the U.S. Forest Service U.S. Fish and Wildlife Service (USFWS), and National Park Service also participated as members of the interdisciplinary team to develop the RMP but were not formal cooperating agencies.

1.7.3 Consultation with USFWS

In 2001, the BLM and USFWS signed and implemented a Consultation Agreement for the RMP revisions in the Vernal, Price, and Richfield Field Offices (BLM and USFWS 2001). That document defined the respective roles and responsibilities of the two agencies and addressed the Section 7 consultation process to be followed for listed, proposed, or candidate species and their habitat located within the respective planning areas. As part of the implementation of this agreement, the RFO has consulted with USFWS throughout development of the DRMP/DEIS. The RFO will continue consultation with the USFWS through completion of the final biological assessment (BA) and Proposed RMP/Final EIS.

The BLM sent a letter to the USFWS concerning Section 7 consultation, presenting the approach for consultation, including the process of Programmatic Species-Specific Section 7 consultations on Utah BLM RMPs. The USFWS provided a species list to the RFO for evaluating BLM Section 7 responsibilities. A draft biological assessment analyzing potential impacts to these species has been prepared and informally submitted to the USFWS for comment. The BLM has incorporated into the DRMP/DEIS a list of species-specific conservation measures common to all alternatives that will serve to provide management direction for habitat of listed species (Appendix 14). These measures were

developed as a result of a statewide programmatic Section 7 consultation effort on existing land use plans. Section 7 consultation has previously occurred for the oil and gas lease sale program within the RFO. A set of lease notices, developed as part of that consultation, have been incorporated into this DRMP/DEIS, as standard requirements common to all alternatives (see Appendix 11).

Formal Section 7 consultation will proceed with the BLM's submission of a final biological assessment prepared for the Proposed RMP/Final EIS. The USFWS will respond with a biological opinion that will be included in the administrative record. The BLM will consider application of all measures suggested by the USFWS.

CHAPTER 2 ALTERNATIVES

2.1 INTRODUCTION

This chapter describes and compares five alternatives for managing the public lands and their resources within the Richfield Field Office (RFO). These alternatives are identified by the letters N, A, B, C, and D. The No Action Alternative (Alternative N) represents the continuation of current management direction. The Bureau of Land Management (BLM) developed the action alternatives (A, B, C, and D) by considering issues and concerns raised during the scoping period, planning criteria, and guidance applicable to management of resources and resource uses. The alternatives constitute a range of management actions that set forth different priorities and measures to emphasize certain uses or resource values over other uses or resource values under the multiple use sustained yield mandate so as to achieve the identified goals and objectives.

Evaluation of a reasonable range of alternatives is required by National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] Part 1502.14), as well as by BLM planning regulations. As required in the CEQ regulations, the reasonable range must include a "no action" alternative (CEQ 1981, Question 3.A) which is the continuation of current management under the Mountain Valley MFP (1982), the Henry Mountain MFP (1982), the Parker Mountain MFP (1982), the Cedar-Beaver-Garfield-Antimony RMP (1986), the Forest MFP (1977), and the San Rafael RMP (1991), as well as subsequent plan amendments.

The BLM recognizes that social, economic, and environmental issues cross land ownership lines and that extensive cooperation is needed to actively address issues of mutual concern. To the extent possible, these alternatives were crafted utilizing input from public scoping comments and cooperating agencies.

Once developed, the BLM analyzed the alternatives to predict their impacts on the environment. Based on the impacts analysis of these alternatives, along with knowledge of specific issues raised throughout the planning process, input from cooperating agencies and BLM resource specialists, consideration of planning criteria, and potential resolution of resource conflicts, the BLM has identified Alternative B as the Preferred Alternative. Each alternative provides a different emphasis for managing public lands and resources within the planning area, and each alternative represents a complete and reasonable RMP that: 1) meets the purpose and need described in Chapter 1; 2) responds to environmental, operational, and economic concerns raised by the public, agencies, business and other special interest groups during the scoping process; and 3) addresses potential environmental issues identified during review of the proposed management actions.

2.2 ALTERNATIVE COMPONENTS

The alternatives described in this chapter represent varying approaches to addressing and resolving key planning issues (see Chapter 1) and to managing resources and resource uses in the planning area. Each alternative comprises two categories of land use planning decisions: (1) desired outcomes (goals and objectives) and (2) allowable uses and management actions that are anticipated to achieve the desired outcomes. These two categories are discussed below.

2.2.1 Desired Outcomes (Goals and Objectives)

Goals and objectives provide overarching direction for BLM actions in meeting the agency's legal, regulatory, policy, and strategic requirements. Goals are broad statements of desired outcome, but

generally are not measurable. Objectives are more specific statements of a desired outcome that may include a measurable component. Objectives generally are anticipated to achieve the stated goals.

2.2.2 Allowable Uses and Management Actions

After establishing desired outcomes, the BLM identifies allowable uses (land use allocations) and management actions for different alternatives that are anticipated to achieve the desired outcomes (goals and objectives). Alternatives were developed to address planning issues, resolve resource conflicts, improve consistency, and ensure resource-specific decisions for the following categories in the RMP revision process: 1) physical, biological, and cultural resources; 2) resource uses; and 3) special designations.

Allowable uses identify where land uses are allowed, restricted, or prohibited on all BLM-administered surface and Federal mineral estate in the planning area. Alternatives may include specific land use restrictions to meet goals and objectives and may exclude certain land uses to protect resource values. For example, alternatives considered for this DRMP close all suitable wild and scenic river segments to oil and gas leasing. Because the alternatives identify whether particular land uses are allowed, restricted, or prohibited, allowable uses often include a spatial (e.g., map) component.

Management actions are those actions anticipated to achieve desired outcomes. These actions include proactive measures (e.g., measures taken to maintain, restore, or improve land health), as well as measures or criteria that would be applied to guide day-to-day activities occurring on public land.

Although anticipated to achieve desired outcomes, the components described above may not be achieved during the planning period due to limitations in funding or staffing, changing policies or priorities, or new information. These factors could also affect the rate of RMP implementation. It is important to note that the RMP is strategic in nature, and, while it provides an overarching vision for managing resources in the planning area, it also allows management flexibility in light of changing priorities, information, and circumstances.

2.3 ALTERNATIVES CONSIDERED IN DETAIL

2.3.1 Overview of the Alternatives

The BLM has developed five alternative management strategies for managing public lands and resources administered by the RFO. Alternative N is the “No Action Alternative;” that is, it represents the continuation of current management under the existing five land use plans, as amended. Alternatives A, B, C, and D (the “action alternatives”) would each effect change in management – each includes proactive responses to existing conditions and circumstances, which in some cases may have changed since the existing land use plans were written. Each alternative has a different emphasis, or theme, of management that reflects a different response to the Federal mandate to balance use and conservation of resources on public lands. All five alternatives comply with applicable laws, regulations, and policies.

This section summarizes the five alternatives. It includes a brief description of each alternative plus a comparative summary of proposed land use plan decisions by alternative (Table 2-1).

- **Alternative N (No Action Alternative)**
  Alternative N represents the continuation of current management under the existing six land use plans, as amended. The existing land use plans are the Mountain Valley MFP (1982), the Henry Mountain MFP (1982), the Parker Mountain MFP (1982), the Cedar-Beaver-Garfield-Antimony

RMP (1986), the Forest MFP (1977), and the San Rafael RMP (1991). This alternative provides the baseline against which to compare the other alternatives. It includes existing Areas of Critical Environmental Concern (ACECs) (four areas totaling 14,780 acres) and eligible wild and scenic river segments (WSRs) (12 segments totaling 135 miles). None of the eligible segments would be found suitable for Congressional designation into the National Wild and Scenic Rivers System (NWSRS).

- **Alternative A**

  Alternative A emphasizes commodity production, and mineral extraction – mining, oil and gas leasing, grazing, commercial recreation, and commercial woodland products harvesting – and motorized recreation. Relative to all other alternatives, Alternative A conserves the least land area for physical, biological, and cultural resources; proposes the least special designations (0 suitable WSR segments; 0 ACECs); and is the least restrictive to off-highway vehicle (OHV) use and mineral development.

- **Alternative B (Preferred Alternative)**

  Alternative B has been identified by the BLM as the Preferred Alternative because it represents an attempt to balance protection/conservation of physical, biological, and cultural resources while providing for commodity production and mineral extraction. This alternative designates ACECs (2 areas totaling 2,530 acres) and recommends WSR segments (two segments totaling 59 miles).

- **Alternative C**

  Alternative C emphasizes conservation of physical, biological, and cultural resources over commodity production, mineral extraction and motorized recreation access. This alternative (along with Alternative D) designates the most ACECs (16 areas totaling 886,800 acres) and recommends the most eligible WSR segments (12 segments totaling 135 miles) as suitable for Congressional designation into the National Wild and Scenic Rivers System.

- **Alternative D**

  Alternative D emphasizes conservation of physical, biological, and cultural resources over commodity production, mineral extraction and motorized recreation access. Relative to all alternatives, this alternative conserves the most land area for physical, biological, and cultural resources; (along with Alternative C) designates the most ACECs (16 areas totaling 886,800 acres) and recommends the most eligible WSR segments (12 segments totaling 135 miles) as suitable for Congressional designation into the National Wild and Scenic Rivers System; and emphasizes management of non-WSA lands with wilderness characteristics (682,600 acres), so as to preserve those characteristics. Except for management of lands with wilderness characteristics, decisions under this alternative are the same as under Alternative C.

2.3.2 Comparison of Alternatives Summary

Table 2-1 below compares the proposed management actions and land use allocations for each alternative.

Table 2-1. Alternative Comparison Summary

Resource/ Resource Use	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Air Quality	• Manage all BLM and BLM-authorized actions to maintain air quality prescribed by Federal, tribal, state, and local laws and regulations. This includes meeting the National Ambient Air Quality Standards (NAAQS) and ensuring that BLM authorized actions continue to keep the area in attainment, meet Prevention of Significant Deterioration (PSD) Class II standards, and protect the Class I airsheds. • Mitigate potential adverse impacts of site-specific actions identified in NEPA documents prepared at the time an action is proposed, through best available control technology as part of the state permitting process and PSD review.				
Soil Resources	Maintain or improve soil resources through implementation of Rangeland Health Standards and other appropriate protection measures.				
Water Resources	Maintain or improve water quality and quantity through implementation of Rangeland Health Standards and other appropriate protection measures.				
Vegetation	Maintain or improve soil, water, and vegetation resources through implementation of Rangeland Health Standards and other appropriate protection measures.				
Cultural Resources	Reduce imminent threats to significant cultural resources from natural and human-caused deterioration or potential conflicts with other resources.				
	Mitigate impacts from permitted activities.	Allocate and manage cultural resource sites for scientific use, public use, conservation use, traditional use, and experimental use categories.			
Paleontological Resources	No assessments or inventories required.	Require paleontological assessments in Class I areas.	Require paleontological inventories in Class I and Class II areas.	Require paleontological inventories prior to permitting all surface disturbing activities.	
Visual Resources	• Class I: 0 acres • Class II: 529,500 acres • Class III: 569,000 acres • Class IV: 1,029,500 acres	• Class I: 446,900 acres • Class II: 0 acres • Class III: 392,800 acres • Class IV: 1,288,300 acres	• Class I: 446,900 acres • Class II: 209,000 acres • Class III: 410,800 acres • Class IV: 1,061,300 acres	• Class I: 446,900 acres • Class II: 230,600 acres • Class III: 509,100 acres • Class IV: 941,400 acres	• Class I: 1,129,600 acres • Class II: 66,700 acres • Class III: 355,100 acres • Class IV: 576,600 acres
Special Status Species	• Conserve and recover all special status species and their habitats. • Employ strategies to avoid or reduce fragmenting of habitat.				
Fish and Wildlife	Maintain, restore, protect, and enhance habitats to support a diversity of fish and wildlife species.				
Wild Horses and Burros	Manage wild horses and burros at appropriate management levels (AML) to ensure a natural ecological balance between horse and burro populations and wildlife, livestock, vegetation resources, and other resource values (Map 3-8).				
	Allocate 100 animal unit months (AUMs) for wild burros in Canyonlands Herd Management Area (HMA), with no AML set.		Manage Canyonlands HMA with an AML of 60-100; allocate 600 AUMs for wild burros.	Manage Canyonlands HMA with an AML of 120-200; allocate 1,200 AUMs for wild burros.	

Table 2-1. Alternative Comparison Summary

Resource/ Resource Use	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Fire and Fuels Management	Manage fire and fuels to protect life, firefighter safety, property, and other critical resources and, where appropriate, to restore natural systems.				
	Manage fire and fuels using a full suite of tools that allows for the graduated movement to a more ecologically sustainable condition and reduction of hazardous fuels.	• Manage fire and fuels through treatments averaging 73,600 acres annually for a maximum level of 1,472,000 acres over the life of the plan. • Use the full range of treatment types, including prescribed fire; mechanical, chemical, biological, and cultural treatments; and wildland fire use.		• Manage fire and fuels through treatments averaging 26,000 acres annually for a maximum level of 520,000 acres over the life of the plan. • Use prescribed fire, intensively treating areas to create properly functioning ecosystems, prioritizing treatments in areas not currently functioning properly.	
Non-WSA Lands with Wilderness Characteristics	Provide no special management specifically for protection of non-WSA lands with wilderness characteristics.				Manage all non-WSA lands with wilderness characteristics (29 areas, 682,600 acres) by: • closing to oil and gas leasing • closing to off-highway vehicle use • designating VRM Class I • retaining lands in public ownership • closing to mineral material sales • managing for primitive and semi-primitive recreation opportunities • recommending for withdrawal from mineral entry • Avoiding new rights-of-way (ROWs)
Forestry and Woodland Products	Provide forest and woodland products on a sustainable basis consistent with other land management objectives.				

Table 2-1. Alternative Comparison Summary

Resource/ Resource Use	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Livestock Grazing	Continue forage allocations depicted on Map 2-7 and in Appendix 7 (Table A7-1). • Acres available for grazing: 1,989,048 • Acres unavailable for grazing: 138,952 • Available AUMs: 146,202	Forage allocations would be as depicted on Map 2-6 and in Appendix 7 (Table A7-2). • Acres available for grazing: 2,025,998 • Acres unavailable for grazing: 102,002 • Available AUMs: 147,281	Forage allocations would be as depicted on Map 2-7 and in Appendix 7 (Table A7-3). • Acres available for grazing: 1,989,048 • Acres unavailable for grazing: 138,952 • Available AUMs: 146,202		
Recreation	One SRMA (120 acres)	Five SRMAs (516,400 acres)	Five SRMAs (838,700 acres)	Four SRMAs (928,550 acres)	Seven SRMAs (1,358,200 acres)
Travel Management	• Open: 1,636,400 acres • Limited: 277,600 acres • Closed: 214,000 acres	• Open: 449,000 acres • Limited: 1,679,000 acres • Closed: 0 acres	• Open: 8,400 acres • Limited: 1,909,200 acres • Closed: 210,400 acres	• Open: 0 acres • Limited: 1,445,000 acres • Closed: 683,000 acres	• Open: 0 acres • Limited: 972,800 acres • Closed: 1,155,200 acres
	• Designated routes: 4,315 miles[1] • Designated routes with seasonal closures or size/width restrictions: 0 miles • Closed routes: 65 miles	• Designated routes: 4,063 miles[1] • Designated routes with seasonal closures or size/width restrictions: 249 miles • Closed routes: 68 miles	• Designated routes: 3,693 miles[1] • Designated routes with seasonal closures or size/width restrictions: 483 miles • Closed routes: 204 miles	• Designated routes: 2,601 miles[1] • Designated routes with seasonal closures or size/width restrictions: 591 miles • Closed routes: 1,188 miles	• Designated routes: 2,493 miles[1] • Designated routes with seasonal closures or size/width restrictions: 550 miles • Closed routes: 1,242 miles
Lands and Realty	• Retain public lands in Federal ownership unless disposing of a particular parcel would serve the national interest. • Consider land tenure adjustments (e.g., exchanges and acquisitions) that meet identified criteria.				

[1] Route inventory and designations are implementation-level decisions, not planning level decisions and are thus subject to change with updated inventory data.

Table 2-1. Alternative Comparison Summary

Resource/ Resource Use	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
	Continue to offer for sale lands identified in the Mountain Valley MFP (280 of the 1,040 acres identified have not been sold to date).	Identify 92 parcels, totaling 13,400 acres, for sale under Section 203 of the Federal Land Policy and Management Act of 1976 (FLPMA).		Identify no lands for sale under Section 203 of FLPMA.	
	Review existing withdrawals to determine whether they are serving the purposes for which they were withdrawn.				
	Continue existing withdrawals (154,700 acres). Recommend withdrawing the four existing ACECs (14,780 acres) from mineral entry. **Total acres: 169,480**	Continue existing withdrawals (154,700 acres). Recommend no new withdrawals. **Total acres: 154,700**	Continue existing withdrawals (154,700 acres). Recommend 21,500 acres for withdrawal from mineral entry. **Total acres: 176,200**	Continue existing withdrawals (154,700 acres). Recommend 176,400 acres for withdrawal from mineral entry. **Total acres: 331,100**	Continue existing withdrawals (154,700 acres). Recommend 749,200 acres for withdrawal from mineral entry. **Total acres: 903,900**
Leasable Minerals	Identify lands available for oil and gas leasing and development subject to the following lease categories: • Standard: 1,236,500 acres • Controlled surface use (CSU)/Timing: 409,200 acres • No surface occupancy (NSO): 22,600 acres • Closed: 459,700 acres	Identify lands available for oil and gas leasing and development subject to the following lease categories: • Standard: 860,600 acres • CSU/Timing: 820,500 acres • NSO: 0 acres • Closed: 446,900 acres	Identify lands available for oil and gas leasing and development subject to the following lease categories: • Standard: 545,000 acres • CSU/Timing: 1,021,600 acres • NSO: 110,900 acres • Closed: 450,500 acres	Identify lands available for oil and gas leasing and development subject to the following lease categories: • Standard: 491,900 acres • CSU/Timing: 901,100 acres • NSO: 148,800 acres • Closed: 586,300 acres	Identify lands available for oil and gas leasing and development subject to the following lease categories: • Standard: 290,200 acres • CSU/Timing: 634,000 acres • NSO: 43,300 acres • Closed: 1,160,500 acres
Locatable Minerals	Continue existing withdrawals (154,700 acres). Recommend an additional 14,780 acres for withdrawal. **Total acres: 169,480**	Continue existing withdrawals (154,700 acres). Recommend no new withdrawals. **Total acres: 154,700**	Continue existing withdrawals (154,700 acres). Recommend 21,500 acres for withdrawal. **Total acres: 176,200**	Continue existing withdrawals (154,700 acres). Recommend 176,400 acres for withdrawal. **Total acres: 331,100**	Continue existing withdrawals (154,700 acres). Recommend 749,200 additional acres for withdrawal. **Total acres: 903,900**

Table 2-1. Alternative Comparison Summary

Resource/ Resource Use	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Salable Minerals (Mineral Materials)	• 459,700 acres closed to mineral material disposal • 1,236,500 acres open subject to standard stipulations • 431,800 acres open with restrictions	• 446,900 acres closed to mineral material disposal • 860,600 acres open subject to standard stipulations • 820,500 acres open with restrictions	• 450,500 acres closed to mineral material disposal • 545,000 acres open subject to standard stipulations • 1,132,500 acres open with restrictions	• 586,300 acres closed to mineral material disposal • 491,900 acres open subject to standard stipulations • 1,049,900 acres open with restrictions	• 1,160,500 acres closed to mineral material disposal • 290,200 acres open subject to standard stipulations • 677,300 acres open with restrictions
Wilderness Study Areas	• Manage 11 existing WSAs (Map 3-14) in a manner that does not impair their suitability for designation as wilderness in accordance with BLM Handbook H-8550-1, *Interim Management Policy for Lands Under Wilderness Review* (IMP).				
	• Manage as VRM Class I	• Designate as VRM Class I			
	• Designate as closed or limited to OHV use • Limited: 259,900 acres • Closed: 187,000 acres	• Designate as limited to OHV use.	• Designate as closed or limited to OHV use • Limited: 271,500 acres • Closed: 175,400 acres	• Designate as closed to OHV use.	• Designate as closed to OHV use.
Wild and Scenic Rivers	All eligible river segments would continue to be managed in a protective manner on a case-by-case basis. Eligible: 12 segments, 135 miles	Manage suitable river segments in a manner that would protect their outstandingly remarkable values, tentative classification, and free flowing nature. River corridors of eligible rivers that are not determined suitable would be managed according to other resource decisions for that alternative.			
		Suitable: 0 segments, 0 miles	Suitable: 2 segments, 59 miles	Suitable: 12 segments, 135 miles	
Areas of Critical Environmental Concern	Provide special management attention to relevant and important values, resources, natural systems and/or hazards in designated ACECs. Potential ACECs that are not designated would be managed according to other resource decisions for that alternative.				
	Continue designation of four (existing) ACECs totaling 14,780 acres.	Designate no ACECs.	Designate two ACECs totaling 2,530 acres.	Designate 16 ACECs totaling 886,810 acres.	

2.4 ADAPTIVE MANAGEMENT

Adaptive management is a formal, systematic, and rigorous approach to learning from the results of management actions, accommodating change, and improving management. It involves synthesizing existing knowledge, exploring alternative actions, and making explicit forecasts about their results. Management actions and monitoring programs are carefully designed to generate reliable feedback and clarify the reasons underlying results. Actions and objectives are then adjusted based on this feedback and improved understanding to continue to try to achieve the desired outcomes. In addition, decisions, actions, and results are carefully documented and communicated to others, so that knowledge gained through experience is passed on rather than lost when individuals move or leave the organization.

Land use plan level decisions are not subject to adaptive management. These include the goals and objectives, allowable uses, management actions, and special designations. Plan amendments would be required to change these decisions. Implementation or activity level decisions could be subject to adaptive management. Future activity level plans would follow NEPA procedures and involve the public.

This Draft Resource Management Plan/Draft Environmental Impact Statement (DRMP/DEIS) recommends an adaptive management strategy. The adaptive management process is flexible and generally involves four phases: planning, implementation, monitoring, and evaluation. As the BLM obtains new information, it is able to evaluate monitoring data and other resource information to periodically refine and update desired outcomes (goals and objectives), management actions, and allowable uses. This allows for the continual refinement and improvement of management prescriptions and practices.

2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

This section provides a summary of two alternatives the BLM considered but eliminated from detailed analysis, as well as the reasons for not analyzing them in detail.

2.5.1 No Grazing Alternative

An alternative that proposes to make the entire RFO unavailable for grazing would not meet the purpose and need of this DRMP/DEIS. NEPA requires that agencies study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources. No issues or conflicts have been identified during this land use planning effort which requires the complete elimination of grazing within the planning area for their resolution. Where appropriate, removal of livestock and adjustments to livestock use have been incorporated in this planning effort. Since the BLM has considerable discretion through its grazing regulations to determine and adjust stocking levels, seasons-of-use, and grazing management activities, and to allocate forage to uses of the public lands in RMPs, the analysis of an alternative to entirely eliminate grazing is not needed.

An alternative that proposes to make the entire planning area unavailable for grazing would also be inconsistent with the intent of the Taylor Grazing Act (TGA) which directs the BLM to provide for livestock use of BLM lands, to adequately safeguard grazing privileges, to provide for the orderly use, improvement, and development of the range, and to stabilize the livestock industry dependent upon the public range.

FLPMA requires that public lands be managed on a "multiple use and sustained yield basis" (FLPMA 43 USC Section 302 (43 USC 1732)(a) and Section 102 (43 USC 1701)(7)) and includes livestock grazing as a principal or major use of public lands. While multiple use does not require that all lands be used for livestock grazing, complete removal of livestock grazing in the entire planning area would be arbitrary and would not meet the principle of multiple use and sustained yield.

Livestock grazing is and has been an important use of the public lands in the planning area for many years and is a continuing government program. The CEQ guidelines for compliance with NEPA require that agencies analyze the "No Action Alternative" in all Environmental Impact Statements (40 CFR 1502.14(d)). For the purposes of this NEPA analysis, the "no action alternative" is to continue the status quo which includes livestock grazing. For this reason and those stated above, the RFO dismissed a no grazing alternative for the entire planning area from further consideration in this DRMP/DEIS.

2.5.2 SUWA Alternative

In November 2003, the Southern Utah Wilderness Alliance (SUWA) submitted an outline and map for an RMP alternative to the BLM. It divided the lands managed by the RFO into management zones similar to those identified in the Grand Staircase—Escalante National Monument Plan and provided brief prescriptions for managing each zone. While it provided an outline for management, it fell short of a fully developed alternative because it did not address an attempt to resolve the issues raised during scoping nor the multiple laws, regulations, and policies that BLM must consider in developing an RMP. Consequently, this alternative does not meet the purpose and need for this plan revision, and it is largely inconsistent with FLPMA's multiple use sustained yield mandate. For these reasons, the RFO dismissed this alternative from further consideration in this DRMP/DEIS. However, elements of it are included in Alternatives C and D.

2.6 ALTERNATIVE DECISION TABLES

The following tables present the details of the proposed management for each resource, resource use, and special designation by alternative.

2.6.1 Natural, Biological and Cultural Resources

2.6.1.1 Air Quality

Table 2-2. Air Quality

Desired Outcomes (Goals and Objectives)
• Ensure authorizations and management activities comply with local, state, and Federal air quality regulations, requirements, and implementation plans. • Manage all BLM and BLM-authorized activities to maintain air quality within the thresholds established by the National Ambient Air Quality Standards and ensure that those activities continue to keep the area in attainment, meet PSD Class II standards, and protect the Class I airsheds. • Manage BLM and BLM-authorized activities to comply with the Utah Enhanced Smoke Management Plan, August 11, 2003 and the Utah State Law R307-204 Emission Standards: Smoke Management, August 1, 2007.
Issue: Management of Air Quality
Management Actions
Common to All Alternatives
• Mitigate potential adverse impacts of site-specific actions identified in NEPA documents prepared at the time an action is proposed, through best available control technology as part of the state permitting process and PSD review. • Mitigate actions that compromise ambient air quality standards or visibility within the Class I airsheds.

2.6.1.2 Soil Resources

Table 2-3. Soil Resources

Desired Outcomes (Goals and Objectives)
• Maintain or improve soil quality and long-term soil productivity through implementation of Rangeland Health Standards and other soil protection measures. • Manage uses to minimize and mitigate damage to soils. • Manage soil resources to: – Maintain or increase soil productivity; – Prevent or minimize accelerated soil erosion; – Prevent or minimize flood and sediment damage, as needed; – Reduce resource loss from floods and erosion; – Maintain vegetation cover at or above the level necessary to avoid accelerated soil erosion.

Table 2-3. Soil Resources

Issue: Protection of Soil Resources				
Management Actions				
Common to All Alternatives				
Surface disturbance and reclamation activities would proceed consistent with current authorizations and subject to the following: • Utah Standards for Rangeland Health would be followed to maintain or improve soil conditions. • Activities would be the minimum necessary to accomplish the task. • Reclamation would be required for road realignments. • Measures to stabilize soils and minimize surface water runoff would be required, both during project activities and following project completion. • Reclamation of all surface disturbances would be initiated during or immediately upon completion of the authorized project. Reclamation could include recontouring the disturbed area to blend with the surrounding terrain, ripping compacted areas, replacement of topsoil, seeding, planting, and/or providing effective ground cover.				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Not specifically addressed in existing plans.	• Implement appropriate best management practices (BMPs) designed to protect water quality for all ground disturbing activities (Appendix 14). • All temporary roads would be closed and reclaimed immediately upon completion of the project. Reclaimed roads could be barricaded or signed until reclamation objectives are achieved. • Facilities or improvements no longer necessary would be removed and the sites would be reclaimed, provided no historic properties would be affected.			

2.6.1.3 Water Resources

Table 2-4. Water Resources

Desired Outcomes (Goals and Objectives)
• Maintain and/or restore overall watershed health and reduce erosion, stream sedimentation, and salinization of water. • Work to improve water quality on listed streams and prevent listing of additional streams under the Clean Water Act, Section 303(d) (Appendix 4). • Improve quality and quantity of water in all streams, with particular emphasis on streams with populations of native species, or with non-native game fish, as well as other aquatic species. • Maintain and/or restore the chemical, physical, and biological integrity of the planning area's waters. • Protect community watersheds and sources of culinary water. • Avoid adverse impacts to floodplains. • Restore and preserve the natural and beneficial values served by floodplains in carrying out BLM's responsibilities for acquiring, managing, and disposing of Federal lands and facilities (Executive Order 11988, Floodplain Management). • Manage resources to reduce salinity loading where possible, and make progress towards accomplishing the goals and objectives outlined in the Colorado River Salinity Control Act.

Issue: Water Quality and Quantity
Management Actions
Common to All Alternatives
Implement appropriate best management practices designed to protect water quality for all ground disturbing activities (Appendix 14).
Surface water: • Develop total maximum daily loads (TMDLs) for each Hydrologic Unit Code (HUC) listed on the Section 303d list of impaired streams in cooperation with the State of Utah. • Cooperate and contribute to the completion and implementation of the TMDL process.
Recreational water standards: Maintain or improve water quality and quantity for recreational uses
Municipal watershed areas: Manage culinary water sources to preserve the quality and health of water sources.
Public water systems: • The RFO would continue to operate and maintain public drinking water systems at BLM facilities to comply with transient non-community water system requirements as defined by State of Utah Administrative Code 309 – Water Quality Monitoring Standards. The RFO would continue to gather source samples for laboratory analysis when the water system is operating (seasonal use) including coliform samples quarterly; nitrates yearly; and nitrite/sulfate every three years. • Identify public water systems with surface water or ground water sources (e.g., delineated drinking water source protection zones) that may be affected by BLM-authorized activities. Ensure that BLM-authorized activities do not pose a threat to public water systems.

Issue: Protection of Groundwater				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Maintain a 500-foot buffer zone of no surface disturbance and/or occupancy around natural springs to protect water quality.	Maintain buffer zones of no surface disturbance and/or occupancy around natural springs unless it can be shown that (1) there are no practical alternatives, or (2) all long-term impacts can be fully mitigated, or (3) the activity will benefit and enhance the riparian area. Base the size of the buffer zone on geohydrological, riparian, and other factors necessary to protect the water quality of the springs. If these factors cannot be determined, maintain a 330-foot buffer zone from the outer edge.		Maintain buffer zones of no surface disturbance and/or occupancy around natural springs unless it can be shown that (1) there are no practical alternatives, or (2) all long-term impacts can be fully mitigated, or (3) the activity will benefit and enhance the riparian area. Base the size of the buffer zone on geohydrological, riparian, and other factors necessary to protect the water quality of the springs. If these factors cannot be determined, maintain a 660-foot buffer zone from the outer edge.	

2.6.1.4 Vegetation

Table 2-5. Vegetation Decisions

Desired Outcomes (Goals and Objectives)

- Manage and mitigate activities to restore, sustain, and enhance the health of plant associations.
- Manage all resources and resource uses to achieve the Standards for Rangeland Health.
- Enhance and/or restore native and desirable naturalized plant species.
- Manage for a mix of vegetative types, structural stages, and landscape and riparian functions, and provide for native plant, fish, and wildlife (including special status species) habitats.
- Enhance biological and genetic diversity of natural ecosystems.
- Maintain relict vegetation communities.
- Sustain or reestablish the integrity of the sagebrush biome to provide the amount, continuity, and quality of habitat that is necessary to maintain sustainable populations of the greater sage grouse and other sagebrush-dependent wildlife species.
- Manage all riparian areas to maintain, restore, or improve unique and high-value habitat characteristics, including diversified plant species composition, plant species structural diversity, and adequate native vegetative cover and density for stream bank stabilization. All riparian areas would be managed to be in properly functioning condition.
- Control noxious and invasive weed species and avoid the introduction of new invasive species.

Issue: Overall Vegetation Management

Management Actions

Common to All Alternatives

- Treat areas determined to need reseeding with a variety of plant species, including native plants, if available, that are desirable for wildlife habitat, livestock, watershed management, and other resource values while maintaining vegetation species diversity.
- Where appropriate, require on-site mitigation when surface disturbance cannot be avoided on a site-specific basis, and consider off-site (compensatory) mitigation where on-site mitigation is impractical.
- Maintain existing vegetative treatments to provide suitable habitats for wildlife and adequate forage for livestock.

Issue: Vegetation Treatments

Management Actions

Alternative N (No Action)	Alternative A	Alternative B (Preferred Alternative)	Alternative C	Alternative D
Manipulate vegetation using mechanical, wildland and/or prescribed fire, and chemical treatments on a case-by-case basis to achieve or maintain Standards for Rangeland Health and desired vegetation condition.	Maintain existing vegetation treatments and implement additional treatments (including prescribed fire and wildland fire use, mechanical, biological, manual, and chemical) to increase productivity for resource uses and achieve or maintain Standards for Rangeland	Maintain existing vegetation treatments and implement additional treatments (e.g., prescribed fire and wildland fire use, mechanical, biological, manual, and chemical) to achieve or maintain Standards for Rangeland Health and desired vegetation condition.	Allow only natural processes (e.g., prescribed fire and wildland fire use, disease, and insects) to achieve or maintain Standards for Rangeland Health and desired vegetation condition. Vegetation treatments could be conducted on up to 520,000 acres over the life of the plan. (An annual average of 26,000 acres would need to receive treatment to reach the total treatment acreage listed (see Table 2-12a). Actual annual treatment acreage would vary depending on conditions, staffing, etc. These acreage figures include all vegetation and fire fuels treatments (see also Section	

Table 2-5. Vegetation Decisions

	Health and desired vegetation condition. Vegetation treatments (e.g. wildlife habitat treatments, watershed treatments, livestock grazing treatments, fuels treatments, stewardship contracts, etc.) could be conducted on up to 1,472,000 acres over the life of the plan. (An annual average of 73,600 acres would need to receive treatment to reach the total treatment acreage listed (see Table 2-12a). Actual annual treatment acreage would vary depending on conditions, staffing, etc. These acreage figures include all vegetation and fire fuel treatments (see also Section 2.6.1.11)).	Vegetation treatments (e.g. wildlife habitat treatments, watershed treatments, livestock grazing treatments, fuels treatments, stewardship contracts, etc.) could be conducted on up to 1,472,000 acres over the life of the plan. (An annual average of 73,600 acres would need to receive treatment to reach the total treatment acreage listed (see Table 2-12a). Actual annual treatment acreage would vary depending on conditions, staffing, etc. These acreage figures include all vegetation and fire fuels treatments (see also Section 2.6.1.11)).	2.6.1.11)).
The use and perpetuation of native species would be emphasized. However, when restoring or rehabilitating disturbed or degraded rangelands, non-intrusive, non-native plant species would be considered appropriate for use where native species (a) are not available, (b) are not economically feasible, (c) cannot achieve ecological objectives as well as nonnative species, and/or (d) cannot compete with already established non-native species.	The use and perpetuation of native species would be emphasized. However, when restoring or rehabilitating disturbed or degraded rangelands, non-intrusive, non-native plant species may be used where native species: • are not available; • are not economically feasible; • cannot achieve desired future conditions (DFCs), desired plant communities (DPCs), or other ecological objectives as well as non-native species, and/or • cannot compete with already established non-native species. Non-native forbs and perennial grasses could be used in preference to monocultures of non-native annuals.		

Table 2-5. Vegetation Decisions

Issue: Management Activities in Riparian Areas				
Management Actions				
Common to All Alternatives				
• Allow uses and activities in riparian areas as consistent with Utah BLM Riparian Management Policy and in compliance with Executive Orders 11990 and 11988. • Allow no new surface disturbing activities within a specified distance of riparian areas (see specific buffer sizes below), as measured from bank-full width along all perennial streams or streams with perennial reach unless the following criteria can be met: –there are no practical alternatives to the surface disturbance; –all long-term impacts could be fully mitigated; or –the activity would benefit the riparian area. • Retain riparian areas in public ownership, unless exchanges result in acquisition of parcels containing superior public values. • Coordinate riparian management with interested Federal, State, Tribal and local governments and private conservation groups, etc.				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
The buffer zone would be 500 feet on each side of the stream.	The buffer zone would be 330 feet on each side of the stream.	The buffer zone would be 330 feet on each side of the stream.	The buffer zone would be 660 feet on each side of the stream.	The buffer zone would be 660 feet on each side of the stream.
Issue: Management of Noxious Weeds and Invasive Species				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Apply approved weed control methods to noxious weeds in an identified integrated weed management program (including preventive management and education, as well as mechanical, biological, and chemical techniques). Do so in cooperation with state, Federal, affected counties, adjoining private land owners, and other directly affected interests.			Emphasize natural processes (e.g. wildland and/or prescribed fire, disease, and insects), preventative management and education to reduce the spread of noxious and invasive species. Other methods, including biological and hand cutting could be utilized to remove noxious weeds and non-native invasive species to restore ecological condition of a site.	
Issue: Insect Pest Management				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Develop and implement strategies in cooperation with the State of Utah, adjacent states, Federal agencies, affected counties, adjoining	Treat all insect pests in coordination with the State of Utah, adjacent states, Federal agencies, affected counties, adjoining private	Treat insect pests that exceed an economic threshold on public land adjacent to other landowners or that impact high-value	Implement no control measures for insect pests.	

Table 2-5. Vegetation Decisions

private land owners, and other interests directly affected.	land owners, and other interests directly affected.	resources in coordination with the State of Utah, adjacent states, Federal agencies, affected counties, adjoining private land owners, and other directly affected interests.	

2.6.1.5 Cultural Resources

Table 2-6. Cultural Resources Decisions

Desired Outcomes (Goals and Objectives)
• Preserve and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations. • Seek to reduce imminent threats from and resolve potential conflicts caused by natural or human-caused deterioration, or potential conflicts with other resource uses. • Identify priority areas for new field inventory, based on their probability for significant resources. • Coordinate with local historic and cultural preservation and interpretation efforts. • Provide opportunities for traditional (American Indian) uses of cultural resources and sites. • Ensure compliance with Native American Graves Protection and Repatriation Act (NAGPRA) and National Historic Preservation Act (NHPA).
Issue: Management of Cultural Resources
Management Actions
Common to All Alternatives
• Identify and manage traditional cultural properties (TCPs) in coordination with American Indian tribes. • Mitigate adverse impacts to cultural resources resulting from authorized surface disturbing activities. • Meet responsibilities under the NHPA as addressed in the State Protocol Agreement between the Utah State Director of BLM and the Utah State Historic Preservation Officer (SHPO) and the Programmatic Agreement among the BLM, the Advisory Council on Historic Preservation, and the National Conference of SHPOs. • Authorize no surface disturbing activities in the Bull Creek Archaeological District other than archaeological research. • Complete cultural resources inventories prior to allowing permitted surface disturbing activities, excluding those areas and circumstances identified in BLM-Manual M-8110.23 *Identifying & Evaluating Cultural Resources*, and Handbook UT-BLM-H-8110, *Guidelines for Identifying Cultural Resources* Section II.C and Appendix 1. • Coordinate Old Spanish Trail management with the National Park Service (NPS) and other agencies under Public Law 107-325. • Protect eligible cultural sites and mitigate impacts when it is determined that such sites are being impacted by grazing activities.

Table 2-6. Cultural Resources Decisions

Issue: Management of Cultural Resource Sites by Allocation to Use Categories				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Mitigate impacts to cultural resources from permitted activities.	• Allocate and manage cultural resource sites for scientific use, public use, conservation use, traditional use, and experimental use categories described in Handbook BLM-M-8110.4, *Guidelines for Identifying Cultural Resources,* and shown in Table 2-6a. • Reevaluate and revise cultural resources site allocations by site or area when circumstances change or when new data becomes available. Consult with the SHPO and American Indian Tribes as appropriate. • Mitigation actions would not be necessary on cultural resource sites if both of the following conditions are met and documented— – BLM and the SHPO have formally agreed the site is not eligible for listing on the National Register of Historic Places (NRHP); – The site has no value for other cultural uses (as described in BLM-M-8110.4).			

Issue: Identification of Areas for New Field Inventories				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• No priority areas for new field inventories are identified in existing land use plans.	Inventory the following priority area— • Horseshoe Canyon South WSA	Inventory the following priority areas— • Horseshoe Canyon South WSA • Trough Hollow area • Bull Creek Archaeological District • Areas of special cultural designation that have not been fully inventoried	Inventory the following priority areas— • Horseshoe Canyon South WSA • Trough Hollow area • Bull Creek Archaeological District • Areas of special cultural designation that have not been fully inventoried • Resources eligible for the National Register of Historic Places that have not been fully inventoried	

Issue: Coordination With American Indian Tribes				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue coordinating with the Paiute Tribe to identify the types of projects on which they want to consult.	• Work with American Indian Tribes to help protect their rights including their rights to practice their religions. When planning and implementing land uses, accommodate tribal access to sacred sites and traditional cultural properties and prevent or mitigate physical damage or intrusions that might impede their use. • Establish agreements with all American Indian Tribes interested in the lands managed by the RFO to identify the types of projects on which they want to consult.			

Table 2-6a. Cultural Resource Site Use Allocations

Site Type	Alternative N	Alternative A	Alternative B	Alternatives C and D
Prehistoric Site Use Allocation				
Occupation Site	No allocation	Public Use/Scientific	Scientific	Conservation/Traditional
Temporary Camp	No allocation	Public Use	Scientific	Public Use/Scientific
Storage Site	No allocation	Public Use	Scientific	Conservation
Rock Alignment	No allocation	Public Use	Scientific	Public Use
Traps	No allocation	Public Use	Scientific	Conservation
Rock Art	No allocation	Traditional/Public Use	Traditional/Public Use	Conservation/Traditional
Hunting Blind	No allocation	Public Use/Scientific	Public Use/Scientific	Public Use
Tool Stone Quarry	No allocation	Public Use/Scientific	Scientific	Conservation
Mineral Sources	No allocation	Conservation/Traditional	Conservation/Traditional	Conservation/Traditional
Lithic Scatters	N/A	N/A	N/A	N/A
– with diagnostics	No allocation	Public Use	Scientific	Conservation
– without diagnostics	No allocation	Experimental	Discharged	Experimental
Cairns	No allocation	Public Use	Scientific	Conservation
Historic Site Use Allocations				
Early Exploration	No allocation	Public Use	Public Use	Conservation
Freight Roads	No allocation	Public Use	Scientific Use	Conservation
Telegraph/Telephone	No allocation	Public Use	Scientific Use	Conservation
Mining – Placer	No allocation	Public Use	Scientific Use	Conservation
Mining – Hardrock	No allocation	Public Use	Scientific Use	Conservation
Mining – Milling	No allocation	Public Use	Scientific Use	Conservation
Mining – Habitation	No allocation	Public Use	Public Use	Conservation
Homesteads	No allocation	Public Use	Public Use	Conservation
Ranching – Habitation	No allocation	Public Use	Public Use	Conservation
Other Ranching	No allocation	Public Use	Scientific Use	Public Use
Sheepherder Camps	No allocation	Public Use	Scientific Use	Public Use

Table 2-6a. Cultural Resource Site Use Allocations

Site Type	Alternative N	Alternative A	Alternative B	Alternatives C and D
Historic Inscriptions	No allocation	Public Use	Public Use	Public Use
Military – 19th Century	No allocation	Public Use	Public Use	Public Use
Military – 20th Century	No allocation	Public Use	Public Use	Public Use
Historic American Indian Habitation	No allocation	Conservation/Traditional	Conservation/Traditional	Conservation/Traditional
Battle Sites	No allocation	Conservation/Traditional	Conservation/Traditional	Conservation/Traditional
Cairns	No allocation	Public Use	Scientific	Conservation

2.6.1.6 Paleontological Resources

Table 2-7. Paleontological Resources Decisions

Desired Outcomes (Goals and Objectives)				
• Protect scientifically significant paleontological resources. • Provide opportunities for scientific, educational and recreational uses of paleontological resources. • Cooperate with other Federal, state and local agencies in paleontological resources management activities.				
Issue: Management of Paleontological Resources				
Management Actions				
Common to All Alternatives				
• Mitigate adverse impacts to vertebrate and significant non-vertebrate paleontological resources resulting from surface disturbing activities. • Support and provide public education and interpretive opportunities for paleontological resources, including agreements with visitor information providers, use of special designations, or interpretive sites. • Issue paleontological resource use permits for scientific study as appropriate. • Prohibit collection of invertebrate and plant fossils for commercial use.				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
No similar action in any of the existing plans.	Require paleontological assessments prior to permitting surface disturbing activities in areas where there is a high potential to impact scientifically significant paleontological resources.	• Require on-the-ground paleontological inventories prior to permitting surface disturbing activities in areas where there is a high potential to impact scientifically significant paleontological resources. • Require paleontological assessments prior to permitting surface disturbing activities in areas where there is a moderate potential to impact scientifically significant paleontological resources.	Require on-the-ground paleontological inventories prior to permitting all surfacing disturbing activities.	

Table 2-7. Paleontological Resources Decisions

No similar action in any of the existing plans.	Paleontological inventories would not be required.	• Conduct paleontological inventories intermittently as resources allow. • Prioritize paleontological resource inventories based on the potential to impact scientifically significant resources.	• Conduct paleontological inventories on a limited but annual basis. • Prioritize paleontological resource inventories based on the potential to impact scientifically significant resources.
Collection of common invertebrate and botanical paleontological resources would be allowed for personal use.	Allow surface collection (as defined in BLM Manual 8270, *Paleontological Resources Management*) of common invertebrate and botanical paleontological resources for personal (non-commercial) use without permits and if consistent with other management decisions in this RMP. Significant resources of critical scientific and educational value would be protected.		Allow collection of common invertebrate and botanical paleontological resources for personal (non-commercial) use without permits only in specifically designated fossil collecting areas.
No similar action in any of the existing plans.	When appropriate, target fossil localities with significant scientific value for excavation and curation either by the BLM or by a qualified outside academic or curatorial/research facility to protect them from theft, erosion, and/or vandalism. If excavation is not carried out within one field season, periodic monitoring should be conducted to document the integrity of the locality until excavation and curation are completed.		
No similar action in any of the existing plans.	Monitor highly significant (scientific) localities with paleontological resources that are not feasible to excavate, curate or interpret. Frequency of monitoring for identified localities would be determined by the significance of the resource and the risk of damage by either natural processes or human intrusion.		
No similar action in any of the existing plans.	Develop interpretation for significant localities and sites with displays that foster a scientific knowledge of the unique nature of the resource and that create opportunities for public education and access to such resources.		
No similar action in any of the existing plans.	All permitted actions occurring in paleontologically sensitive areas would include stipulation(s) to cover unanticipated paleontological discoveries during disturbance. This stipulation would mandate work stoppage (or avoidance), notification to the authorized officer, and protection of the material and geological context if any paleontological resources are discovered during disturbance activities. Other stipulations may be appropriate on a case-by-case basis.		

2.6.1.7 Visual Resources

Table 2-8. Visual Resource Management Decisions

Desired Outcomes (Goals and Objectives)				
• Manage public lands for their scenic values while providing for overall multiple use and quality of life for local communities and visitors to public lands. • Manage actions to preserve those scenic vistas that are deemed most important.				
Issue: Assign Visual Resource Management Classes to All Public Lands in the RFO				
Management Actions				
Common to All Alternatives				
• Designate WSAs as VRM Class I to maintain an undeveloped landscape and preserve their natural values according to direction in Instruction Memorandum IM-2000-096, *Use of Visual Resource Management Class I Designation in Wilderness Study Areas*. • All activities authorized by the BLM must meet the management objectives for the designated VRM class in that particular area. • To the extent practicable, bring existing visual contrasts into VRM class conformance as the opportunity arises.				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage the RFO according to the following VRM classes, as indicated on Map 2-1: • Class I: 0 acres • Class II: 529,500 acres • Class III: 569,000 acres • Class IV: 1,029,500 acres Per BLM policy, WSAs would continue to be managed as VRM Class I (446,900 acres).	Designate the following VRM classes, as indicated on Map 2-2: • Class I: 446,900 acres • Class II: 0 acres • Class III: 392,800 acres • Class IV: 1,288,300 acres WSAs would be designated as VRM Class I (446,900 acres).	Designate the following VRM classes, as indicated on Map 2-3: • Class I: 446,900 acres • Class II: 209,000 acres • Class III: 410,800 acres • Class IV: 1,061,300 acres WSAs would be designated as VRM Class I (446,900 acres).	Designate the following VRM classes, as indicated on Map 2-4: • Class I: 446,900 acres • Class II: 230,600 acres • Class III: 509,100 acres • Class IV: 941,400 acres WSAs would be designated as VRM Class I (446,900 acres).	Designate the following VRM classes, as indicated on Map 2-5: • Class I: 1,129,600 acres • Class II: 66,700 acres • Class III: 355,100 acres • Class IV: 576,600 acres WSAs would be designated as VRM Class I (446,900 acres).
Issue: Application of VRM Standards to Existing Rights-of-Way				
Management Actions				
Common to All Alternatives				
To avoid potential conflicts with the construction, operation, maintenance, and termination of facilities and improvements located on existing rights-of-way on public land, apply the following: • Where a right-of-way grant specifically identifies an area and/or width, the VRM class within the specified area/width would be VRM Class IV. • Where no width is specified, the VRM class within the interior boundaries of the area disturbed when the facility or improvement was initially constructed would be VRM Class IV. For roads, the area within the interior boundaries of the following setbacks would be designated VRM Class IV: • 30 feet on each side of centerline for low standard dirt roads • 100 feet on each side of centerline for high standard gravel roads • 300 feet on each side of centerline for high standard paved roads				

2.6.1.8 Special Status Species

Table 2-9. Special Status Species Decisions

Desired Outcomes (Goals and Objectives)
• Conserve and recover all special status species (including listed species) and the ecosystems on which they depend. • Manage, minimize, and mitigate impacts to plant, fish, and animal species and habitats so that the need to list any of these species as threatened or endangered does not become necessary. • Promote recovery and conservation of special status plant, fish, and animal species, including those listed under the Endangered Species Act (ESA). • Prevent long-term habitat fragmentation through avoidance and/or site-specific reclamation to return areas to productive levels. • Continue to work with USFWS and others to ensure that plans and agreements are updated and implemented as necessary to reflect the latest scientific data. • Where possible, implement the conservation actions identified in the Utah Comprehensive Wildlife Conservation Strategy (UDWR 2005c), which identifies priority wildlife species and habitats, identifies and assesses threats to their survival, and identifies long-term conservation actions needed, including those on BLM-administered lands.
Issue: Overall Special Status Species Management Guidance
Management Actions
Common to All Alternatives
• For listed species that do not have designated critical habitat, cooperate with the USFWS and other agencies, such as the Utah Division of Wildlife Resources (UDWR), in managing the species and their habitat. • Allow, initiate, or participate in scientific research of listed and sensitive species and their habitats. • Collaborate with the appropriate local, state, and Federal agencies to promote public education on species at risk, their importance to the human and biological community, and reasons for protective measures that would be applied to the lands involved. • Implement species-specific conservation measures to avoid or mitigate adverse effects to known populations of BLM sensitive plant and animal species on public lands. • Prohibit actions that destroy, adversely modify, or fragment listed threatened or endangered species' habitat. • Maintain the integrity of special status species habitat to provide the quantity, continuity and quality of habitat necessary to maintain special status species populations. • Conduct habitat improvement treatments for special status species. • Retain habitat for Federally-listed and candidate species in Federal ownership. Exceptions may be considered in exchanges with the State of Utah and others after consultation with and concurrence from the USFWS. • Consider special status species habitat in all wildland fire suppression efforts. **Recovery Plans and Conservation Agreements** • Implement the goals and objectives of recovery plans, conservation agreements and strategies, and activity level plans utilizing best available information to recover and conserve species to the point where requirements of the ESA are no longer necessary. • Work with USFWS and others to ensure that plans and agreements are updated and implemented as necessary to reflect the latest scientific data. • Implement the specific goals and objectives of recovery plans, conservation agreements and strategies, and approved activity level plans. **Recovery Actions for Listed Species** • Do not adversely modify or destroy designated critical habitats for Federally-listed species.

Table 2-9. Special Status Species Decisions

- Provide habitat improvements and other management actions to promote conservation and recovery of listed species.

Reintroduction/Translocation of Special Status Species

- Allow introduction, transplant, augmentation, and/or re-establishment of listed or non-listed special status species in cooperation and collaboration with USFWS, UDWR, and other interested parties, following NEPA requirements.

Issue: Habitat Mitigation				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Decisions for habitat mitigation are not specifically addressed in existing plans.	• Use strategies to avoid or reduce habitat fragmentation when possible, including: –Collocating communication and other facilities –Employing directional drilling for oil and gas –Closing and reclaiming roads –Using topographic and vegetative screening to reduce the influence of intrusions • Mitigate the effects of proposed projects that have the potential of causing long-term or permanent habitat impacts or losses by enhancing, restoring, or creating other habitat within the project's region of influence. Consider protecting the habitat when the habitat type is rare and under severe development pressures. Protection should only be a portion of the mitigation and must contain elements of restoration or enhancement. • Use species-specific buffers and seasonal, temporal, and spatial restrictions to conserve habitat for special status species (see Appendix 11 and Appendix 14).			

Issue: Protection of Raptor Habitat				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage raptors as required in current land use plans.	• Employ "Raptor Best Management Practices" (Appendix 10), utilizing seasonal and spatial buffers, as well as mitigation, to maintain and enhance raptor nesting and foraging habitat, while allowing other resource uses. • Comply with *Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006* (APLIC 2006) and Avian Protection Plan (APP) Guidelines (APLIC and USFWS 2005) for new power line construction (including upgrades and reconstruction) to prevent electrocution of raptors.			

2.6.1.9 Fish and Wildlife

Table 2-10. Fish and Wildlife Decisions

Desired Outcomes (Goals and Objectives)				
• Maintain, restore, protect, and enhance habitats to support healthy populations of diverse fish and wildlife species, recognizing crucial and high-value habitats as management priorities. • Manage habitat to prevent additional listings of species under the Federal Endangered Species Act, or the State of Utah's Species of Concern List. • Manage for unfragmented blocks of habitat that provide for a variety of wildlife and fish species. • Recognize and support the role of Utah Division of Wildlife Resources (UDWR) in managing wildlife and fish populations and regulating hunting and fishing. • Recognize and support the role of USFWS in managing raptors, migratory birds, and threatened and endangered species. • Recognize and support the role of the Federal Animal and Plant Health Inspection Service (APHIS) in controlling predators.				
Issue: Overall Fish and Wildlife Management Guidance				
Management Actions				
Common to All Alternatives				
• Recognize and coordinate with UDWR on their Management Plans and associated revisions, and (where appropriate) plans of other cooperating agencies. To the extent practicable, implement future plans on a case-by-case basis through applicable regulations. • Implement BLM wildlife management plans. • Implement the conservation actions identified in Executive Order 13186, *Federal Agency Responsibilities Under the Migratory Bird Treaty Act*, with particular emphasis on those migratory birds identified as Priority Species in the Utah Avian Conservation Strategy (Parrish *et al.* 2002). • Cooperate with UDWR in the management of fisheries, including habitat improvements and treatments. • Work with UDWR to establish and maintain Blue Ribbon Fisheries, as defined by the Utah Blue Ribbon Fishery Advisory Council. • Coordinate with UDWR to address population dynamics and habitat conditions for major habitat types that support a wide variety of game and non-game species. • Use strategies to avoid or reduce habitat fragmentation such as collocating facilities, employing directional drilling, reclaiming redundant roads, reclaiming roads no longer serving intended purpose, reducing road densities, and using topographic and vegetative screening to reduce influence of intrusions. • Where appropriate, require on-site mitigation when surface disturbance cannot be avoided on a site-specific basis, and consider off-site (compensatory) mitigation where on-site mitigation is impractical. • Where possible, implement the conservation actions identified in the Utah Comprehensive Wildlife Conservation Strategy (UDWR 2005c), which identifies priority wildlife species and habitats, identifies and assesses threats to their survival, and identifies long-term conservation actions needed, including those on BLM-administered lands.				
Issue: Forage Management and Allocations				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage big game winter range to maximize browse production, using class of livestock and season of use.	Use prescriptive grazing to favor forage production on crucial big game winter range.	• Use prescriptive grazing to favor forage production for big game high-priority and crucial winter range.	• Use prescriptive grazing to favor forage production for big game ranges. • On suitable allotments, as determined on a case-by-case basis, authorize livestock grazing only on a nonrenewable	

Table 2-10. Fish and Wildlife Decisions

		• On suitable allotments, as determined on a case-by-case basis, authorize livestock grazing only on a nonrenewable basis to meet wildlife habitat objectives. These actions would be limited to crucial wildlife habitat where conventional grazing management practices are not providing attainment of RMP objectives.	basis to meet wildlife habitat objectives. These actions would be limited to crucial wildlife habitat where conventional grazing management practices are not providing attainment of RMP objectives.	
Accomplish habitat treatments to meet terrestrial, aquatic, and riparian habitat objectives through the use of prescribed fire, chemical, biological, and mechanical methods.	Accomplish habitat treatments to meet terrestrial, aquatic, and riparian habitat objectives through the use of prescribed and/or wildland fire, chemical, biological, and mechanical methods.		Accomplish habitat treatments to meet terrestrial, aquatic, and riparian habitat objectives through the use of prescribed and/or wildland fire and biological methods.	
Issue: Management of Henry Mountain Bison and Mule Deer				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Provide no special management for Henry Mountain bison or mule deer.		• Develop a Habitat Management Plan (HMP) for bison, mule deer and other big game species within the Henry Mountain area in consultation with UDWR. (The HMP would address management objectives with respect to size of herds (numbers of animals), desired ratio of male to female animals, and the reauthorization of voluntarily relinquished grazing	• Designate an ACEC in the Henry Mountains (288,200 acres) to recognize bison, mule deer, and scenic values. • Manage bison habitat in cooperation with UDWR. • Allow manipulation of habitat to benefit wildlife. • Allow range improvements outside of wilderness characteristics areas (Alternative D only) that benefit wildlife (water developments, fencing riparian areas, etc.). • Develop a HMP for bison and mule deer within the ACEC. • Address voluntary relinquishments of grazing preference and reauthorization of AUMs as provided for in Instruction Memorandum IM-2007-67, *Relinquishment of Grazing Preference on BLM-Administered Lands*. • See Section 2.6.3.3 (ACEC Decisions) for other management prescriptions.	

Table 2-10. Fish and Wildlife Decisions

		preference and reallocation of forage on specific grazing allotments. The HMP would also address needed improvements for range conditions including proposed habitat improvement projects for both livestock and big game species to mitigate potential conflicts during seasons of use and the strategies required for herd adjustments during critical droughts.)		
Issue: Management of Desert Bighorn Sheep Habitat				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Comply with the Henry Mountains Desert Bighorn HMP (1990).	Prohibit change in the kind of livestock from cattle to domestic sheep in those allotments with bighorn sheep habitat identified in the Desert Bighorn Sheep HMP.		Prohibit change in kind of livestock from cattle to domestic sheep within all identified bighorn sheep habitat.	
Implement no restrictions on surface disturbing activities in crucial bighorn sheep habitat.		Restrict surface disturbing activities in crucial bighorn sheep habitat during lambing season (April 15 through June 15). Exceptions may be granted on a case-by-case basis (see Appendix 11).	Restrict surface disturbing activities in crucial bighorn sheep habitat during lambing season (April 15 through June 15). Grant no exceptions.	
Issue: Management of OHV Use in Deer and Elk Habitats				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue OHV management as outlined in current land use plans.	Require no specific OHV restrictions within crucial deer and elk habitat.	• Limit OHV use to designated routes in deer and elk crucial winter habitat (646,000 acres), except for Glenwood, Aurora, and Mayfield Managed Open Areas.	• OHV use in 509,000 acres of deer and elk crucial winter range would be limited to designated routes. • 142,000 acres of deer and	• OHV use in 393,000 acres of deer and elk crucial winter range would be limited to designated routes. • 258,000 acres of deer and

Table 2-10. Fish and Wildlife Decisions

		• Close 4,000 acres of deer and elk crucial winter range to OHV use. • Consider seasonal closure of designated routes on a case-by-case basis. (Maps 3-6 and 3-7)	elk crucial winter range would be closed to OHV use. (Maps 3-6 and 3-7)	elk crucial winter range would be closed to OHV use. (Maps 3-6 and 3-7)
Issue: Management of OHV Use in Crucial Bison Habitat				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Close crucial bison habitat to OHV use from December 20–March 20 at Swap Mesa and Cave Flat.	Limit OHV use to designated routes in crucial bison habitat (251,000 acres).	Limit OHV use to designated routes in crucial bison habitat (251,000 acres).	• OHV use in 62,000 acres of crucial bison habitat would be limited to designated routes. • 189,000 acres of crucial bison habitat would be closed to OHV use. (Map 3-5)	• OHV use in 44,000 acres of crucial bison habitat would be limited to designated routes. • 207,000 acres of crucial bison habitat would be closed to OHV use. (Map 3-5)
Issue: Management of OHV Use in Sage Grouse Habitats				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue to follow current policy for sensitive species.	Limit OHV use to designated routes in sage grouse leks and nesting habitats.	Limit OHV use to designated routes in all greater sage grouse habitats, including: breeding (leks), nesting, brood-rearing and wintering habitats.		
Issue: Management of OHV Use for Game Retrieval				
Management Actions				
Common to All Alternatives				
Manage OHV use for game retrieval consistent with OHV area and route designations.				
Issue: Seasonal Stipulation for Surface Disturbing Activities in Bison Habitats				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Restrict oil and gas exploration and leasing activities in crucial bison	No special stipulation required, however, mitigation may be required for surface	Restrict surface disturbing activities in crucial bison habitats (Map 3-5) from November 1 through May 15 for protection of winter habitats and species sensitivity during calving season.		

Table 2-10. Fish and Wildlife Decisions

habitats (Map 3-5) from December 1 through April 15 for protection of winter habitats and species sensitivity during calving season.	disturbing activities in crucial bison habitats (Map 3-5) from November 1 through May 15.	See Appendix 11 for exceptions, modifications, or waivers.		
Issue: Seasonal Stipulation for Surface Disturbing Activities in Crucial and High Value Mule Deer and Elk Habitat				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Restrict oil and gas exploration and development in crucial and high value mule deer and elk habitats (Maps 3-6 and 3-7) from December 15 through May 15 for protection of winter habitats and species sensitivity during fawning season.	No special stipulation required, however, mitigation may be required for surface disturbing activities in crucial and high value mule deer and elk habitats (Maps 3-6 and 3-7) from December 15 through April 15.	Restrict surface disturbing activities in crucial and high value mule deer and elk habitats) Maps 3-6 and 3-7) from December 15 through April 15 for protection of winter habitats, unless the action is carried out to enhance habitats for mule deer, elk and/or other wildlife. See Appendix 11 for exceptions, modifications, or waivers.	Restrict surface disturbing activities in crucial and high value mule deer and elk habitats (Maps 3-6 and 3-7) from December 15 through April 15 for protection of winter habitats. Grant no exceptions.	
Issue: Seasonal Stipulation for Surface Disturbing Activities in Crucial Desert Bighorn Sheep Habitat				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
No special stipulation required.	No special stipulation required, however, mitigation may be required for surface disturbing activities in crucial desert bighorn sheep habitat (Map 3-5) from April 15 through June 15.	Prohibit surface disturbing activities in crucial desert bighorn sheep habitat (Map 3-5) from April 15 through June 15 for protection of species sensitivity during lambing season.		

Table 2-10. Fish and Wildlife Decisions

Issue: Special Stipulations for Surface Disturbing Activities in Crucial Pronghorn Antelope Habitat				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Prohibit oil and gas exploration and development activities in crucial pronghorn antelope habitat (Map 3-5) from December 1 through April 30 for protection of species sensitivity during fawning season.	No special stipulation required, however, mitigation may be required for surface disturbing activities in crucial pronghorn antelope habitat (Map 3-5) from May 15 through June 15.	Restrict surface disturbing activities in crucial pronghorn antelope habitat (Map 3-5) from May 15 through June 15 for protection of species sensitivity during fawning season. See Appendix 11 for exceptions, modifications, or waivers.		
Issue: Special Stipulations for Surface Disturbing Activities Near Sage Grouse Leks				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Prohibit surface disturbing activities from March 1 through July 15, for protection of species sensitivity during lekking activities.	Prohibit surface disturbing activities within one-quarter mile of sage grouse leks from March 15 through June 1 for protection of species sensitivity during lekking activities. Any surface disturbing activity conducted outside this time frame would not result in an above ground structure within one-quarter mile of leks from March 15 through June 1.	Prohibit surface disturbing activities within one-half mile of sage grouse leks from March 15 through June 1 for protection of species sensitivity during lekking activities. Any surface disturbing activity conducted outside this time frame would not result in an above ground structure within one-half mile of leks from March 15 through June 1.	Prohibit surface disturbing activities within two miles of sage grouse leks from March 15 through June 1 for protection of species sensitivity during lekking activities. Any surface disturbing activity conducted outside this time frame would not result in an above ground structure within two miles of leks from March 15 through June 1.	
Issue: Special Stipulations for Surface Disturbing Activities within Sage Grouse Brooding Habitat				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Prohibit surface disturbing activities within sage grouse brooding habitat from April 1 through June 15 for protection of brooding and	No special stipulation required for surface disturbing activities within sage grouse brooding habitat.	Prohibit long-term surface disturbing activities within sage grouse brooding/nesting habitat from April 1 through July 15 for	Prohibit long-term surface disturbing activities within sage grouse brooding/nesting habitat from April 1 through July 15 for protection of brooding and nesting activities.	

Table 2-10. Fish and Wildlife Decisions

nesting activities.		protection of brooding and nesting activities, unless the activity is completed to improve sage grouse brooding habitat.		
Issue: Special Stipulation for Surface Disturbing Activities in Riparian and Wetland Habitats				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Prohibit surface disturbing activities within 500 feet of live water.	Prohibit surface disturbing activities within 330 feet of streams with intermittent or perennial reaches, resulting in no surface occupancy in this area, for protection of habitat for riparian-obligate species.		Prohibit surface disturbing activities within 660 feet of streams with intermittent or perennial reaches, resulting in no surface occupancy in this area, for protection of habitat for riparian-obligate species.	
Issue: Reintroduction, Transplantation, Augmentation, and Reestablishment of Wildlife and Fish Species				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Cooperate with UDWR and USFWS in reintroducing wildlife species into historic ranges as determined through NEPA analysis. • Consider wildlife transplants of big game species and fish.	• Analyze UDWR and USFWS proposals to introduce, augment, transplant, and reestablish wildlife species through NEPA evaluation. • Introduction, translocation, transplantation, augmentation, and reestablishment of both native and naturalized fish and wildlife species would be allowed in cooperation and collaboration with UDWR.		• Analyze UDWR and USFWS proposals to introduce, augment, transplant, and reestablish wildlife species through NEPA evaluation. • Introductions, translocation, transplantation, augmentation, and reestablishment of native species only would be allowed in cooperation and collaboration with UDWR.	
Issue: Management of Raptor Habitat				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage raptors as required in current land use plans.	Implement the following direction: "Raptor management will be guided by the use of “Raptor Best Management Practices” (Appendix 10), utilizing seasonal and spatial buffers, as well as mitigation, to maintain and enhance raptor nesting and foraging habitat, while allowing other resource uses."			

2.6.1.10 Wild Horses and Burros

Table 2-11. Wild Horses and Burros Decisions

<table>
<tr><th colspan="5">Desired Outcomes (Goals and Objectives)</th></tr>
<tr><td colspan="5">• Manage wild burros at appropriate levels in viable, vigorous, and stable populations to ensure a natural ecological balance among wild burro populations, wildlife, livestock, vegetation resources, and other resource values.
• Manage for genetic diversity of wild burros within the Canyonlands Herd Management Area.
• Maintain, enhance, and perpetuate the viable herd's distinguishing characteristics that were typical at the time of the passage of the Wild Free-Roaming Horse and Burro Act or that are identified in population management plans.</td></tr>
<tr><th colspan="5">Issue: Overall Wild Horses and Burros Management Guidance</th></tr>
<tr><th colspan="5">Management Actions</th></tr>
<tr><th colspan="5">Common to All Alternatives</th></tr>
<tr><td colspan="5">Manage wild burro populations for appropriate age and sex ratios, genetic viability, and adoptability, as well as maintaining AML on the established HMA (Map 3-8). Allow wild burro research, as long as other wild horse and burro program goals are met. Wild burro herd research data that may be collected include, but are not limited to, data to determine population size and characteristics, assess herd health, determine herd history and genetic profile (blood and hair sampling, Instruction Memorandum IM # 2002-095 *Gather Policy and Selective Removal Criteria for Wild Horses Program Area: Wild Horse and Burro Program*), and conduct immunocontraceptive research and monitor results as appropriate. Data gathering in the Canyonlands wild burro herd has historically been limited to aerial population counts. Other data that could be useful in population management would include general characteristics such as age ratios, sex ratios, and color, as well as health characteristics such as pregnancy rates, parasite loading, and the general physical condition of the burros. Additionally, genetic sampling would determine the genetic health of the herd.</td></tr>
<tr><th colspan="5">Issue: Management of the Canyonlands Herd Management Area</th></tr>
<tr><th colspan="5">Management Actions</th></tr>
<tr><th>Alternative N
(No Action)</th><th>Alternative A</th><th>Alternative B
(Preferred Alternative)</th><th>Alternative C</th><th>Alternative D</th></tr>
<tr><td colspan="2">Manage Canyonlands HMA as a wild burro HMA. No AML has been set in existing planning documents (Map 3-8).
• Allocate 100 AUMs for wild burros.
• Maintain the AML of the Canyonlands HMA at levels to maintain genetic viability.</td><td>Manage Canyonlands HMA as a wild burro HMA with an AML of 60–100 (Map 3-8).
• Allocate 600 AUMs for wild burros to meet an AML upper limit of 100.
• Maintain the AML of the Canyonlands HMA at levels to maintain genetic viability.
• Allow introductions of wild burros from other herd areas to maintain genetic viability, given the burros being introduced have</td><td colspan="2">Manage Canyonlands HMA as a wild burro HMA with an AML of 120–200 (Map 3-8).
• Allocate 1,200 AUMs for wild burros to meet an AML upper limit of 200.
• Maintain the AML of the Canyonlands HMA at levels to maintain genetic viability.</td></tr>
</table>

Table 2-11. Wild Horses and Burros Decisions

	characteristics similar to the burros in the Canyonlands HMA.	

2.6.1.11 Fire and Fuels Management

Table 2-12. Fire And Fuels Management Decisions

Desired Outcomes (Goals and Objectives)				
• Manage fire and fuels to protect life, firefighter safety, property, and critical resource values. • Reduce the threat of wildfire in the Wildland Urban Interface (WUI). • Manage fire and fuels, where appropriate, to restore natural systems to their desired future condition, considering the interrelated social and economic components. • Manage wildland fires to minimize cost considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives.				
Issue: Fire Management in the Wildland Urban Interface				
Management Actions				
Common to All Alternatives				
• Employ WUI Fire and Fuels Management according to national policy to meet vegetation treatment goals. • Work with partners in the WUI in wildland firefighting, hazardous fuels reduction, prevention and education, and technical assistance.				
Issue: Appropriate Management Response, Hazardous Fuels Reduction, and Wildland Fire Use				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage fire using a full suite of tools that allows for the graduated movement to a more ecologically sustainable condition and reduction of hazardous fuels.	Implement appropriate management response (AMR) according to General Risk Categories (GRCs), as contained in Appendix 6. The General Risk Categories contain criteria for managing dynamic vegetation communities. Wildland fire use would not be appropriate in the following areas— –Administrative sites –Developed recreation sites –Communication sites –Oil and gas facilities –Mining facilities –Above-ground utility corridors –High-use travel corridors –Crucial wildlife habitats where fire is unwanted			

Table 2-12. Fire And Fuels Management Decisions

	–General Risk Category A, such as desert scrub communities • Prioritize other fire management activities as directed and prioritized in the GRCs. • Specific fire suppression directions are noted in Section 2.6.3.3, ACEC Decisions, for protection of identified relevant and important values from irreparable damage. • Give specific considerations when implementing suppression activities to special status species habitats and cultural resource sites.			
Issue: Hazardous Fuels Reduction				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Hazardous fuels would be reduced to restore ecosystems; protect human, natural and cultural resources; and reduce the threat of wildfire to communities.	Manage fire and fuels through treatments conducted on up to 1,472,000 acres over the life of the plan. Use the full range of treatment types (e.g., prescribed and wildland fire, mechanical, chemical, biological, and cultural treatments. (An annual average of 73,600 acres would need to receive treatment to reach the total treatment acreage listed (see Table 2-12a). Actual annual treatment acreage would vary depending on conditions, staffing, etc. These acreage figures include all vegetation and fire fuels treatments (See also Section 2.6.1.4)).		Manage fire and fuels through treatments conducted on up to 520,000 acres over the life of the plan. Use prescribed fire, intensively treating areas to create properly functioning ecosystems and desired natural communities. The type of treatment would vary depending on case-by-case environmental conditions. Human management would be applied to protect life and property and to ensure ecosystem function in areas currently at risk of losing key ecosystem components following wildland fire. (An annual average of 26,000 acres would need to receive treatment to reach the total treatment acreage listed (see Table 2-12a). Actual annual treatment acreage would vary depending on conditions, staffing, etc. These acreage figures include all vegetation and fire fuels treatment (See also Section 2.6.1.4)).	
Issue: Prevention and Mitigation of Wildland Fire				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Prevent human-caused fires through coordination with partners and affected groups and individuals. Utilize a full range of prevention and mitigation activities.	• Prevent human-caused fires through coordination with partners and affected groups and individuals. Utilize a full range of prevention and mitigation activities. • Prioritization criteria are contained in the GRCs (Appendix 6).			

Table 2-12. Fire And Fuels Management Decisions

Issue: Emergency Stabilization and Rehabilitation (ESR)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Undertake ESR efforts to protect and sustain ecosystems, public health, and safety, and to help communities protect infrastructure.		Undertake ESR efforts to protect and sustain ecosystems, public health, and safety, and to help communities protect infrastructure. Prioritize implementation of post-fire emergency stabilization and rehabilitation activities considering the following criteria— • Areas that could pose a threat to life and property • Areas with potential for invasive species invasion, significant ecosystem alteration (e.g., Condition Class 3 areas), and soil stabilization		

Table 2-12a. Estimated Treatment Acreages

ESTIMATED TREATMENT ACREAGES		
20 Year Treatment Acreage – Alternatives A and B	**20 Year Treatment Acreage – Alternatives C and D**	**Vegetation Class**
0	0	Other (Non-Vegetated)
58,634	7,329	Mixed Conifer
5,786	1,927	Aspen
171,140	34,228	Ponderosa
19,629	7,852	Oak
16,378	8,189	Mountain Shrub
671,277	223,759	Pinyon-Juniper
343,781	171,891	Sagebrush Steppe
185,515	64,930	Desert Grassland
0	0	Desert Brush
1,472,140	**520,105**	
Estimated Average Treatment per Year		
73,607	**26,005**	

2.6.1.12 Non-WSA Lands with Wilderness Characteristics

Table 2-13. Wilderness Characteristics Decisions

Desired Outcomes (Goals and Objectives)				
• Protect or preserve the wilderness characteristics (appearance of naturalness and outstanding opportunities for solitude or primitive and unconfined recreation or solitude) of areas with 5,000 acres or more of non-WSA lands with wilderness characteristics, as appropriate. • Manage primitive and backcountry landscapes to preserve their undeveloped character and scenic quality, and to provide opportunities for primitive and unconfined recreational activities and experiences of solitude, as appropriate.				
Issue: Management of Non-WSA Lands with Wilderness Characteristics				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
No special direction for managing the non-WSA lands with wilderness characteristics is included in the existing land use plans.	Provide no special management direction for protecting the non-WSA lands with wilderness characteristics.			Protect the 29 areas (682,600 acres) of non-WSA lands with wilderness characteristics (identified in Chapter 3 and on Map 3-9) through the following land allocations and prescriptions: • Designate as VRM Class I • Manage for primitive and semi-primitive non-motorized recreation • Close to motorized and mechanized use • Retain land in public ownership • Avoid new rights-of-way • Propose for withdrawal from mineral entry • Close to oil and gas leasing • Close to mineral material sales • Unavailable for further consideration for coal leasing

2.6.2 Resource Uses

2.6.2.1 Forestry and Woodland Products

Table 2-14. Forestry and Woodland Products Decisions

Desired Outcomes (Goals and Objectives)				
• Provide forest and woodland products (including fuelwood, timber, posts, pinyon nuts, and Christmas trees) on a sustainable basis. • Reduce pinyon-juniper encroachment through woodland product use where increased density threatens other resource values. • Provide opportunities for seed and live plant collecting where and when ecologically feasible. • Emphasize forest and woodland health.				
Issue: Overall Management of Forests and Woodlands				
Management Actions				
Common to All Alternatives				
• Allow use of forest and woodland species to achieve desired conditions. • Reforest sites after disturbances. • Manage forests and woodlands to meet objectives of the Healthy Forest Restoration Act of 2003, including— –Develop a Forest and Woodlands Management Plan. –Give priority to restoration of destroyed or degraded woodland ecosystems. –Employ commercial uses to improve forest and woodland ecosystem health. –Emphasize partnerships among internal programs and outside agencies for forest and woodland management. –Increase monitoring of forest and woodland conditions. –Emphasize public education on forest and woodland health, fire danger, and resource uses. –Identify, maintain, and restore old-growth forests.				
Issue: Areas Open to Timber Harvest				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
West of Capitol Reef National Park— • Manage commercial timber harvest on a case-by-case basis East of Capitol Reef National Park— • Continue to prohibit commercial timber	Provide for commercial and non-commercial timber harvest where feasible, sustainable, and compatible with restoring, maintaining, or improving forest health.		Allow no commercial timber harvest.	

Table 2-14. Forestry and Woodland Products Decisions

harvesting.				
Issue: Areas Open to Woodland Products Harvest: Christmas Trees, Posts, Green Wood Cutting, and Fuelwood				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
West of Capitol Reef National Park— • Allow harvest of dead and down woodland products by permit on a case-by-case basis. • Allow green wood cutting in specified areas by permit. East of Capitol Reef National Park— • Provide for non-commercial use of woodland products outside WSAs by permit.	Provide for commercial and non-commercial use of forest and woodland products where sustainable and compatible with restoring, maintaining, and improving woodland health, in areas specified by permit. WSAs and suitable WSR corridors would be closed to commercial and non-commercial use of forest and woodland products. Exceptions for traditional American Indian use may be considered.			Provide for commercial and non-commercial use of forest and woodland products where sustainable and compatible with restoring, maintaining, and improving woodland health, in areas specified by permit. WSAs, non-WSA lands with wilderness characteristics, and suitable WSR corridors would be closed to commercial and non-commercial use of forest and woodland products. Exceptions for traditional American Indian use may be considered.
Issue: Management of Seed and Live Plant Collecting				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Allow commercial and non-commercial live plant and seed collecting by permit.	• Allow commercial and non-commercial live plant and seed collecting by permit. • Consider designating specific seed collecting areas for resource benefits.	• Allow commercial and non-commercial live plant and seed collection by permit in areas outside WSAs and suitable Wild and Scenic River corridors. Exceptions for traditional American Indian use may be considered. • Consider designating specific seed collecting areas for resource benefits.		• Allow no commercial or non-commercial live plant and seed collecting within WSAs, non-WSA lands with wilderness characteristics and suitable Wild and Scenic River corridors. Exceptions for traditional American Indian use may be considered. • Consider designating

Table 2-14. Forestry and Woodland Products Decisions

			specific seed collecting areas for resource benefits.

2.6.2.2 Livestock Grazing

Table 2-15. Livestock Grazing Decisions

Desired Outcomes (Goals and Objectives)
• Provide for the orderly use, improvement, and development of the range for livestock grazing. • Provide for livestock grazing while maintaining rangelands in properly functioning condition. • Maintain healthy, sustainable rangeland ecosystems and restore degraded rangelands to meet Utah's Standards for Rangeland Health, and to provide a wide range of public values such as wildlife habitat, livestock forage, recreation opportunities, clean water, and functional watersheds. • Livestock use and associated management practices would be integrated with other multiple use needs and objectives to maintain, protect, and improve rangeland health.
Issue: General Grazing Management
Management Actions
Common to All Alternatives
• Monitor and evaluate grazing allotments to maintain or improve rangeland productivity. • Adjust permit terms and conditions (e.g. permitted use, amount of use, season of use, and kind and class of livestock) when grazing permits are renewed, transferred, or as otherwise deemed necessary by site-specific evaluation of monitoring data and environmental analysis. • Use livestock grazing to enhance ecosystem health or mitigate resource problems (e.g., noxious/invasive weed control, hazardous fuel reduction) where supported by site-specific environmental analysis. • During periods of drought, adjust livestock numbers annually based on estimates of the available forage. • Exclude livestock grazing from small areas (such as springs) within allotments that cannot meet Rangeland Health Standards with livestock grazing. • Voluntary relinquishment of grazing permits and preference, in whole or in part, by a permittee in writing to the BLM would be handled on a case-by-case basis. BLM would not recognize as valid, relinquishments which are conditional on specific BLM actions and BLM would not be bound by them. Relinquished permits and the associated preference will remain available for application by qualified applicants after BLM considers if such action would meet Rangeland Health Standards and is compatible with achieving land use plan goals and objectives. Prior to re-issuance of the relinquished permit the terms and conditions may be modified to meet RMP goals and objectives and/or site-specific resource objectives. However, upon relinquishment, BLM may determine through a site-specific evaluation and associated environmental analysis that the public lands involved are better used for other purposes. Grazing may then be discontinued on the allotment through an amendment to the Resource Management Plan. Any decision issued concerning discontinuance of livestock grazing is not permanent and may be reconsidered and changed through future land use plan amendments and updates.

Table 2-15. Livestock Grazing Decisions

Issue: Forage Allocations				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue to permit livestock use on those allotments shown on Map 2-7 and in Appendix 7 (Table A7-1). • Acres available for grazing: 1,989,048 • Acres unavailable for grazing: 138,952 • Available AUMs: 146,202	Permit livestock use on those allotments shown on Map 2-6 and in Appendix 7 (Table A7-2). Fourteen allotments comprising 36,950 acres previously unavailable to livestock grazing would again be available to livestock grazing. • Acres available for grazing: 2,025,998 • Acres unavailable for grazing: 102,002 • Available AUMs: 147,281	Permit livestock use on those allotments shown on Map 2-7 and in Appendix 7 (Table A7-3). • Acres available for grazing: 1,989,048 • Acres unavailable for grazing: 138,952 • Available AUMs: 146,202		
Issue: Grazing Allotment Boundaries				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Continue to manage Long Hollow, Terza Flat, Deleeuw, and Loa Winter allotments as separate allotments. • Continue to manage Flat Top, King Sheep, and Bicknell Winter allotments as separate allotments. • Manage Cedar Peak, Hare Lake, Smooth Knoll, and Bicknell Spring allotments as separate allotments. • Manage Cyclone and Cyclone Co-Op allotments	Authorize allotment boundary changes, including combining and splitting allotments, on a case-by-case basis after environmental analysis. Provide for the following allotment combinations: • Combine Long Hollow, Terza Flat, and Deleeuw Allotments with the Loa Winter Allotment. • Combine Flat Top and King Sheep allotments with the Bicknell Winter Allotment. • Combine Cedar Peak, Hare Lake, and Smooth Knoll Allotments with the Bicknell Spring Allotment. • Combine the Cyclone Allotment with the Cyclone Co-Op Allotment.			

Table 2-15. Livestock Grazing Decisions

as separate allotments.				
Issue: Guidelines and Criteria for Adjusting Allotment-Specific Grazing Management Practices				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Existing land use plans do not specifically address this issue.	**Conversion in Kind of Livestock** Authorize conversion in kind of livestock on a case-by-case basis when justified through environmental analysis. Permittees may be required to provide needed range improvements to support the conversion. A conversion may be justified when it meets the following criteria: • Monitoring studies or other acceptable data support the conversion; • Environmental conditions (e.g. vegetation types, topographic features, water availability) can accommodate the conversion; • Change in kind of livestock poses no threat to other resources; • A trial change proves acceptable. **Adjusting Livestock Season of Use** Consider adjustments to season of use when resource conditions indicate a change is needed. Conduct appropriate environmental analysis prior to any changes. Resource conditions include: • Physiological requirements (reproduction and maintenance) of desired plant species are not being met; • Range conditions are declining due to season of use; • Conflicts with other resources or uses are identified. Consider the following actions if livestock grazing is contributing to declining range conditions: • Shorten the grazing period; • Temporary suspension of use; • Implement or change grazing system; • Authorize non-use until conditions improve. Authorize permittee requests for changes to livestock season of use when the following conditions are met: • Physiological requirements (e.g., reproduction and maintenance) of desired plants can be met; • On community allotments, all permittees in that allotment must agree to the change; • Requested changes do not conflict with other established land uses; • A trial of the change proves acceptable; • Permittees may be required to provide needed range improvements to support changing the season of use. **Adjusting Permitted Use** Consider changes to permitted use if: • Change is supported by monitoring data, field observations, ecological site inventory, or other acceptable data; • Conflicts with other uses are identified; • There is a change in public land ownership (increase or decrease); • Protection of other resources is required; • Changes are required by 43 CFR 4180 (Rangeland Health regulations).			

Table 2-15. Livestock Grazing Decisions

Issue: Administrative Access for Grazing Management				
Management Actions				
Common to All Alternatives				
• Continue to allow motorized access to range improvements for allotment management purposes. • Allow access within WSAs according to IMP.				
Issue: Managing Domestic Sheep/Wildlife Conflicts				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Permit domestic sheep grazing in bighorn sheep habitat while following the Guidelines for Domestic Sheep and Goat Management in Native Wild Sheep Habitats	Permit domestic sheep grazing in bighorn sheep habitat while following the Guidelines for Domestic Sheep and Goat Management in Native Wild Sheep Habitats	Permit no domestic sheep and goat grazing east of Capitol Reef National Park, subject to existing livestock grazing permits.	Permit no domestic sheep and goat grazing in bighorn sheep habitat throughout the lands managed by the RFO, subject to existing livestock grazing permits.	

2.6.2.3 Recreation

Table 2-16. Recreation Decisions

Desired Outcomes (Goals and Objectives)
• Provide recreational opportunities in a variety of physical, social and administrative settings, from primitive to near-urban, that allow visitors to have desired recreational experiences and enjoy the resulting benefits. • Provide opportunities for recreational experiences unique to the lands managed by the RFO, consistent with resource capabilities and mandated resource requirements; provide for visitor education and interpretation of the recreational opportunities within the RFO. • Encourage entrepreneurial enterprises. • Work with local communities to foster recreation and tourism. • Provide for public health and safety through interpretation, facility development, and visitor management. • Maintain important recreational values and sites in Federal ownership to ensure a continued diversity of recreation settings, activities and opportunities.
Issue: Overall Recreation Guidance
Management Actions
Common to All Alternatives
Implement the Utah BLM Standards for Rangeland Health and Guidelines for Recreation Management, as follows— • Recognize that various levels of regulations and limits may be necessary, but that restrictions and limitations on public uses should be as small as possible

Table 2-16. Recreation Decisions

without compromising the primary goal.

- Use an on-the-ground presence as a tool to protect public lands.
- Where long-term damage by recreational usage is observed or anticipated, limit or control activities through special management tools such as designated campsites, permits, area closures, and limitations on numbers of users and duration of usage.
- Revise recreation management plans and RMPs when they prove to be either overly restrictive or inadequate to protect public land health.
- Coordinate with other Federal and state agencies, county and local governments, and tribal nations in recreation planning and managing traffic, search and rescues operations, trash control and removal, and public safety.
- Consider and implement where appropriate, management methods to protect resources while maintaining the quality of the experience of various users. Limitations could include numbers, types, timing and duration of usage.
- Encourage the location of public land recreational activities near population centers and highway corridors by the placement of appropriate visitor use infrastructure. Provide restrooms and other facilities adequate for anticipated uses at designated campgrounds, trailheads, and other areas where recreational users concentrate.
- Allow non-commercial dispersed camping without permit, throughout the RFO administered lands, unless directed by other management prescriptions.
- Allow no rock climbing within 300 feet of cultural sites or within one-quarter mile of raptor nests during nesting seasons.
- Allow no camping within one-half mile of any Mexican spotted owl protected activity center (PAC).
- BLM Back Country Byways may be designated in the future as deemed appropriate with site-specific environmental analysis.
- National Recreation Trails may be designated in the future as deemed appropriate with site-specific environmental analysis.
- Encourage “Leave No Trace” and “Tread Lightly” camping and travel techniques.

Issue: Management of Extensive Recreation Management Areas (ERMAs)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue managing recreation as directed in current land use plans.	• Portions of the decision area not delineated as a SRMA would be identified as an ERMA. ERMAs would receive only custodial management (which addresses only activity opportunities) of visitor health and safety, user conflict and resource protection issues with no activity level planning. Therefore, actions within ERMAs would generally be implemented directly from land use plan decisions. • Manage the ERMAs to provide a variety of recreational opportunities including primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, and rural. Provide outdoor settings ranging from areas with a high-to-moderate opportunity for solitude and closeness to nature, where visitors should be prepared for a high level of self reliance, challenge, and risk; to areas where visitors have the convenience of facilities and a higher interaction with other users. • Consider limiting recreational access, season of use, and numbers of users, if needed, to protect other resources. • Provide facilities, based on needs for resource protection and user demand. Consider site-specific development on a case-by-case basis, ranging from minimal, rustic facilities to larger developments that would require major site modifications. • Manage public lands in the Fiddler Butte, Labyrinth Canyon, Blue Hills, and Little Rockies areas in a primitive, naturally appearing setting for a high probability of experiencing solitude, freedom, closeness to nature, self reliance, challenge, and risk. Interaction and evidence of other users would be low. (In some alternatives, these areas are part of SRMAs.) Achieve this by— –Preserving resources while providing for a sustainable recreational opportunity; –Managing access and travel primarily as non-motorized, with motorized travel limited to designated routes (access for			

Table 2-16. Recreation Decisions

	people with disabilities would be difficult); –Providing minimum improvements needed for site protection; –Providing no on-site interpretative facilities. • Manage public lands adjacent to other Federal and state lands to complement the recreational experience on the adjoining lands. • Designate sites and areas appropriate for large group events and camping, including— –Starr Spring campground –McMillan Spring campground –Sandy Creek Overlook (except in Alternative D) –Apple Brush Flat near McMillan Spring road junction –Turkey Haven –Two sites along Sulphur Creek –Others as necessary to meet recreation demand and protect resources • Provide signs, trails, trailhead parking, and staging areas to facilitate the use and enjoyment of the ERMA and to protect visitor health, safety, and resources. • Maintain and improve the Paiute, Great Western, and other motorized trail systems. • Maintain and improve a non-motorized trail system.			
Issue: Establishment and Management of Special Recreation Management Areas (SRMAs)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Current land use plans identify one SRMA.	• Establish and manage SRMAs, as identified below. • Manage recreation activities and developments in the SRMA to support SRMA goals and objectives. • Develop recreation facilities in response to resource management needs appropriate to the intent of the SRMA.			
One SRMA, 120 acres Yuba Reservoir (defer management of Yuba SRMA to Fillmore Field Office (FO) in all alternatives)	Five SRMAs, 516,400 acres **OHV:** • Factory Butte • Big Rocks • Sahara Sands **Dispersed Recreation:** • Dirty Devil • Otter Creek See Map 2-8	Five SRMAs, 838,700 acres **OHV:** • Factory Butte • Big Rocks **Dispersed Recreation:** • Henry Mountains • Dirty Devil • Capitol Reef Gateway See Map 2-9	Four SRMAs, 928,550 acres **Dispersed Recreation:** • Henry Mountains • Dirty Devil • Capitol Reef Gateway • Sevier Canyon See Map 2-10	Seven SRMAs,1,358,200 acres **Primitive and semi-primitive recreation:** • Henry Mountains • Dirty Devil • Capitol Reef Gateway • E. Fork Sevier River • San Rafael Swell • Little Rockies • Labyrinth Canyon **Dispersed recreation:** • Capitol Reef Gateway

Table 2-16. Recreation Decisions

				• E. Fork Sevier River See Map 2-11
Issue: Management of Recreational Opportunities in the E. Fork Sevier River (Including Otter Creek Reservoir)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue managing the area as a part of the ERMA in cooperation with the Utah Division of Parks and Recreation (Otter Creek State Park).	**Otter Creek Reservoir SRMA** Establish the 3,200 acres of public land adjacent to Otter Creek Reservoir as an SRMA (Map 2-8). • Manage the SRMA to provide a roaded natural experience, providing users the opportunity to interact with each other in developed sites while providing some chance of privacy. • Provide a moderate level of access for people with disabilities. • Provide some facilities for user comfort. Allow site modifications if needed. • Provide simple way-side interpretive exhibits.	• Manage the area as a part of the ERMA in cooperation with the Utah Division of Parks and Recreation. • If warranted by demand, enhance and expand recreation opportunities and facilities such as campgrounds, water, restrooms, and other recreation, picnic, and trailhead facilities.	Manage the area as a part of the ERMA in cooperation with the Utah Division of Parks and Recreation.	**East Fork of the Sevier River SRMA** Establish the East Fork of the Sevier River SRMA (59,500 acres) • Manage lands around Otter Creek Reservoir for dispersed recreational uses in cooperation with the Utah Division of Park and Recreation. • Manage non-WSA lands with wilderness characteristics in and around Kingston Canyon for primitive recreation opportunities. • Manage remaining lands for a roaded natural experience, providing users the opportunity to interact with each other in developed sites while providing some chance of privacy. • Manage the East Fork of the Sevier River in cooperation with the UDWR to enhance the blue ribbon fishing opportunities • Enhance, expand and market recreation

Table 2-16. Recreation Decisions

				opportunities and facilities such as the Paiute ATV Trail, campgrounds, water, restrooms, and other recreation, picnic, and trailhead facilities as a regional destination location.
Continue to manage the area as open to OHV use.	• Limit OHV use in the SRMA to designated routes and trails east of the reservoir. • Provide an OHV open area west of the reservoir.	Limit OHVs to designated routes, according to the area designations shown in Section 2.6.2.4, Travel Management.		Close non-WSA lands with wilderness characteristics to off-highway vehicle use. Elsewhere in the SRMA, limit vehicles to designated routes. Allow permitted access, where needed, to range developments and mining claims as identified in the activity plan.
Not applicable.	Complete an SRMA activity plan within five years of RMP Record of Decision (ROD).	Not applicable.	Not applicable.	Complete an SRMA activity plan within five years of RMP Record of Decision.
Issue: Management of Recreational Opportunities in the Factory Butte Area				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue managing the Factory Butte area as part of the ERMA.	**Factory Butte SRMA** Identify 199,700 acres of public land as the Factory Butte SRMA (Map 2-8) to provide a motorized recreational experience that involves a high degree of self-reliance, challenge, and risk in a natural setting. • Allow moderate to extensive landscape modifications. • Provide limited signing and interpretation.	**Factory Butte SRMA** Identify 2,600 acres of public land as the Factory Butte SRMA (Map 2-9) to provide a motorized recreational experience that involves a high degree of self-reliance, challenge, and risk in a natural setting. • Allow moderate to extensive landscape modifications. • Provide limited signing and interpretation.	Manage recreation values in the Factory Butte area as part of the ERMA in concert with the Badlands ACEC designation. • Develop no facilities to support recreation activities unless needed to meet ACEC objectives.	**San Rafael Swell SRMA** Identify 127,100 acres of public land in the Factory Butte area as part of the San Rafael Swell SRMA (Map 2-11) for primitive and semi-primitive recreational opportunities. Manage in coordination with the Price FO. • Preserve or retain the existing character of the landscape. • Develop facilities to

Table 2-16. Recreation Decisions

	• Develop facilities to provide for visitor health and safety and support the objectives of the SRMA.	• Develop facilities to provide for visitor health and safety and support the objectives of the SRMA.		support motorized and non-motorized recreation in a dispersed setting and to provide for health and safety, such as restrooms, staging areas, loading facilities, and parking areas. • Manage SRMA for a medium probability of experiencing solitude, closeness to nature, self-reliance, challenge, and risk in an unmodified and natural appearing environment with low interaction or evidence of other users. • Manage recreational activities to sustain natural resources while meeting social and economic needs, emphasizing the opportunity to experience solitude by recreational vehicle touring, camping, and hiking.
Continue to manage OHV use per The Notice of OHV Travel Restriction for motorized use in the Factory Butte area (See Section 2.6.2.4)	Designate SRMA as open to OHV use (Map 2-8).	Designate SRMA as open to OHV use (Map 2-9).	Close mesa tops to OHV use. Elsewhere in the ACEC, limit OHVs to designated trails to prevent irreparable damage to cultural resources, badlands topography, listed species, and scenic values (Map 2-10).	Close mesa tops and non-WSA lands with wilderness characteristics to OHV use. Elsewhere in SRMA, limit vehicles to designated routes. Allow permitted access, where needed, to range developments and mining claims as identified in the activity plan. (Map 2-11).
Not applicable.	Complete an SRMA activity plan within five years of the RMP Record of Decision.	Complete an SRMA activity plan within five years of the RMP Record of Decision.	Not applicable.	Complete an SRMA activity plan within five years of the RMP Record of Decision.

Table 2-16. Recreation Decisions

Issue: Management of Recreational Opportunities in the Big Rocks Area Near Loa				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue to manage the Big Rocks area as part of the ERMA.	**Big Rocks SRMA** Identify Big Rocks SRMA (9,300 acres) and provide for motorized and dispersed recreational use, including competitive motorized recreation events (Map 2-8). • Manage recreational activities to sustain natural resources while meeting social and economic needs, emphasizing the opportunity to experience solitude. • Provide access ranging from moderate to easy through a full range of motorized vehicle types with little self-reliance and a high or moderate level of interaction between users. • Provide signing and interpretation as needed. • Develop facilities to support motorized and dispersed recreational activities, such as restrooms, staging areas, loading facilities and parking areas.	**Big Rocks SRMA** Identify Big Rocks SRMA (265 acres) to provide for motorized recreational use, including competitive motorized recreation events (Map 2-9). • Manage motorized recreational activities to sustain natural resources while meeting social and economic needs. • Provide access ranging from moderate to easy through a full range of motorized vehicle types with little self-reliance and a high or moderate level of interaction between users. • Provide signing and interpretation as needed. • Develop facilities to support motorized and dispersed recreational activities, such as restrooms, staging areas, loading facilities, and parking areas.	Manage the Big Rocks area as part of the ERMA.	
Continue managing as an OHV open area.	Manage SRMA as an OHV open area.	Manage SRMA as an OHV open area.	Limit OHVs to designated routes according to Section 2.6.2.4, Travel Management.	

Table 2-16. Recreation Decisions

Not applicable	Complete an activity plan within five years of the RMP Record of Decision.	Complete an activity plan within five years of the RMP Record of Decision.	Not applicable	Not applicable
Issue: Management of Recreational Opportunities in the Dirty Devil/Robbers Roost Area				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue to manage area as part of ERMA.	**Dirty Devil SRMA** Identify the Dirty Devil/Robbers Roost area as an SRMA (290,000 acres, see Map 2-8) to provide for recreational experiences complementary with the remote and scenic nature and other resource values of the area. (SRMA includes the Dirty Devil WSA, Horseshoe Canyon WSA, Happy Canyon—French Springs WSA, and the Beaver Wash ACEC.) • Manage SRMA consistent with prescriptions identified in the Beaver Wash ACEC and direction provided in the IMP for WSAs • Manage SRMA for a high probability of experiencing solitude, closeness to nature, self-reliance, challenge, and risk in an unmodified and natural appearing environment with very low interaction or evidence of other users. • Provide opportunities for primitive and semi-primitive, non-motorized	**Dirty Devil SRMA** Identify the Dirty Devil/Robbers Roost area as an SRMA (290,000 acres, see Map 2-9) to provide for recreational experiences complementary with the remote and scenic nature and other resource values of the area. (SRMA includes Dirty Devil WSA, Horseshoe Canyon WSA, the Happy Canyon—French Springs WSA, and the suitable Dirty Devil Wild and Scenic River segment.) • Manage the portions of the WSAs within the SRMA according to the IMP. • Manage SRMA to protect the Wild and Scenic River outstandingly remarkable values • Manage SRMA for a high probability of experiencing solitude, closeness to nature, self-reliance, challenge, and risk in an unmodified and natural appearing environment with very low interaction or evidence of other users. • Provide opportunities for	**Dirty Devil SRMA** Identify the Dirty Devil/Robbers Roost area as an SRMA (375,800 acres, see Map 2-10) in concert with the Dirty Devil/North Wash ACEC to provide for recreational experiences complementary with the remote and scenic nature and other resource values of the area, notably the ACEC values. (SRMA includes the Dirty Devil WSA, Horseshoe Canyon WSA, Fiddler Butte WSA, Happy Canyon—French Springs WSA, proposed Dirty Devil/North Wash ACEC and the suitable Dirty Devil River and tributary Wild and Scenic River segments.) • Manage SRMA consistent with prescriptions identified in the Dirty Devil North Wash ACEC, with direction provided in the IMP for WSAs, and with protection for Wild and Scenic River outstandingly remarkable values. • Manage SRMA for a high probability of experiencing	**Dirty Devil SRMA** Identify the Dirty Devil/Robbers Roost area as an SRMA (383,900 acres, see Map 2-11) in concert with the Dirty Devil/North Wash ACEC to provide for recreational experiences complementary with the remote and scenic nature and other resource values of the area, notably the ACEC values. (SRMA includes the Dirty Devil WSA, Horseshoe Canyon WSA, Fiddler Butte WSA, Happy Canyon—French Springs WSA, proposed Dirty Devil/North Wash ACEC and the suitable Dirty Devil River and tributary Wild and Scenic River segments.) • Manage SRMA consistent with: – Prescriptions identified in the Dirty Devil North Wash ACEC, – Direction provided in the IMP for WSAs. – Protection of Wild and Scenic River outstandingly

Table 2-16. Recreation Decisions

	recreation within the Dirty Devil River corridor, its tributaries, and the Horseshoe Canyon drainage. • Provide semi-primitive motorized activity on designated routes. • Provide non-motorized access by means of trails, cross-country travel, and some primitive roads (access for people with disabilities would be most difficult). • Provide no site developments or only the minimum required for site protection, considering user comfort secondarily. • Provide no on-site interpretive facilities. • Manage to allow natural processes to achieve self-sustaining systems.	primitive and semi-primitive, non-motorized recreation within the Dirty Devil River corridor, its tributaries, and the Horseshoe Canyon drainage. • Provide semi-primitive motorized activity on designated routes. • Provide non-motorized access by means of trails, cross-country travel, and some primitive roads (access for people with disabilities would be most difficult). • Provide no site developments or only the minimum required for site protection, considering user comfort secondarily. • Provide no on-site interpretive facilities. • Manage to allow natural processes to achieve self-sustaining systems.	solitude, closeness to nature, self-reliance, challenge, and risk in an unmodified and natural appearing environment with very low interaction or evidence of other users. • Provide non-motorized access on trails, cross-country and some primitive roads (access for people with disabilities would be most difficult). • Provide no site developments or only the minimum required for site protection, with user comfort secondary in consideration. • Provide no on-site interpretive facilities. • Manage to allow natural processes to achieve self-sustaining systems.	remarkable values. – Protection of non-WSA lands with wilderness characteristics. • Manage SRMA for a high probability of experiencing solitude, closeness to nature, self-reliance, challenge, and risk in an unmodified and natural appearing environment with very low interaction or evidence of other users. • Provide non-motorized access on trails, cross-country and some primitive roads (access for people with disabilities would be most difficult). • Provide no site developments or only the minimum required for site protection, with user comfort considered secondarily. • Provide no on-site interpretive facilities. • Manage to allow natural processes to achieve self-sustaining systems
Manage OHVs according to existing area designations (Map 2-12).	Limit OHVs to designated routes.	Close canyons and portions of WSAs to OHV use. Limit OHVs to designated routes elsewhere. See Section 2.6.2.4.	Close WSAs and wild and scenic river segments to OHV use except for limited designation in Poison Springs/North Hatch Canyon road corridor. Limit OHV use to designated routes in the portion of the SRMA outside the ACEC. See Section 2.6.2.4.	Close WSAs and non-WSA lands with wilderness characteristics to vehicle use. Elsewhere in the SRMA, limit vehicles to designated roads and trails. Allow permitted access, where needed, to range developments and mining claims as identified in the activity plan. See Section 2.6.2.4.

Table 2-16. Recreation Decisions

Continue dealing with recreation use conflicts on a case-by-case basis.	Consider limiting recreational activities if they conflict with other resources or users, if necessary. (Limitations could include numbers of people, season of use, or area of use.)			
Not applicable	• Develop an activity plan for the SRMA within five years to address developed facilities, special recreation permits (SRPs), and special rules for protecting resources such as regulating fire use, camping, sanitation, backcountry permits, group size, spatial and seasonal restrictions. • Consider developing facilities to support the objectives of the SRMA, to provide for visitor health and safety, and for resource protection. • Locate facilities such as trailheads, instructional signs, group sites, and parking areas on the bench lands near existing access roads. • Address changes to OHV route designations, if needed. • Continue to issue current SRPs according to site-specific analysis already completed and according to existing permit stipulations. (SRPs are currently in place for commercial uses such as canyoneering, rock climbing, backpacking, hiking, guided hunting, and vehicle tours.) • Prior to completing the activity plan, issue additional similar SRPs, subject to the following stipulations– –Within one-half mile of canyon rims and below the rim, limit group size to 12 or fewer. Allow no commercial or organized group larger than 12 to operate in this area. –Allow only one commercial group to occupy the same side canyon at any one time. –Review itineraries prior to each operating season. –Allow no camping within one-half mile of Mexican spotted owl protected activity centers. Require all activities be consistent with the guidelines in the Mexican spotted owl recovery plan. –Allow no camping within 330 feet of any spring or within one-quarter mile of water sources in desert bighorn sheep use areas during the lambing season (April 15-June 15). –Stipulate additional requirements, if needed, to protect sensitive species and their critical habitats. • Conduct environmental analysis on SRP proposals that do not meet the criteria above or that are different than existing SRPs.			
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue managing oil and gas leasing according to existing land use plans and applicable law (Map 2-34).	Manage oil and gas leasing in SRMA (outside WSA) as follows— • Lease remaining areas subject to controlled surface use and/or timing limitations. (Map 2-35)	Manage oil and gas leasing in SRMA (outside WSAs and Wild and Scenic River corridors) as follows— • Lease VRM Class II areas and canyon rims within the viewshed of all canyons (approximately one-quarter mile), with major constraints (no surface occupancy).	Manage oil and gas leasing in SRMA (outside WSAs, Wild and Scenic River corridors, and VRM Class II areas within Poison Springs Canyon and Happy Canyon) as follows— • Lease the remaining VRM Class II areas and canyon rims within the viewshed of all canyons	Manage oil and gas leasing in SRMA (outside WSAs, Wild and Scenic River corridors and non-WSA lands with wilderness characteristics) as follows— • Lease the remainder of the SRMA as no surface occupancy or subject to controlled surface use and/or timing limitations.

Table 2-16. Recreation Decisions

		• Lease the remainder of the SRMA subject to controlled surface use and/or timing limitations. (Map 2-36)	(approximately one-quarter mile) with major constraints (NSO). • Lease the remainder of the SRMA subject to controlled surface use and/or timing limitations. (Map 2-37)	(Map 2-38).
Issue: Management of Recreational Opportunities on Lands Adjacent to Capitol Reef National Park				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue managing the Capitol Reef Gateway area as part of the ERMA. In addition— • Manage the Fremont Gorge WSA under the IMP. • Manage the eligible Fremont Gorge wild river segment to protect its outstandingly remarkable values.	Manage the Capitol Reef Gateway area as part of the ERMA. In addition— • Manage the Fremont Gorge WSA under the IMP.	**Capitol Reef Gateway SRMA** Identify the Capitol Reef Gateway as an SRMA (12,800 acres, see Map 2-9) to manage recreation opportunities associated with Capitol Reef National Park. SRMA boundary includes the Fremont Gorge WSA and the suitable Fremont Gorge wild river segment. • Manage the Fremont Gorge WSA under the IMP. • Manage the Fremont Gorge suitable wild river segment to protect its outstandingly remarkable values. • Manage the Capitol Reef Gateway SRMA for a moderate probability of experiencing solitude, closeness to nature and tranquility, high degree of self-reliance, challenge,	**Capitol Reef Gateway SRMA** Identify the Capitol Reef Gateway as an SRMA (12,800 acres, see Map 2-10) to manage recreation opportunities associated with Capitol Reef National Park. SRMA boundary includes Fremont Gorge WSA, the suitable wild river segment of the Fremont River, and the Fremont Gorge Cockscomb potential ACEC. • Manage appropriate portions of the SRMA in concert with the Fremont Gorge/Cockscomb ACEC. • Manage the Fremont Gorge WSA under the IMP. • Manage the Fremont Gorge eligible wild river segment to protect its outstandingly remarkable values. • Manage the Capitol Reef	**Capitol Reef Gateway SRMA** Identify the Capitol Reef Gateway as an SRMA (168,800 acres, see Map 2-11) to manage recreation opportunities associated with Capitol Reef National Park. SRMA boundary includes Fremont Gorge WSA, the suitable wild river segment of the Fremont River, portions of the Fremont Gorge Cockscomb potential ACEC and non-WSA lands with wilderness characteristics adjacent to the east boundary of the park. • Manage appropriate portions of the SRMA in concert with the Fremont Gorge/Cockscomb ACEC. • Manage the Fremont Gorge WSA under the IMP. • Manage the Fremont Gorge eligible wild river

Table 2-16. Recreation Decisions

		and risk in a predominately natural-appearing environment with low interaction but often evidence of other users. • Provide access into the area through motorized and non-motorized routes (access for people with disabilities would be difficult). • Allow facilities to reduce resource impacts, including campgrounds, picnic areas, restrooms, parking and staging areas, and interpretive facilities. • Explore concession opportunities for management and development of additional facilities.	Gateway SRMA for a moderate probability of experiencing solitude, closeness to nature and tranquility, high degree of self-reliance, challenge, and risk in a predominately natural-appearing environment with low interaction but often evidence of other users. • Access into the area and staging would involve a higher level of interaction with visitors, while travel through the interior would be through non-motorized means on trails or cross-country (access for people with disabilities would be difficult). • Provide no interior site developments and only the minimum required for site protection. • Provide no on-site interpretation facilities.	segment to protect its outstandingly remarkable values. • Protect non-WSA lands with wilderness characteristics. • Manage the Capitol Reef Gateway SRMA for a moderate probability of experiencing solitude, closeness to nature and tranquility, high degree of self-reliance, challenge, and risk in a predominately natural-appearing environment with low interaction but often evidence of other users. • Access into the area and staging would involve a higher level of interaction with visitors, while travel through the interior would be through non-motorized means on trails or cross-country (access for people with disabilities would be difficult). • Provide no interior site developments and only the minimum required for site protection. • Provide no on-site interpretation facilities.
Continue managing OHV use according to current land use plans.	Manage OHV use according to designations in Section 2.6.2.4, Travel Management.	• Close the Fremont Gorge WSA and Fremont Gorge wild river corridor to OHV use. • Limit OHVs to designated routes elsewhere.	• Close the Fremont Gorge WSA, Fremont Gorge wild river corridor, and VRM Class II areas to OHV use. • Limit OHVs to designated routes elsewhere.	• Close the Fremont Gorge WSA, Fremont Gorge wild river corridor, and non-WSA lands with wilderness characteristics to OHV use.

Table 2-16. Recreation Decisions

				• Elsewhere, limit OHVs to designated routes. Allow permitted access, where needed, to range developments and mining claims as identified in the activity plan.
Not applicable.		Complete a SRMA activity plan within five years of RMP Record of Decision.		
Issue: Management of Recreational Opportunities in the Sahara Sands Area				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue managing Sahara Sands as part of the ERMA.	**Sahara Sands SRMA** Identify Sahara Sands SRMA (12,300 acres) as indicated on Map 2-8. • Manage for a roaded natural recreational opportunity providing users the opportunity to interact with others in developed sites, with some chance of privacy. • Provide a managed OHV recreation experience, including cross-country all terrain travel. • Develop facilities for user comfort and convenience (as opposed to site protection) to promote and enhance recreation experience as a managed open area. This could include development of parking and staging areas, restrooms, and instructional signing, and could involve moderate or	• Manage Sahara Sands as part of the ERMA.		

Table 2-16. Recreation Decisions

	even heavy site modifications. • Explore concession opportunities for management and operation of recreation activity in the area.			
Continue managing as open to OHV use.	Designate as an OHV open area.	Manage OHV use according to area designations in Section 2.6.2.4, Travel Management.		
Not applicable.	Complete an SRMA activity plan within five years of RMP Record of Decision.	Not applicable.		
Issue: Management of Recreational Opportunities in the Henry Mountains				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue to manage the Henry Mountains as part of the ERMA. • Manage WSAs according to the IMP. • Manage Bull Creek Archaeological District to protect cultural resource values.	Manage the Henry Mountains as part of the ERMA. • Manage WSAs according to the IMP. • Manage Bull Creek Archaeological District to protect cultural resource values.	**Henry Mountains SRMA** Identify a Henry Mountains SRMA (533,900 acres—see Map 2-9). Area includes the Mount Ellen–Blue Hills WSA, Bull Mountain WSA, Mount Pennell WSA, Mount Hillers WSA, and Bull Creek Archaeological District. • Manage WSAs according to the IMP. • Manage Bull Creek Archaeological District to protect cultural resource values. • Emphasize opportunities for a combination of semi-primitive non-motorized	**Henry Mountains SRMA** Identify a Henry Mountains SRMA (533,900 acres—see Map 2-10). Area includes the Mount Ellen–Blue Hills WSA, Bull Mountain WSA, Mount Pennell WSA, Mount Hillers WSA, and Bull Creek Archaeological District. • Manage WSAs according to the IMP. • Manage Bull Creek Archaeological District to protect cultural resource values. • Manage the SRMA in concert with the Henry Mountains ACEC.	**Henry Mountains SRMA** Identify a Henry Mountains SRMA (479,500 acres—see Map 2-11). Area includes the Mount Ellen–Blue Hills WSA, Bull Mountain WSA, Mount Pennell WSA, Mount Hillers WSA, and Bull Creek Archaeological District. • Manage WSAs according to the IMP. • Manage Bull Creek Archaeological District to protect cultural resource values. • Protect non-WSA lands with wilderness characteristics.

Table 2-16. Recreation Decisions

		and motorized recreational experiences in a natural or predominately natural setting with a high or very high probability of experiencing solitude, closeness to nature, self-reliance, challenge, and risk (interactions between users would be low with minimal evidence of other users). • Provide facilities needed to protect resources and provide for visitor safety. • Provide signs, trails, trailhead parking, and staging areas to facilitate the use and enjoyment of the SRMA and protection of resources. • Maintain and improve non-motorized trails, including— –Panorama Knoll –Mount Ellen –Burro Wash –Cottonwood Wash –Sheets Gulch –Five Mile Wash • Designate areas for large group events and camping, including— –Starr Springs Campground –McMillan Spring Overlook –Sandy Creek Overlook –Apple Brush Flat –Turkey Haven	• Emphasize opportunities for a combination of semi-primitive non-motorized and motorized recreational experiences in a natural or predominately natural setting with a high or very high probability of experiencing solitude, closeness to nature, self-reliance, challenge, and risk (interactions between users would be low with minimal evidence of other users). • Provide facilities needed to protect resources and provide for visitor safety. • Provide signs, trails, trailhead parking, and staging areas to facilitate the use and enjoyment of the SRMA and protection of resources. • Maintain and improve non-motorized trails, including— –Panorama Knoll –Mount Ellen –Burro Wash –Cottonwood Wash –Sheets Gulch –Five Mile Wash • Designate areas for large group events and camping, including— –Starr Springs Campground –McMillan Spring Overlook	• Manage the SRMA in concert with the Henry Mountains ACEC. • Emphasize opportunities for a combination of semi-primitive non-motorized and motorized recreational experiences in a natural or predominately natural setting with a high or very high probability of experiencing solitude, closeness to nature, self-reliance, challenge, and risk (interactions between users would be low with minimal evidence of other users). • Provide facilities needed to protect resources and provide for visitor safety. • Provide signs, trails, trailhead parking, and staging areas to facilitate the use and enjoyment of the SRMA and protection of resources. • Maintain and improve non-motorized trails, including— –Panorama Knoll –Mount Ellen –Burro Wash –Cottonwood Wash –Sheets Gulch –Five Mile Wash • Designate areas for large group events and camping, including— –Starr Springs

Table 2-16. Recreation Decisions

			– Sandy Creek Overlook – Apple Brush Flat – Turkey Haven	Campground – McMillan Spring Overlook – Sandy Creek Overlook – Apple Brush Flat – Turkey Haven
Continue OHV area designations from current land use plans.	Manage according to area designations in Travel Management Section 2.6.2.4.	Manage according to area designations in Travel Management Section 2.6.2.4.	Manage according to area designations in Travel Management Section 2.6.2.4.	Close WSAs and non-WSA lands with wilderness characteristics to motorized vehicle use. Elsewhere, limit vehicles to designated routes. Allow permitted access, where needed, to range developments and mining claims as identified in the activity plan.
Not applicable.		Complete an SRMA activity plan within five years of the RMP Record of Decision.		
Issue: Management of Recreational Opportunities in the Sevier Canyon Area				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue to manage Sevier Canyon as part of the ERMA.			**Sevier Canyon SRMA** Identify a Sevier Canyon SRMA (7,500 acres. See Map 2-10.) • Manage the SRMA to protect the scenic values in and around Sevier Canyon. • Manage the SRMA in concert with the Sevier Canyon ACEC. • Provide opportunities for semi-primitive motorized and non-motorized recreation.	Continue to manage Sevier Canyon as part of the ERMA.

Table 2-16. Recreation Decisions

Continue OHV area designations from current land use plans.	Manage OHV use according to area designations in Section 2.6.2.4, Travel Management.	Limit OHV use to designated routes.		
Not applicable			Complete an SRMA activity plan within five years of the RMP Record of Decision.	Not applicable.
Issue: Management of Recreational Opportunities in Horseshoe Canyon				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue to manage as part of the ERMA.	**Dirty Devil SRMA** Manage as part of the Dirty Devil SRMA (see above)			**Labyrinth Canyon SRMA** • Manage 75,300 acres in the Horseshoe Canyon area as part of the Labyrinth Canyon SRMA in cooperation with the Price FO (Map 2-11) for primitive and semi-primitive recreational opportunities. • Access into the area and staging would involve a higher level of interaction with visitors, while travel through the interior would be through non-motorized means on trails or cross-country. • Provide no interior site developments and only the minimum required for site protection elsewhere. • Manage SRMA for a high probability of experiencing solitude, closeness to nature, self-reliance, challenge, and risk in an unmodified and natural appearing environment

Table 2-16. Recreation Decisions

		with very low interaction or evidence of other users. • Provide non-motorized access on trails, cross-country and some primitive roads. • Provide no on-site interpretation facilities.
Manage OHVs per direction in existing land use plan.	Manage OHVs per management direction in the Dirty Devil SRMA (above) and Section 2.6.2.4.	• Close WSAs and non-WSA lands with wilderness characteristics to OHVs. Elsewhere, limit vehicles to designated routes (see Section 2.6.2.4). • Allow permitted access, where needed, to range developments and mining claims as identified in the activity plan.
Not applicable	Complete an SRMA activity plan within five years of the RMP Record of Decision.	

Issue: Management of Recreational Opportunities in the Little Rockies				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue to manage as part of the ERMA.				**Little Rockies SRMA** • Manage the 64,000 acres of the Little Rockies SRMA for primitive and semi-primitive recreational opportunities (Map 2-11). • Access into the area and staging would involve a higher level of interaction with visitors, while travel through the interior would be through non-motorized means on trails or cross-

Table 2-16. Recreation Decisions

		country (access for people with disabilities would be difficult) • Provide no interior site developments and only the minimum required for site protection and public safety elsewhere. • Manage the SRMA in coordination with National Natural Landmark values. • Preserve or retain the existing character of the landscape. • Manage SRMA for a high probability of experiencing solitude, closeness to nature, self-reliance, challenge, and risk in an unmodified and natural appearing environment with very low interaction or evidence of other users.
Manage OHVs per direction in existing land use plan.	Manage OHVs per management direction in Section 2.6.2.4, Travel Management.	• Close WSAs and non-WSA lands with wilderness characteristics to OHVs. • Allow permitted access, where needed, to range developments and mining claims as identified in the activity plan.
Not applicable.		Complete an SRMA activity plan within five years of the RMP Record of Decision.

Table 2-16. Recreation Decisions

Issue: Management of Recreational Opportunities Around Yuba Reservoir				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue implementing the current Yuba Reservoir Management Plan.	Implement the Yuba Reservoir Management Plan, as revised by the Fillmore FO.			
Issue: Overall Special Recreation Permit (SRP) Guidance				
Management Actions				
Common to All Alternatives				
Permit no competitive events in WSAs.				
Issue: Criteria for Commercial Special Recreation Permits				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Current plans provide no guidance on SRPs. Issue SRPs on a case-by-case basis.	Authorize commercial use permits that provide recreational opportunities, enhance recreational experiences, and protect resources on a case-by-case basis, subject to environmental analysis.			
Issue: Criteria for Competitive Special Recreation Permits				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Current plans provide no guidance on competitive events.	• Authorize motorized and non-motorized competitive events consistent with OHV area and route designations on a case-by-case basis, subject to environmental analysis. • Permit no competitive events in the Dirty Devil/Robbers Roost SRMA.			
Issue: Criteria for Organized Group Special Recreation Permits				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Current plans provide no guidance on regulating organized groups.	Require SRPs for organized groups outside designated large group areas meeting any *one* of the following criteria– • Group occupation of an area lasts more than two hours; • Group includes fifty or more participants; • Group uses 10 or more vehicles			

Table 2-16. Recreation Decisions

Issue: Criteria for Vending				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Current plans provide no guidance on vending.	• Authorize vending on a case-by-case basis subject to environmental analysis in conjunction with organized events or when the vending is necessary to support protection of resources or recreational use. • Authorize vending permits for uses that enhance recreational experiences.	• Authorize vending on a case-by-case basis subject to environmental analysis in conjunction with organized events or when the vending is necessary to support protection of resources or recreational use. • Authorize vending permits for uses that enhance recreational experiences. • Do not authorize vending along scenic byways and backways.	• Allow no vending in conjunction with organized events. • Authorize no vending along scenic byways and backways.	

2.6.2.4 Travel Management

Table 2-17. Travel Management Decisions

Desired Outcomes (Goals and Objectives)
• Existing access would be maintained, where needed, to meet public and administrative needs including acquiring or maintaining necessary access across non-Federal land. • Compatible traditional, current, and future use of the land would be sustained by establishing a route system that contributes to protection of sensitive resources, accommodates a variety of uses, and minimizes user conflicts. • Public access, resource management, and regulatory needs would be considered through transportation planning. • Coordinate OHV management with other agencies where possible (U.S. Forest Service, National Park Service, State of Utah, counties and communities). • Provide opportunities for off-highway vehicle use on public lands.

Table 2-17. Travel Management Decisions

Issue: OHV Area Designations				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue existing OHV area designations as follows (Map 2-12)— • Open: 1,636,400 acres • Limited: 277,600 acres – Existing routes: 271,000 acres – Designated routes: 4,900 acres – Maintained routes: 1,700 acres • Closed: 214,000 acres Continue to manage OHV use per The Notice of OHV Travel Restriction for motorized use in the Factory Butte Area, published September 20, 2006 (2,602 acres open to OHV use, 142,023 acres limited to designated routes, and 3,843 acres of North Caineville Mesa closed to OHV use). This restriction will remain in effect until the RFO DRMP becomes final.	Provide motorized access to the public lands with the minimum restrictions needed to protect other resources. Designate areas as follows (Map 2-13)— • Open: 449,000 acres • Limited: 1,679,000 acres • Closed: 0 acres	Balance motorized access to public lands with other resource and resource use needs. Designate areas as follows (Map 2-14)— • Open: 8,400 acres • Limited: 1,909,200 acres • Closed: 210,400 acres	Restrict motorized access to public lands to protect other resources and resource uses. Designate areas as follows (Map 2-15)— • Open: 0 acres • Limited: 1,445,000 acres • Closed: 683,000 acres	Restrict motorized access to public lands to protect other resources and resource uses. Designate areas as follows (Map 2-16)— • Open: 0 acres • Limited: 972,800 acres • Closed: 1,155,200 acres
Management Actions				
Common to All Alternatives				
• Designate WSAs as closed or limited to OHV use (see Section 2.6.3.1, WSA decisions for details). • If OHV use in areas designated as open or limited causes threats or adverse impacts to resources, the BLM would take appropriate steps, including but not limited to use restrictions or closures, installation of additional signs and barricades, restoration of affected areas, etc.				

Table 2-17. Travel Management Decisions

Issue: Designation of Managed Open Areas				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue to manage existing open areas.	Designate the following managed open areas— • **Ticaboo Play Area** (19,000 acres. Cane Spring Desert east of Ticaboo)—Designate and manage as an OHV open area to accommodate existing use and growth, provide alternative modes of recreation adjacent to Glen Canyon National Recreation Area (NRA), and provide opportunities for economic development. • **Sahara Sands Play Area** (12,000 acres. Northeast of Hwy 95/276 junction)—Designate and manage as an OHV open area to provide a sand dune riding opportunity, accommodate existing use and growth, provide alternative modes of recreation adjacent to Glen Canyon NRA, and provide opportunities for economic development. • **Roost Play Area** (19,000 acres. Northwest of Antelope Valley)—Designate and manage as an OHV open area to provide a sand dune riding opportunity and to accommodate existing use	Designate the following managed open areas— • **Factory Butte Play Area** (2,600 acres.—Designate and manage as an OHV open area to provide a unique OHV riding experience on Mancos shale badlands to accommodate existing use and future growth. • **Big Rocks Trials Area** (270 acres.)—Designate and manage as an OHV open area to provide trials motorcycle/rock crawling OHV recreational opportunity. • **Glenwood Play Area** (3,300 acres.)—Designate as an OHV open area and manage as a community OHV area. • **Aurora Play Area** (310 acres.)—Designate as an OHV open area and manage as a community OHV area. • **Mayfield Open Area** (1,900 acres.)—Designate as an OHV open area and manage as a community OHV play area.	Designate no OHV open areas.	

Table 2-17. Travel Management Decisions

	and future growth. • **Factory Butte Play Area** (200,000 acres. Near Caineville and Notom)—Designate and manage as an OHV open area to provide a Mancos shale riding opportunity and to accommodate existing use and future growth. • **Miners Mountain** (9,500 acres. Southeast of Torrey)—Designate and manage as an OHV open area to accommodate dispersed camping, prospecting, firewood cutting, game retrieval, and other traditional uses of the land. • **Beas Lewis Flat** (4,500 acres. East of Torrey)—Designate and manage as an OHV open area to accommodate dispersed camping, prospecting, firewood cutting, game retrieval, and other traditional uses of the land. • **Big Rocks Dispersed Recreation Area** (9,000 acres. South of Loa)—Designate and manage as an OHV open area to accommodate trials motorcycle/rock crawling use and dispersed camping. • **Dry Wash** (6,500 acres. East of Antimony)—Designate and manage as		

Table 2-17. Travel Management Decisions

	an OHV open area to accommodate dispersed camping, prospecting, firewood cutting, game retrieval and other traditional uses of the land. • **Hunter Spring** (4,500 acres. West of Antimony.)—Designate and manage as an OHV open area to accommodate dispersed camping, prospecting, firewood cutting, game retrieval, and other traditional uses of the land. • **Otter Creek Reservoir** (1,000 acres. Public land around the reservoir.)—Designate and manage as an OHV open area west of the reservoir to accommodate dispersed camping and access to Otter Creek Reservoir and nearby OHV trails. • **Antelope Range/Kingston Canyon** (102,000 acres. Southern Sevier County and western Piute County.)—Designate and manage as an OHV open area to accommodate prospecting, firewood cutting, game retrieval, dispersed camping, and other traditional uses of the land. • **Glenwood Play Area**		

Table 2-17. Travel Management Decisions

	(3,500 acres. East of Glenwood.)—Designate as an OHV open area and manage as a community OHV area. • **Richfield to Aurora Play Area** (7,000 acres. West of I-70.)—Designate as an OHV open area and manage as a community OHV area. • **Rocky Ford Play Area** (12,500 acres. East of Rocky Ford Reservoir.)—Designate as an OHV open area and manage as a community OHV area. • **White Hills Play Area** (16,500 acres. North of Aurora.)—Designate as an OHV open area and manage as a community OHV area. • **Fayette Play Area**—(4,500 acres. West of Fayette.)—Designate as an OHV open area and manage as a community OHV area. • **Salina to Mayfield** (12,500 acres. North and east of Salina and west of Mayfield.)—Designate as an OHV open area and manage as a community OHV area. • **Gunnison Reservoir** (5,500 acres. West of Gunnison reservoir.)—Designate and manage as an OHV open area to provide access to the west		

Table 2-17. Travel Management Decisions

	side of the reservoir and an associated open OHV area.			
Issue: Management of OHV Play Areas Adjacent to Communities				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Consider and promote leasing OHV open areas near communities such as Caineville, Glenwood, Aurora and Mayfield under Recreation and Public Purposes Act (R&PP) authorities to encourage local management of OHV play areas. Generally these would include areas with existing surface disturbance. Requests would be considered on a case-by-case basis, subject to an environmental analysis.			Consider no requests for R&PP leases for OHV open play areas.	
Issue: Designate Areas as Closed to All Motorized and Mechanized Vehicular Traffic				
Management Actions				
Common to All				
• All motorized or mechanized travel would be prohibited in closed areas, with the following exceptions: –For emergency and other purposes as authorized under 43 CFR 8340.0-5(a)(2),(3),(4) and (5); –Minimum use necessary to exercise a valid existing right or authorized use.				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue existing closed areas. (Map 2-12) • **Wilderness Study Areas:** to prevent impairment of the areas' suitability for preservation as wilderness. –Little Rockies WSA –Portions of the Dirty Devil, Fiddler Butte, Mount Ellen/Blue Hills and Mount Hillers WSAs • **ACECs:** All of the existing ACECs as specified by management prescriptions to protect relevant and	Close no areas to motorized or mechanized use. (Map 2-13)	Close the following areas to motorized or mechanized use. (Map 2-14) • **Wilderness Study Areas:** to prevent impairment of the areas' suitability for preservation as wilderness. –Little Rockies WSA –Portions of the Dirty Devil, Fiddler Butte, Fremont Gorge, French Spring/Happy Canyon, Horseshoe Canyon North, Horseshoe Canyon South and Mount Ellen/Blue Hills	Close the following areas to motorized or mechanized use. (Map 2-15) • **Wilderness Study Areas:** All WSAs, to prevent impairment of the areas' suitability for preservation as wilderness. • **Wild and Scenic Rivers:** All segments proposed to protect outstandingly remarkable river-related values. (Refer to Section 2.6.3.2, Wild and Scenic River Decisions) • **ACECs:** As specified by management prescriptions	Close the following areas to motorized or mechanized use. (Map 2-16) • **Wilderness Study Areas:** All WSAs, to prevent impairment of the areas' suitability for preservation as wilderness. • **Non-WSA Lands with Wilderness Characteristics:** All non-WSA lands with wilderness characteristics, to protect their naturalness and opportunities for solitude and primitive recreation.

Table 2-17. Travel Management Decisions

important values. – North Caineville Mesa ACEC – South Caineville Mesa ACEC (overlaps a portion of Mt. Ellen/Blue Hills WSA) – Beaver Wash Canyon ACEC (overlaps a portion of Dirty Devil WSA) – Gilbert Badlands ACEC (overlaps a portion of Mt. Ellen/Blue Hills WSA) • **Trough Hollow:** to protect cultural resources in this area.		WSAs • **Wild and Scenic Rivers:** to protect outstandingly remarkable river-related values. (Refer to Section 2.6.3.2, Wild and Scenic River Decisions) – Fremont Gorge Suitable Wild River – Dirty Devil Suitable Wild River • **ACECs:** All potential ACECs as specified by management prescriptions to protect relevant and important values. (Refer to Section 2.6.3.3, ACEC Decisions) – North Caineville Mesa ACEC – Old Woman Front ACEC • **Special Recreation Management Areas:** Portions of the proposed SRMAs to retain the desired recreation setting and for consistency with other management decisions. (Refer to Section 2.6.2.3, Recreation Decisions) – Dirty Devil SRMA – Fremont Gorge SRMA	to protect relevant and important values. (Refer to Section 2.6.3.3, ACEC Decisions) – Old Woman Front ACEC – Rainbow Hills ACEC – A portion of the Badlands ACEC (mesa tops) – A portion of the Henry Mountains ACEC (No Man's Mesa) • **Special Recreation Management Areas:** Portions of the proposed SRMAs to retain the desired recreation setting, scenic values and for consistency with other management decisions. In areas where the proposed SRMAs overlap WSAs and/or Wild and Scenic Rivers, the decisions in those sections would apply to the SRMA. (Refer to Section 2.6.2.3, Recreation Decisions) – Dirty Devil SRMA – Henry Mountains SRMA – Capitol Reef Gateway SRMA	• **Wild and Scenic Rivers:** All segments proposed to protect outstandingly remarkable river-related values. (Refer to Section 2.6.3.2, Wild and Scenic River Decisions) • **ACECs:** As specified by management prescriptions to protect relevant and important values and for consistency with other management decisions. In areas where the potential ACECs overlap WSAs, non-WSA lands and/or Wild and Scenic Rivers, the decisions in those sections would apply to the ACEC. (Refer to Section 2.6.3.3, ACEC Decisions) – All of the Old Woman Front, Rainbow Hills, Dirty Devil, Horseshoe Canyon and Lower Muddy Creek ACECs – Portions of the Badlands, Bull Creek, Fremont Gorge/ Cockscomb, Henry Mountains, Kingston Canyon, Little Rockies, Quitchupah and Thousand Lakes Bench ACECs • **Special Recreation Management Areas:** As identified by management actions to retain the desired recreation

Table 2-17. Travel Management Decisions

				settings, scenic values and for consistency with other management decisions. In areas where the proposed SRMAs overlap WSAs, non-WSA lands and/or Wild and Scenic Rivers, the decisions in those sections would apply to the SRMA. (Refer to Section 2.6.2.3, Recreation Decisions) – Little Rockies SRMA – Portions of the E. Fork Sevier, San Rafael Swell, Dirty Devil, Capitol Reef Gateway, Henry Mountains and Labyrinth Canyon SRMAs
Issue: Designate Limited Areas				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue managing 277,600 acres identified on Map 2-12 as limited to OHV use as identified in current land use plans.	Manage 1,679,000 acres identified on Map 2-13 as limited to designated routes or designated routes with seasonal closures or size/width restrictions.	Manage 1,909,200 acres identified on Map 2-14 as limited to designated routes or designated routes with seasonal closures or size/width restrictions.	Manage 1,445,000 acres identified on Map 2-15 as limited to designated routes or designated routes with seasonal closures or size/width restrictions.	Manage 972,800 acres identified on Map 2-16 as limited to designated routes or designated routes with seasonal closures or size/width restrictions.
Issue: Route Designation and Vehicle Use within Limited Areas				
Management Actions				
Common to All				
• All cross-country (off-transportation system) motorized or mechanized travel would be prohibited in limited areas, with the following exceptions: – Minimum necessary to administer of the area; – For emergency and other purposes as authorized under 43 CFR 8340.0-5(a)(2),(3),(4) and (5). – Minimum use necessary to exercise a valid existing right or authorized use. • Coordinate OHV route designations with U.S. Forest Service, National Park Service, State of Utah, counties and communities, where possible.				

Table 2-17. Travel Management Decisions

- Rehabilitation of closed OHV routes would occur on a case-by-case basis as required to mitigate impacts to resources. Closed or non-designated routes would be allowed to rehabilitate naturally unless a specific resource impact was occurring that warranted expedited rehabilitation of the route (e.g., soil erosion, water quality concerns, and/or continued illegal use).
- Route designations are implementation decisions that are subject to change based upon future site-specific environmental analysis.

Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Where routes are designated for motorized use within WSAs, such use would be subject to the condition that it not impair the area's wilderness suitability (as that concept is described in the IMP). The continued use of these routes is conditioned on non-impairment of wilderness suitability. If such use were to impair wilderness suitability, BLM would take appropriate steps, including but not limited to use restrictions or closures, installation of additional signs and barricades, restoration of affected areas, etc. Further, in the event Congress were to designate a WSA as wilderness, unless Congress specified that specific route(s) were to remain open to motorized use, all routes in the wilderness area would be closed to such use.			Not applicable (all WSAs are closed to motorized travel).	
Designate existing, inventoried routes for motorized use per existing land use plan direction.	Designate routes for motorized use unless a clear threat to soil, watershed, wildlife (including special status species), vegetation, air, or other public land resources or uses is identified or to prevent impairment of an area's suitability for wilderness (within WSAs).	• Designate routes to minimize damage to soil, watershed, vegetation, air, or other public land resources. • Designate routes to minimize harassment of wildlife or significant disruption of wildlife habitats. Give special attention to protecting special status species and their habitats. • Designate routes to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated	• Designate routes to prevent damage to soil, watershed, vegetation, air, or other resources of the public lands. • Designate routes to prevent harassment of wildlife or significant disruption of wildlife habitats. Give special attention to protecting special status species and their habitats. • Designate routes to prevent conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated	• Designate routes to prevent damage to soil, watershed, vegetation, air, or other resources of the public lands, and to prevent impairment of wilderness characteristics • Designate routes to prevent harassment of wildlife or significant disruption of wildlife habitats. Give special attention to protecting special status species and their habitats. • Designate routes to prevent conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of

Table 2-17. Travel Management Decisions

		areas, taking into account noise and other factors. • Designate motorized routes in WSAs only if vehicle use in such locations would not result in impairment of an area's suitability for wilderness.	areas, taking into account noise and other factors. • Designate no routes within WSAs.	such uses with existing conditions in populated areas, taking into account noise and other factors. • Designate no routes within WSAs. • Designate no routes in non-WSA lands with wilderness characteristics.
Issue: Identify Routes Where Seasonal Closures Are Needed to Protect Deer and Elk				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Not specifically addressed in existing plans.	No specific restrictions within crucial habitat.	Limit OHV use to designated routes in deer and elk crucial winter range, except for Glenwood, Aurora, and Mayfield Managed Open Areas. Consider seasonal closure of designated routes on a case-by-case basis, subject to environmental analysis.	Close identified routes in deer and elk crucial winter range seasonally (December 1–April 15) to protect wildlife values.	
Issue: Identify Routes Where Seasonal Closures Are Needed to Protect Bison in the Henry Mountains.				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue seasonal (December 20–March 20) closures in bison crucial habitat at Swap Mesa and Cave Flat.	Limit OHV use to designated routes in bison crucial habitat.		Manage OHV use in bison habitat as closed or limited to designated routes, according to the prescriptions outlined in the Henry Mountains ACEC (Section 2.6.3.3).	
Summary of Route Designations, by Alternative				
Management Actions				
Common to All Alternatives				
Route designations are implementation decisions that are subject to change in the future based on site-specific environmental analyses.				

Table 2-17. Travel Management Decisions

Alternative N (No Action)	Alternative A	Alternative B (Preferred Alternative)	Alternative C	Alternative D
• Designated routes: 4,315 miles • Designated routes with seasonal closures or size/width restriction: 0 miles • Closed routes: 65 miles	• Designated routes: 4,063 miles • Designated routes with seasonal closures or size/width restriction: 249 miles • Closed routes: 68 miles See Map 2-17.	• Designated routes: 3,693 miles • Designated routes with seasonal closures or size/width restriction: 483 miles • Closed routes: 204 miles See Map 2-18.	• Designated routes: 2,601 miles • Designated routes with seasonal closures or size/width restriction: 591 miles • Closed routes: 1,188 miles See Map 2-19.	• Designated routes: 2,493 miles • Designated routes with seasonal closures or size/width restriction: 550 miles • Closed routes: 1,242 miles See Map 2-20.
Issue: Motor Vehicle Access for Parking/Staging in OHV Limited Areas Outside WSAs				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Place no restrictions on motorized use off of a designated route for the purposes of parking/staging.	Allow motor vehicles to pull off of a designated route up to 100 feet of either side of the centerline for the purposes of parking/staging.	Allow motor vehicles to pull off of a designated route up to 50 feet of either side of the centerline for the purposes of parking/staging.	Allow motor vehicles to pull off of a designated route up to 25 feet of either side of the centerline for the purposes of parking/staging.	
Issue: Motor Vehicle Access to Campsites in OHV Limited Areas Outside WSAs				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Place no restrictions on motorized access to campsites, per current land use plans.	• Allow motor vehicles to use existing spur routes for ingress and egress to established campsites within 300 feet of the centerline of designated routes. (Previous campsites can be distinguished by evidence of rock fire rings, old tent sites, and tracks from earlier vehicle access.) This does not authorize creation of new campsites or travel ways.	• Allow motor vehicles to use existing spur routes for ingress and egress to established campsites within 150 feet of designated routes. (Previous campsites can be distinguished by evidence of rock fire rings, old tent sites, and tracks from earlier vehicle access.) This does not authorize creation of new campsites or travel ways. • Prohibit motorized travel	• Designate campsites for motor vehicle use where compatible with other resources and resource uses. • Prohibit motorized travel ways between multiple campsites, establishment of motorized play areas, race tracks, or travel across wet meadows or riparian areas. • Prohibit motorized access to camping areas where conflicts with other resources are identified.	

Table 2-17. Travel Management Decisions

	• Prohibit motorized travel ways between multiple campsites, establishment of motorized play areas, race tracks, or travel across wet meadows or riparian areas. • Prohibit motorized access to camping areas where conflicts with other resources are identified.	ways between multiple campsites, establishment of motorized play areas, race tracks, or travel across wet meadows or riparian areas. • Prohibit motorized access to camping areas where conflicts with other resources are identified.		
Issue: Motor Vehicle Access to Campsites and for Parking/Staging in OHV Limited Areas Within WSAs.				
Management Action				
Common to All Alternatives				
Require vehicles to stay on designated routes within wilderness study areas, per IMP direction.			Not applicable (All WSAs are closed to motorized travel.)	
Issue: Game Retrieval				
Management Action				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Not specifically addressed in existing plans.	Allow use of non-motorized wheel carriers to retrieve game kills outside of WSAs.		Preclude the use of game carriers off of designated routes.	
Issue: Management of Paiute ATV Trail and Great Western Trail				
Management Action				
Common to All Alternatives				
Cooperatively manage with the U.S. Forest Service, State of Utah, and local governments the portions of the Paiute ATV Trail and Great Western Trail systems which lie on public lands managed by the RFO.				

2.6.2.5 Lands and Realty

Table 2-18. Lands and Realty Decisions

Desired Outcomes (Goals and Objectives)
• Retain public lands in Federal ownership, unless it is determined that disposal of a particular parcel will serve the public interest. • Emphasize a balanced program of disposals, acquisitions, and land exchanges in conducting land tenure adjustments. • Consider land tenure adjustments to improve land ownership patterns, accomplish resource management goals, and accommodate community expansion

Table 2-18. Lands and Realty Decisions

and economic development needs.

- Support alternative energy development purposes, such as wind and solar energy resources, and coordinate with other resource objectives.
- Use right-of-way corridors and collocate new proposals within existing sites or right-of-way areas, to the extent practical, in order to minimize adverse environmental impacts and the proliferation of separate rights-of-way.
- Public lands that enhance multiple-use management, allow access to public lands, or contain sensitive or rare resources, would be retained in Federal ownership.
- Lands or interests in lands would be acquired to complement existing resource values and uses.
- Lands or interests in lands that are difficult and/or expensive to manage, or are no longer needed for Federal purposes would be considered for disposal.

Issue: Land Tenure Adjustments General Direction

Management Actions

Common to All Alternatives

- Any form of land tenure adjustment (including but not limited to exchanges, *in lieu* selections, state grants, desert land entries, R&PP patents, easement acquisitions, etc.), except for FLPMA Section 203 sales, must meet one or more of the following criteria:
  - Be in the public interest and accommodate the needs of state, local or private entities, including needs for the economy, community growth and expansion, and be in accordance with other land use goals, objectives and planning decisions;
  - Result in a net gain of important and manageable resource values on public lands such as crucial wildlife habitat, significant cultural sites, high value recreation areas, high quality riparian areas, live water, special status species habitat, or areas key to maintenance of productive ecosystems;
  - Ensures the accessibility of public lands in areas where access is needed and cannot otherwise be obtained;
  - Be essential to allow effective management of public lands in areas where consolidation of ownership is necessary to meet resource management objectives;
  - Result in the acquisition of lands which serve a national priority as identified in national policy directives.
- In addition to the above criteria, all future land disposal actions would require a site-specific environmental analysis in accordance with NEPA. This subsequent analysis may reveal resource conditions that could not be mitigated to the satisfaction of the authorized officer and may, therefore preclude disposal.
- All land tenure adjustments must be in conformance with other decisions (goals, objectives, management actions) within this RMP.
- Habitat for listed and candidate T&E species would be retained in Federal ownership. Exceptions may be considered in exchanges with the State of Utah and others with consultation and concurrence with the USFWS.
- Surface lands identified for disposal with unpatented mining claims could be conveyed if the purchaser is the mining claimant, or the mining claims are relinquished if the purchaser is other than the mining claimant.
- Issue patents for existing shooting ranges (see Appendix 5, Table A5-11)). No portions of these R&PP patented lands, under any circumstances, would revert to the United States if any such portion was used for solid waste disposal or for any other purpose that may result in the disposal, placement, or release of any hazardous substance.
- Where consistent with the goals and objectives of the RMP, classify as suitable for lease and/or disposal under Section 7 of the Taylor Grazing Act of 1934, as amended, lands disposed of or leased under the R&PP Act, Desert Land Entry (DLE) Act, Color of Title, Carey Act, and state grants.
- The preferred method of managing OHV Open Play Areas located near communities is to issue a lease or patent under the R&PP Act, and have the areas managed by the relevant state, county, or local community.
- Pursue land acquisitions from willing sellers when lands—
  - Are within or adjacent to WSAs, ACECs, Wild and Scenic Rivers, or other special designations;
  - Are associated with key fisheries or wildlife habitats and riparian zones;

Table 2-18. Lands and Realty Decisions

–Provide linkage or public access to other public lands; –Have significant paleontological or cultural resources; –Provide high recreation or other significant resource or public values; –Are needed to improve manageability of public lands; • Give exchanges with the State of Utah priority consideration.				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• All eligible wild and scenic river segments (12 segments – 135 miles) would be retained in Federal ownership unless such action would benefit outstandingly remarkable values and improve wild and scenic rivers management potential.	• Not applicable.	• All suitable wild and scenic river segments (2 segments – 59 miles) would be retained in Federal ownership unless such action would benefit outstandingly remarkable values and improve wild and scenic rivers management potential.	• All suitable wild and scenic river segments (12 segments – 135 miles) would be retained in Federal ownership unless such action would benefit outstandingly remarkable values and improve wild and scenic rivers management potential.	
Issue: FLPMA Section 203 Sales				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue to offer for sale lands identified in the Mountain Valley MFP (280 of the acres identified are still available).	Approximately 13,400 acres of public land would be available for FLPMA Section 203 sales (as listed in Appendix 5 and shown on Maps 2-21 through 2-25) subject to NEPA compliance and consistent with other decisions in this RMP.		Consider no lands for FLPMA Section 203 sales.	
Issue: Withdrawals, Classifications, and Segregations				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Review existing withdrawals to determine whether they are serving the purposes for which they were withdrawn (existing withdrawals are listed in Table A5-7 in Appendix 5). • Any lands becoming unencumbered by withdrawals would be managed in a manner consistent with adjacent or comparable public land within the RFO. • Review existing classifications and segregations on a case-by-case basis to determine whether the classification or segregation is appropriate and should be continued, modified or terminated.				
Continue existing withdrawals (154,700 acres).	Continue existing withdrawals (154,700 acres).	Continue existing withdrawals (154,700 acres).	Continue existing withdrawals (154,700 acres).	Continue existing withdrawals (154,700 acres).

Table 2-18. Lands and Realty Decisions

Recommend withdrawing the following developed recreation sites from mineral entry— • Lonesome Beaver Campground • McMillan Spring Campground • Starr Springs Campground • Dandelion Flat Picnic Area • Hog Springs Picnic Area Recommend withdrawing the four existing ACECs (14,780 acres) from mineral entry. **Total acres: 169,480**		Recommend withdrawing the following areas from mineral entry (Map 2-26)— • North Caineville Mesa ACEC • Old Woman Front ACEC • Dirty Devil and Fremont (Fremont Gorge) suitable wild rivers within one-quarter mile of each side of the river • Developed recreation sites including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site and Koosharem Picnic Area New recommended acres: 21,500 **Total acres: 176,200**	Recommend withdrawing the following areas from mineral entry (Map 2-27)— • Rainbow Hills ACEC • Old Woman Front ACEC • All suitable Wild and Scenic Rivers within one-quarter mile each side of river • Developed Recreation Sites including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site and Koosharem Picnic Area Recommend withdrawing the VRM Class II portions of the following ACECs from mineral entry (see ACEC prescriptions for details)— • Dirty Devil/North Wash ACEC • Fremont Gorge/Cockscomb ACEC • Badlands ACEC • Henry Mountains ACEC • Horseshoe Canyon ACEC • Little Rockies ACEC New recommended acres: 176,400 **Total acres: 331,100**	Recommend withdrawing the following areas from mineral entry (Map 2-28)— • Rainbow Hills ACEC • Old Woman Front ACEC • All suitable Wild and Scenic Rivers within one-quarter mile each side of river • All areas identified as non-WSA lands with wilderness characteristics. • Developed recreation sites including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site and Koosharem Picnic Area Recommend withdrawing the VRM Class II portions of the following ACECs from mineral entry (see ACEC prescriptions for details)— • Dirty Devil/North Wash ACEC • Fremont Gorge/Cockscomb ACEC • Badlands ACEC • Henry Mountains ACEC • Horseshoe Canyon ACEC • Little Rockies ACEC New recommended acres: 749,200 **Total acres: 903,900**

Table 2-18. Lands and Realty Decisions

Issue: Managing Rights-of-Way				
Management Actions				
Common to All Alternatives				
In existing rights-of-way, authorize culinary water source developments (Culinary Water Sources Table A5-12 in Appendix 5) subject to valid existing rights and future land use authorizations to ensure that they do not lead to degradation, pollution, or contamination of water supply. When compatible, require multiple communication site users to share the same sites and buildings, and use the same facilities. See Existing Communication Sites Table A5-10 in Appendix 5. Consider obtaining easements across non-Federal land to— • Provide public access; • Enhance resource management in key fishery and wildlife habitats and riparian zones; • Cooperate with other Federal, state, and local governing agencies, organizations, tribes, and private individuals in obtaining right-of-way easements; • Enhance resource management.				
Issue: Right-of-Way Avoidance and Exclusion Areas				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Spatial and temporal restrictions outlined in Section 2.6.1.9, Fish and Wildlife Decisions, would apply to right-of-way construction and maintenance activities, by alternative. These restrictions do not apply to emergency maintenance.				
Manage the following as right-of-way avoidance areas (see Map 2-29): • WSAs • ACECs • Eligible wild and scenic river corridors • Areas closed to oil and gas leasing • Areas open to oil and gas leasing with no surface occupancy stipulations	Manage the following as right-of-way avoidance or exclusion areas (see Map 2-30): • WSAs • Areas closed to oil and gas leasing	Manage the following as right-of-way avoidance or exclusion areas (see Map 2-31): • WSAs • ACECs • Suitable wild and scenic river corridors • Areas closed to oil and gas leasing • Areas open to oil and gas leasing with no surface occupancy stipulations	Manage the following as right-of-way avoidance or exclusion areas (see Map 2-32): • WSAs • ACECs • Suitable wild and scenic river corridors • Areas closed to oil and gas leasing • Areas open to oil and gas leasing with no surface occupancy stipulations	Manage the following as right-of-way avoidance or exclusion areas (see Map 2-33): • WSAs • ACECs • Suitable wild and scenic river corridors • Non-WSA lands with wilderness characteristics • Areas closed to oil and gas leasing • Areas open to oil and gas leasing with no surface occupancy stipulations
Consider exceptions on a case-by-case basis if the proposed right-of-way would: • Not create substantial surface disturbances or cause only temporary impacts; • Be compatible with the resource values being protected by the restrictions; • Be consistent with IMP objectives (WSAs only); • Be consistent with management prescriptions for ACECs and wild and scenic rivers (Alternatives N, B, C and D); • Pose no irreversible or irretrievable impacts to ACEC relevant and important values or wild and scenic river outstandingly remarkable values (Alternatives N,				

Table 2-18. Lands and Realty Decisions

B, C and D); • Not impact the wilderness characteristics of the identified non-WSA lands with wilderness characteristics (Alternative D only).				
Issue: Managing Wind and Solar Energy Development				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Not specifically addressed in existing plans.	Authorization of any right-of-way for wind or solar energy development would incorporate best management practices and provisions contained in the Wind Energy Development Program Record of Decision (see Appendix 15 of this DRMP/DEIS and BLM 2005d) and BLM's Solar Energy Policy.			
Consider wind and solar energy exploration and development on a case-by-case basis.	Consider proposals for wind and solar energy exploration and development throughout the RFO with the following exceptions— • WSAs (right-of-way exclusion areas as per IMP)	Consider proposals for wind and solar energy development throughout the RFO except within the following areas- • WSAs (right-of-way exclusion areas as per IMP) • Dirty Devil and Fremont (Fremont Gorge) suitable wild river corridors • ACECs • Areas open to oil and gas leasing with no surface occupancy and areas closed to leasing. • VRM Class I and II areas • Migratory bird habitats and raptor nesting complexes • Threatened & Endangered Species habitats Consider proposals for wind and solar energy exploration throughout the RFO managed lands. Except for WSAs, exploration may be allowed within special management areas if the proposal would not adversely affect the resources of concern.	Consider proposals for wind and solar energy development throughout the lands administered by the RFO except within the following areas— • WSAs (right-of-way exclusion areas as per IMP) • Suitable Wild and Scenic River corridors • ACECs • Areas open to oil and gas leasing with no surface occupancy and areas closed to leasing • VRM Class I and II areas • Migratory bird habitats and raptor nesting complexes • Special status species habitats • Consider proposals for wind and solar energy exploration throughout the RFO managed lands. Except for WSAs, exploration may be allowed within special management areas if the proposal would not	Consider proposals for wind and solar energy development throughout the lands administered by the RFO except within the following areas— • WSAs (right-of-way exclusion areas as per IMP) • Non-WSA lands with wilderness characteristics • Suitable Wild and Scenic River corridors • ACECs • Areas open to oil and gas leasing with no surface occupancy and areas closed to leasing. • VRM Class I and II areas • Migratory bird habitats and raptor nesting complexes • Special status species habitats Consider proposals for wind and solar energy exploration throughout the RFO managed lands. Except for WSAs, exploration may be allowed within special management areas if the proposal would not adversely

Table 2-18. Lands and Realty Decisions

			adversely affect the resources of concern.	affect the resources of concern.
Issue: Transportation and Utility Corridors				
Management Actions				
Common to All Alternatives				
• To minimize adverse environmental impacts and the proliferation of separate rights-of-way, use common rights-of-way whenever possible, including collocation of new utility transmission lines and other facilities within existing utility and highway corridors. • Decisions on designation of energy corridors contained within the "West-wide Energy Corridor Programmatic EIS" currently being developed separately from this RMP analysis that affect public lands in the RFO will be carried forward into the Richfield RMP, or will amend the Richfield RMP.				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Designate no transportation and utility corridors.	Designate those transportation and utility corridors listed in Appendix 5, Table A5-8.			
Issue: Leases (Including R&PP Leases), Permits, and Easements				
Management Actions				
Common to All Alternatives				
Consider authorizing leases, permits, and easements that are compatible with other decisions throughout this RMP.				

2.6.2.6 Minerals and Energy

Table 2-19. Minerals and Energy Decisions

Desired Outcomes (Goals and Objectives)
• Manage conservation of leasable mineral resources utilizing appropriate best management practices, and without compromising the long-term health and diversity of public lands. • Manage mining claim location, prospecting, and mining operations in a manner that would not cause unnecessary or undue degradation of public lands and resources. • Provide salable minerals needed for community and economic purposes while minimizing impacts to other resource values. • Encourage and facilitate the development by private industry of public land mineral resources in a manner that satisfies national and local needs and provides for economical and environmentally sound exploration, extraction, and reclamation practices utilizing appropriate best management practices. • Support the domestic need for energy resources.

Table 2-19. Minerals and Energy Decisions

Issue: Management of Fluid Mineral Leasing (Oil and Gas, Coal Bed Natural Gas)				
Management Actions				
Common to All Alternatives				
• Issue oil and gas leases and allow for oil and gas exploration and development. • WSAs are closed to leasing, pursuant to the Federal onshore Oil and Gas Leasing Reform Act of 1987. • To the extent allowed by a site-specific environmental analysis that justifies a constraint, consistent with 43 CFR 3101.1-2, and consistent with the terms of an existing lease, the constraints and requirements for leasing implemented in this RMP would be applied to leases that were authorized prior to the signing of the Record of Decision and the approval of the RMP. • Manage the following sites as closed to leasing: –Incorporated municipalities • Manage the following additional sites as open to leasing with no surface occupancy, except as otherwise provided in other management decisions: –All cemeteries –Culinary water sources –Landfills – existing and closed –Lands managed under a Recreation and Public Purpose Act lease –Sites listed on the National Register of Historic Places –Developed recreation sites –BLM Administrative sites • Lease split-estate lands according to BLM Resource Management Plan stipulations for adjacent or nearby public lands or plans of other surface management agencies as consistent with Federal laws, 43 CFR 3101, and the surface owner's rights.				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Area closed to leasing: 459,700 acres	Area closed to leasing: 446,900 acres	Area closed to leasing: 450,500 acres	Area closed to leasing: 586,300 acres	Area closed to leasing: 1,160,500 acres
Manage fluid mineral leases as shown on Map 2-34— • Areas open to leasing with standard lease terms: 1,236,500 acres • Areas open to leasing subject to controlled surface use and/or timing limitations: 409,200 acres • Areas open to leasing subject to no surface occupancy: 22,600 acres	Manage fluid mineral leases as shown on Map 2-35— • Areas open to leasing with standard lease terms: 860,600 acres • Areas open to leasing subject to controlled surface use and/or timing limitations: 820,500 acres • Areas open to leasing subject to no surface occupancy: 0 acres	Manage fluid mineral leases as shown on Map 2-36— • Areas open to leasing with standard lease terms: 545,000 acres • Areas open to leasing subject to controlled surface use and/or timing limitations: 1,021,600 acres • Areas open to leasing subject to no surface occupancy: 110,900 acres	Manage fluid mineral leases as shown on Map 2-37— • Areas open to leasing with standard lease terms: 491,900 acres • Areas open to leasing subject to controlled surface use and/or timing limitations: 901,100 acres • Areas open to leasing subject to no surface occupancy: 148,800 acres	Manage fluid mineral leases as shown on Map 2-38— • Areas open to leasing with standard lease terms: 290,200 acres • Areas open to leasing subject to controlled surface use and/or timing limitations: 634,000 acres • Areas open to leasing subject to no surface occupancy: 43,300 acres

Table 2-19. Minerals and Energy Decisions

Alternative N (No Action)	Alternative A	Alternative B (Preferred Alternative)	Alternative C	Alternative D
Geophysical operations are subject to the oil and gas leasing categories.	Geophysical operations under 43 CFR 3150 are subject to the oil and gas leasing restrictions with the following exception: • Geophysical operations proposed for lands that are designated as NSO or closed to leasing may be considered for approval when (1) the circumstances or relative resource values in the area have changed, (2) less restrictive requirements could be developed to protect the resource of concern, or (3) operations could be conducted without causing unacceptable impacts to the resource of concern.			
Issue: Management of Geothermal Resources				
Management Actions				
Common to All Alternatives				
Lease split-estate lands according to BLM Resource Management Plan stipulations for adjacent or nearby public lands or plans of other surface management agencies as consistent with Federal laws, 43 CFR 3101, and the surface owner's rights.				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue to allow geothermal leasing on a case-by-case basis. Use the oil and gas leasing designations as a guide for geothermal resources.	• Leasing of geothermal resources would be in conformance with the oil and gas leasing restrictions (open, open with minor constraints, open with major constraints, and closed) for oil and gas leasing, consistent with the authorities granted at 43 CFR 3200, including 3201 and 3250. • Note: exploration operations under 43 CFR 3250 proposed for lands that are designated as NSO or closed to leasing may be considered for approval when (1) the circumstances or relative resource values in the area have changed, (2) less restrictive requirements could be developed to protect the resource of concern or (3) operations could be conducted without causing unacceptable impacts to the resource or concern.			
Issue: Management of Tar Sands Areas				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Decisions for leasing tar sands will be determined in the Record of Decision and associated *Programmatic Environmental Impact Statement on Oil Shale and Tar Sands Leasing*, being conducted by the BLM separately from this analysis. Leasing for tar sands would be subject to the oil and gas leasing restrictions.				
Issue: Surface Mining of Coal				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Consider leasing coal resources on the following lands identified in the existing land use plans as acceptable— • 25,446 acres of Federal	• Consider applications for exploration licenses for lands that are subject to leasing as defined at 43 CFR 3400.2. Licenses would be subject to the surface disturbing restrictions and the provisions for exceptions, modifications, and waivers, similar to the oil and gas restrictions as consistent with the regulations at 43 CFR 3400. • Consider proposals for coal leasing on public lands determined to be acceptable for further consideration for leasing in the coal unsuitability analysis (Appendix 8), if and when there is interest. Prior to leasing, complete a multiple use analysis (43			

Table 2-19. Minerals and Energy Decisions

mineral estate in the Henry Mountains are identified as acceptable for consideration of coal leasing by surface mining methods. • 30,052 acres of Federal mineral estate in the Wasatch Plateau and Emery coal fields are identified as acceptable for consideration of coal leasing by surface mining methods.	CFR 3420.1 (3)), consult with other surface owners (43 CFR 3420.1-5 (4) (i)), and address other applicable requirements of 43 CFR 3400 Coal Management. —In the Henry Mountains coal field, 36,028 acres are acceptable for consideration for leasing by surface mining methods. —In the Emery coal field, 0 acres are acceptable for consideration by surface mining methods.			
Consider no coal leasing proposals in VRM Class I areas. VRM Classes II, III and IV areas would be subject to coal exploration and development mitigation requirements, with VRM Class II being most restrictive and VRM Class IV least restrictive.			Consider no coal leasing proposals in VRM Class I or II areas.	• Consider no coal leasing proposals in VRM Class I or II areas. • Consider no coal leasing proposals in non-WSA lands with wilderness characteristics.
Issue: Subsurface Mining of Coal				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Consider leasing coal resources on the following lands currently identified as acceptable— • 107,414 acres of Federal mineral estate in the Henry Mountains are identified as acceptable for consideration of leasing by underground mining with 19,255 acres subject to no surface facilities. • 73,952 acres of Federal	• Consider applications for exploration licenses for lands that are subject to leasing as defined at 43 CFR 3400.2. Licenses would be subject to the surface disturbing restrictions and the provisions for exceptions, modifications, and waivers, similar to the oil and gas restrictions as consistent with the regulations at 43 CFR 3400. • Consider proposals for coal leasing on public lands determined to be acceptable for further consideration for leasing in the coal unsuitability analysis (Appendix 8), if and when there is interest. Prior to leasing, complete a multiple use analysis (43 CFR 3420.1 (3)), consult with other surface owners (43 CFR 3420.1-5 (4) (i)), and address other applicable requirements of 43 CFR 3400 Coal Management. —In the Henry Mountains coal field, 50,512 acres of BLM lands are identified as having development potential by underground mining methods. —In the Emery coal field, 9,624 acres of BLM lands and 3,542 acres of National Forest are identified as having development potential by underground mining methods.			

Table 2-19. Minerals and Energy Decisions

mineral estate in the Wasatch Plateau and Emery coal fields are identified as acceptable for consideration of leasing with 43,567 acres subject to no surface facilities.				
Consider no coal leasing proposals in VRM Class I areas. VRM Class II, III and IV areas would be subject to coal exploration and development mitigation requirements, with VRM Class II being most restrictive and VRM IV least restrictive.			Consider no coal leasing proposals in VRM Class I or II areas.	• Consider no coal leasing proposals in VRM Class I or II areas. • Consider no coal leasing proposals in non-WSA lands with wilderness characteristics.
Issue: Management of Non-Energy Solid Leasable Minerals				
Management Actions				
Common to All Alternatives				
Mineral use authorizations for non-energy solid leasable minerals include: prospecting permits, exploration licenses, preference right leases, competitive leases, fringe acreage leases, lease modifications, and use permits. As used herein, the term *leasing* is used to refer to any of the mineral use authorizations, because if the area is not open to leasing, then an exploration authorization or lease modification would not be considered. Any mineral use authorization issued after the RMP is approved would be subject to the stipulations developed in the RMP. The open and closed areas for leasing of non-energy solid leasable minerals would be the same as provided for oil and gas leasing, including exceptions, modifications, and waivers.				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Continue to prohibit leasing in WSAs, within one-quarter mile of eligible wild and scenic rivers, and within ACECs. • Leasing is allowed where it is consistent with the existing land use plans and has been addressed in a NEPA analysis.	• Manage leasing as shown on Map 2-39. • Areas closed to leasing (WSAs): –446,900 acres • Areas open to leasing subject to standard conditions of approval: –860,600 acres • Areas open to leasing subject to controlled surface use and/or timing limitations:	• Manage leasing as shown on Map 2-40. • Prohibit leasing in WSAs, within one-quarter mile of the two wild and scenic rivers recommended as suitable, and in North Caineville Mesa ACEC. • Areas closed to leasing: –450,500 acres • Areas open to leasing subject to standard conditions of approval:	• Manage leasing as shown on Map 2-41. • Prohibit leasing in WSAs, within one-quarter mile of the 12 wild and scenic rivers recommended as suitable, and within the following ACECs: –Dirty Devil/North Wash ACEC –Fremont Gorge/Cockscomb ACEC	• Manage leasing as shown on Map 2-42. • Prohibit leasing in WSAs, non-WSA lands with wilderness characteristics, within one-quarter mile of the 12 wild and scenic rivers recommended as suitable, and within the following ACECs: –Dirty Devil/North Wash ACEC –Fremont Gorge/Cockscomb

Table 2-19. Minerals and Energy Decisions

	–820,500 acres • Areas open to leasing subject to no surface occupancy: –0 acres	–545,000 acres • Areas open to leasing subject to controlled surface use and/or timing limitations: –1,021,600 acres • Areas open to leasing subject to no surface occupancy: –110,900 acres	–Badlands ACEC –Henry Mountains ACEC –Horseshoe Canyon ACEC –Little Rockies ACEC –Rainbow Hills ACEC • Areas closed to leasing: –586,300 acres • Areas open to leasing subject to standard conditions of approval: –491,900 acres • Areas open to leasing subject to controlled surface use and/or timing limitations: –901,100 acres • Areas open to leasing subject to no surface occupancy: –148,800 acres	ACEC –Badlands ACEC –Henry Mountains ACEC –Horseshoe Canyon ACEC –Little Rockies ACEC –Rainbow Hills ACEC • Areas closed to leasing: –1,160,500 acres • Areas open to leasing subject to standard conditions of approval: –290,200 acres • Areas open to leasing subject to controlled surface use and/or timing limitations: –634,000 acres • Areas open to leasing subject to no surface occupancy: –43,300 acres
Issue: Management of Locatable Minerals				
Management Actions				
Common to All Alternatives				
Existing operations would continue to be subject to the stipulations developed for the notice or plan of operations. The BLM would evaluate all operations authorized by the mining laws in the context of its requirement to prevent unnecessary and undue degradation of Federal lands and resources and the non-impairment standards of the Federal regulations at 43 CFR 3802 and the IMP for WSAs. Consistent with the rights afforded claimants under the mining laws, operations conducted after the RMP is approved would be required to conform to the stipulations developed in the RMP and as generally provided in the oil and gas stipulations. The oil and gas stipulations would be a general guideline and may not apply uniformly to all operations under the mining laws. Operations on BLM-administered lands open to mineral entry must be conducted in compliance with all of the BLM's surface management regulations The BLM surface management regulations apply to public lands, including split estate lands where the minerals are reserved to the U.S., but the regulations do not apply to surface lands managed by other Federal agencies. A withdrawal may be necessary if a no surface occupancy stipulation without provisions for exceptions, modifications, and waivers for oil and gas leasing is applied as a management prescription for locatable minerals. All public lands with Federal mineral estate are open to mining claim location unless specifically withdrawn from mineral entry by Secretarial order or by a public land law. Therefore, other than the existing withdrawals and those recommended by this RMP, all public lands within the RFO remain open to mineral entry under the mining laws. The BLM may recommend future withdrawals in areas identified as closed or with a no surface occupancy stipulation for oil and gas leasing, if it becomes necessary to prevent unacceptable resource impacts.				

Table 2-19. Minerals and Energy Decisions

Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Continue to allow location, exploration, and development of locatable minerals while preventing unnecessary and undue degradation of other resources and preventing impairment to wilderness suitability of WSAs. • Continue existing withdrawals (154,700 acres). Recommend withdrawing four existing ACECs (14,780 acres) from mineral entry. **Total acres: 169,480**	• Allow location, exploration, and development of locatable minerals while preventing unnecessary and undue degradation of other resources and preventing impairment to wilderness suitability of WSAs. • Continue existing withdrawals (154,700 acres). **Total acres: 154,700**	• Allow location, exploration, and development of locatable minerals on public lands while preventing unnecessary and undue degradation of other resources and preventing impairment to wilderness suitability of WSAs. • Continue existing withdrawals (154,700 acres). Recommend withdrawing the following areas from mineral entry: – Developed Recreation Sites including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, and Koosharem Picnic Area – North Caineville Mesa ACEC – Old Woman Front ACEC – Dirty Devil and Fremont Gorge Suitable Wild and Scenic Rivers (within a one-quarter mile corridor along each side of the	• Allow location, exploration, and development of locatable minerals on public lands while preventing unnecessary and undue degradation of other resources and preventing impairment to wilderness suitability of WSAs. • Continue existing withdrawals (154,700 acres). Recommend withdrawing the following areas from mineral entry: – Developed Recreation Sites including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, and Koosharem Picnic Area – Dirty Devil/North Wash ACEC (VRM Class II area) – Fremont Gorge/Cockscomb ACEC (VRM Class II area) – Badlands ACEC (VRM	• Allow location, exploration, and development of locatable minerals on public lands while preventing unnecessary and undue degradation of other resources and preventing impairment to wilderness suitability of WSAs. • Continue existing withdrawals (154,700 acres). Recommend withdrawing the following areas from mineral entry: – Developed Recreation Sites including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, and Koosharem Picnic Area – Dirty Devil/North Wash ACEC (VRM Class II area) – Fremont Gorge/Cockscomb ACEC (VRM Class II area) – Badlands ACEC (VRM

Table 2-19. Minerals and Energy Decisions

		river) The proposed new withdrawals would encompass 21,500 acres. **Total acres: 176,200**	Class II area) – Henry Mountains ACEC (VRM Class II area) – Horseshoe Canyon ACEC (VRM Class II area) – Little Rockies ACEC (VRM Class II area) – Rainbow Hills ACEC – All suitable Wild and Scenic Rivers within a one-quarter mile corridor along each side of the river The proposed new withdrawals would encompass 176,400 acres. **Total acres: 331,100**	Class II area) – Henry Mountains ACEC (VRM Class II area) – Horseshoe Canyon ACEC (VRM Class II area) – Little Rockies ACEC (VRM Class II area) – Rainbow Hills ACEC – All suitable Wild and Scenic Rivers within a one-quarter mile corridor along each side of the river – All non-WSA lands with wilderness characteristics. The proposed new withdrawals would encompass 749,200 acres. **Total acres: 903,900**
Issue: Management of Salable Minerals (Mineral Materials)				
Management Actions				
Common to All Alternatives				
Authorizations for mineral materials include: exploration permits, exclusive sale contracts, free use permits, community pits and common use areas. As used herein, the term *disposal* is used as inclusive of any mineral material authorization, because exploration permits would not be issued in areas closed to disposals. Existing disposals would continue to be subject to the existing stipulations and conditions for that disposal. Disposals issued or designated after the RMP is approved would be subject to the stipulations developed in the RMP. The open and closed areas for mineral material disposals would be the same as provided for oil and gas leasing, including exceptions, modifications, and waivers.				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue to prohibit disposal of mineral materials in WSAs, within one-quarter mile of eligible wild and scenic rivers, and ACECs. Allow mineral material disposals on a case-by-case basis subject to site-specific	• Manage disposal of mineral materials as shown on Map 2-39. • Areas closed to mineral material disposals (WSAs): – 446,900 acres	• Manage disposal of mineral materials as shown on Map 2-40. • Allow no disposal of mineral materials in WSAs, within one-quarter mile of suitable wild and scenic rivers, and in North	• Manage disposal of mineral materials as shown on Map 2-41. • Allow no disposal of mineral materials in WSAs, within one-quarter mile of suitable wild and scenic rivers, and within	• Manage disposal of mineral materials as shown on Map 2-42. • Allow no disposal of mineral materials in WSAs, non-WSA lands with wilderness characteristics, within one-

Table 2-19. Minerals and Energy Decisions

environmental analysis outside of these areas.	• Areas open to disposal of mineral materials subject to standard conditions of approval: –860,600 acres • Areas open to disposal of mineral materials subject to controlled surface use and/or timing limitations: –820,500 acres • Areas open to disposal of mineral materials subject to no surface occupancy: –0 acres	Caineville Mesa ACEC. • Areas closed to mineral material disposals: –450,500 acres • Areas open to disposal of mineral materials subject to standard conditions of approval: –545,000 acres • Areas open to disposal of mineral materials subject to controlled surface use and/or timing limitations: –1,021,600 acres • Areas open to disposal of mineral materials subject to no surface occupancy: –110,900 acres	the following ACECs: –Dirty Devil/North Wash ACEC –Fremont Gorge/Cockscomb ACEC –Badlands ACEC –Henry Mountains ACEC –Horseshoe Canyon ACEC –Little Rockies ACEC –Rainbow Hills ACEC • Areas closed to mineral material disposals: –586,300 acres • Areas open to disposal of mineral materials subject to standard conditions of approval: –491,900 acres • Areas open to disposal of mineral materials subject to controlled surface use and/or timing limitations: –901,100 acres • Areas open to disposal of mineral materials subject to no surface occupancy: –148,800 acres	quarter mile of suitable wild and scenic rivers, and within the following ACECs: –Dirty Devil/North Wash ACEC –Fremont Gorge/Cockscomb ACEC –Badlands ACEC –Henry Mountains ACEC –Horseshoe Canyon ACEC –Little Rockies ACEC –Rainbow Hills ACEC • Areas closed to mineral material disposals: –1,160,500 acres • Areas open to disposal of mineral materials subject to standard conditions of approval: –290,200 acres • Areas open to disposal of mineral materials subject to controlled surface use and/or timing limitations: –634,000 acres • Areas open to disposal of mineral materials subject to no surface occupancy: –43,300 acres

2.6.3 Special Designations

2.6.3.1 Wilderness Study Areas

Table 2-20. Wilderness Study Areas Decisions

Desired Outcomes (Goals and Objectives)				
Continue to manage wilderness study areas (WSAs) in a manner that does not impair their suitability for designation as wilderness in accordance with FLPMA Section 603 and the *Interim Management Policy for Lands Under Wilderness Review*.				
Issue: Interim Management of Wilderness Study Areas				
Management Action				
Common to All Alternatives				
Manage WSAs according to the IMP (BLM-H-8550-1). The BLM is statutorily (FLPMA Section 603(c)) required to manage these areas to protect their suitability for Congressional designation into the National Wilderness Preservation System unless and until Congress either designates an area as wilderness or releases it from further consideration. The BLM's discretion to make planning decisions on management of WSAs is limited to designating WSAs as VRM Class I and determining if the WSAs will be limited or closed to OHV use.				
Issue: Oil and Gas Leasing in WSAs				
Management Action				
Common to All Alternatives				
All WSAs are closed to leasing pursuant to the Federal Onshore Oil and Gas Leasing Reform Act of 1987.				
Issue: Visual Resource Management and Designation in WSAs				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage WSAs as VRM Class I.	Designate all WSAs as VRM Class I.			
Issue: Off-highway Vehicle Area Designation in WSAs				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue managing WSAs as closed or limited to OHV use as identified in existing land use plans and shown on Map 2-12.	Designate WSAs as limited to OHV use as shown on Map 2-13. A total of 60 miles of inventoried vehicle routes would be designated for use subject to the IMP (see Travel Management Section 2.6.2.4).	Designate WSAs as closed or limited to OHV use as shown on Map 2-14. A total of 45 miles of inventoried vehicle routes would be designated for use subject to the IMP (see Travel Management Section	Close WSAs to OHV use as shown on Map 2-15.	Close WSAs to OHV use as shown on Map 2-16.

Table 2-20. Wilderness Study Areas Decisions

		2.6.2.4).		
Issue: Wilderness Study Areas if Released by Congress				
Management Action				
Common to All Alternatives				
Only Congress can release a WSA from wilderness consideration. Should any WSA, in part or in whole, be released from wilderness consideration, the BLM would examine proposals in the released area on a case-by-case basis for consistency with the goals and objectives of the RMP decisions. Actions inconsistent with RMP goals and objectives would be deferred until completion of requisite plan amendments. Because the management direction of the released land would continue in accordance with the goals and objectives established in the RMP, there is no separate analysis required in this land use plan to address resource impacts if any WSAs are released by Congress.				

2.6.3.2 Wild and Scenic Rivers

Table 2-21. Wild and Scenic Rivers Decisions

Desired Outcomes (Goals and Objectives)				
Manage to protect the outstandingly remarkable values, tentative classifications, and free-flowing nature of eligible/suitable river segments.				
Issue: Determine Suitability of Eligible Wild And Scenic River Segments				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Existing land use plans contain no decisions regarding wild and scenic rivers. • As directed by BLM Instruction Memorandum IM-2004-196, Clarification of Policy in the BLM Manual Section 8351, Wild and Scenic Rivers, with Respect to Eligibility Criteria and Protective Management, manage all of the eligible river segments (135 miles) to protect their outstandingly	• Recommend no eligible river segments as suitable for inclusion in the National Wild and Scenic River System. • Provide no special management for outstandingly remarkable values.	Recommend and manage the following eligible rivers as suitable for inclusion in the National Wild and Scenic River System— • Dirty Devil River (54 miles)* • Fremont River in Fremont Gorge(5 miles)* *All or portions of these eligible WSRs overlay WSAs which are managed pursuant to the IMP.	Recommend and manage all of the eligible rivers as suitable for inclusion in the National Wild and Scenic River System— • Dirty Devil River (54 miles)* • Beaver Wash Canyon (6.8 miles)* • Larry Canyon (4 miles)* • No Man's Canyon (7.1 miles)* • Robbers Roost Canyon (31 miles)* • Sams Mesa Box Canyon (9.5 miles)* • Twin Corral Box Canyon (9 miles)* • Fish Creek (0.25 mile) • Fremont River – Fremont Gorge (5 miles) – Below Capitol Reef National Park to Caineville Ditch Diversion (4 miles) • Maidenwater Creek (3 miles)	

Table 2-21. Wild and Scenic Rivers Decisions

remarkable values, free-flowing nature, and tentative classification, as follows— – 126.4 miles of river segments tentatively classified as "wild" – 3.25 miles of river segments tentatively classified as "scenic" – 5.4 miles of river segments tentatively classified as "recreational" • In accordance with BLM Manual 8351, suitability determinations would not be made for any of the eligible river segments. They would remain eligible and would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made.			• Quitchupah Creek (1.4 miles) *All or portions of these eligible WSRs overlay WSAs which are managed pursuant to the IMP.	
Issue: Management of Dirty Devil River (54 miles)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage all eligible segments to protect their outstandingly	Do not manage the Dirty River as eligible or suitable	Manage the Dirty Devil River (54 miles) as suitable for inclusion in the National Wild and Scenic River System and tentatively classified as a wild river.		

Table 2-21. Wild and Scenic Rivers Decisions

remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made.	for inclusion in the in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative A.	Manage to protect the outstandingly remarkable values, including scenic, recreation, geologic, and fish and wildlife. Specific management prescriptions within one-quarter mile of each side of the river include— • Close to OHVs except for Poison Spring Road crossing • Close to oil and gas leasing • Recommend withdrawing from mineral entry		
Issue: Management of Fremont River – Fremont Gorge (5 miles)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage all eligible streams to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made.	Do not manage the Fremont River - Fremont Gorge as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative A.	Manage the Fremont River in Fremont Gorge (5 miles) as suitable for inclusion in the National Wild and Scenic River System and tentatively classified as a wild river. Management would protect the outstandingly remarkable scenic values. Specific management prescriptions within one-quarter mile of each side of the river include: • Manage as open to oil and gas leasing with no surface occupancy; • Close to OHV use; • Recommend for withdrawal from mineral entry.	Manage the Fremont River in Fremont Gorge (5 miles) as suitable for inclusion in the National Wild and Scenic River System and tentatively classified as a wild river. Manage to protect the outstandingly remarkable scenic values. Specific management prescriptions within one-quarter mile of each side of the river include: • Close to oil and gas leasing; • Close to OHV use; • Recommend withdrawing from mineral entry.	
Issue: Management of Fremont River—Capitol Reef National Park to Caineville Ditch Diversion (4 miles)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage all eligible streams	Do not manage the Fremont	Do not manage the Fremont	Manage the Fremont River from Capitol Reef National Park to	

Table 2-21. Wild and Scenic Rivers Decisions

to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g. public lands within the corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made.	River - Capitol Reef National Park to Caineville Ditch Diversion as eligible or suitable for inclusion into the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative A.	River - Capitol Reef National Park to Caineville Ditch Diversion as eligible or suitable for inclusion into the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative B.	Caineville Ditch Diversion (4 miles) as suitable for inclusion in the National Wild and Scenic River System and tentatively classified as a recreational river. Manage to protect the outstandingly remarkable values including scenic and geologic. Specific management prescriptions within one-quarter mile of each side of the river include: • Close to oil and gas leasing; • Close to OHV use; • Recommend withdrawing from mineral entry.	
Issue: Management of Beaver Wash Canyon (6.8 miles)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage all eligible streams to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made. Beaver Wash Canyon is also located within the Beaver Wash Canyon ACEC and would be managed according to those management prescriptions.	Do not manage Beaver Wash Canyon as eligible or suitable for inclusion into the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative A.	Do not manage Beaver Wash Canyon as eligible or suitable for inclusion into the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative B.	Manage Beaver Wash Canyon (6.8 miles) as suitable for inclusion in the National Wild and Scenic River System and tentatively classified as a wild river. Manage to protect the outstandingly remarkable values including scenic and ecologic. Specific management prescriptions within one-quarter mile of each side of the river include: • Close to oil and gas leasing; • Close to OHV use • Recommend withdrawing from mineral entry.	
Issue: Management of Larry Canyon (4 miles)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage all eligible streams	Do not manage Larry	Do not manage Larry	Manage Larry Canyon (4 miles) as suitable for inclusion in the	

Table 2-21. Wild and Scenic Rivers Decisions

to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made.	Canyon as eligible or suitable for inclusion into the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative A.	Canyon as eligible or suitable for inclusion into the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative B.	National Wild and Scenic River System and tentatively classified as a wild river. Manage to protect the outstandingly remarkable values including scenic, recreation, wildlife, and ecologic. Specific management prescriptions within one-quarter mile of each side of the river include: • Close to oil and gas leasing; • Close to OHV use; • Recommend withdrawing from mineral entry.	
Issue: Management of No Man's Canyon (7.1 miles)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage all eligible streams to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made.	Do not manage No Man's Canyon as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative A	Do not manage No Man's Canyon as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative B.	Manage No Man's Canyon (7.1 miles) as suitable for inclusion in the National Wild and Scenic River System and tentatively classified as a wild river. Manage to protect the outstandingly remarkable values including scenic and recreation. Specific management prescriptions within one-quarter mile of each side of the river include: • Close to oil and gas leasing; • Close to OHV use; • Recommend withdrawing from mineral entry.	
Issue: Management of Robbers Roost Canyon (31 miles)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage all eligible streams to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the	Do not manage Robbers Roost Canyon as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other	Do not manage Robbers Roost Canyon as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other	Manage Robbers Roost Canyon (31 miles) as suitable for inclusion in the National Wild and Scenic River System and tentatively classified as a wild river. Manage to protect the outstandingly remarkable values including scenic, recreation, and cultural (historic). Specific management prescriptions within one-quarter mile of each	

Table 2-21. Wild and Scenic Rivers Decisions

corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made.	resource headings for Alternative A.	resource headings for Alternative B.	side of the river include: • Close to oil and gas leasing; • Close to OHV use; • Recommend withdrawing from mineral entry.	
Issue: Management of Sams Mesa Box Canyon (9.5 miles)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage all eligible streams to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made.	Do not manage Sams Mesa Box Canyon as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative A.	Do not manage Sams Mesa Box Canyon as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative B.	Manage Sams Mesa Box Canyon (9.5 miles) as suitable for inclusion in the National Wild and Scenic River System and tentatively classified as a wild river. Manage to protect the outstandingly remarkable values including scenic and wildlife. Specific management prescriptions within one-quarter mile of each side of the river include: • Close to oil and gas leasing; • Close to OHV use; • Recommend withdrawing from mineral entry.	
Issue: Management of Twin Corral Box Canyon (9 miles)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage all eligible streams to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made.	Do not manage Twin Corral Box Canyon as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative A.	Do not manage Twin Corral Box Canyon as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative B.	Manage Sams Twin Corral Box Canyon (9 miles) as suitable for inclusion in the National Wild and Scenic River System and tentatively classified as a wild river. Manage to protect the outstandingly remarkable values including scenic and wildlife. Specific management prescriptions within one-quarter mile of the river include: • Close to oil and gas leasing; • Close to OHV use; • Recommend withdrawing from mineral entry.	

Table 2-21. Wild and Scenic Rivers Decisions

Issue: Management of Fish Creek (one-quarter mile)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage eligible streams to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made.	Do not manage Fish Creek as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative A.	Do not manage Fish Creek as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative B.	Manage Fish Creek (one-quarter mile) as suitable for inclusion in the National Wild and Scenic River System and tentatively classified as a scenic river. Manage to protect the outstandingly remarkable cultural resource values. Specific management prescriptions within one-quarter mile of each side of the river include: • Close to oil and gas leasing; • Close to OHV use; • Recommend withdrawing from mineral entry.	
Issue: Management of Maidenwater Creek (3 miles)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage eligible streams to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made.	Do not manage Maidenwater Creek as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative A.	Do not manage Maidenwater Creek as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative B.	Manage Maidenwater Creek (3 miles) as suitable for inclusion in the National Wild and Scenic River System and tentatively classified as a scenic river. Manage to protect the outstandingly remarkable values including scenic, recreation, geologic, fish, wildlife, and cultural. Specific management prescriptions within one-quarter mile of the river include: • Close to oil and gas leasing; • Close to OHV use; • Recommend withdrawing from mineral entry.	
Issue: Management of Quitchupah Creek (1.4 miles)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Manage all eligible streams	Do not manage Quitchupah	Do not manage Quitchupah	Manage Quitchupah Creek (1.4 miles) as suitable for inclusion	

Table 2-21. Wild and Scenic Rivers Decisions

to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made.	Creek as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative A.	Creek as eligible or suitable for inclusion in the National Wild and Scenic River System. Manage the river corridor in the manner identified under other resource headings for Alternative B.	in the National Wild and Scenic River System and tentatively classified as a recreational river. Manage to protect the outstandingly remarkable values including cultural. Specific management prescriptions within one-quarter mile of the river include: • Close to oil and gas leasing; • Close to OHV use; • Recommend withdrawing from mineral entry.

2.6.3.3 Areas of Critical Environmental Concern

Table 2-22. Areas of Critical Environmental Concern Decisions

Desired Outcomes (Goals and Objectives)				
• Manage ACECs with special management attention to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish, wildlife and plant resources, or other natural system or processes; or to protect life and safety from natural hazards.				
Issue: Designate and Manage Areas of Critical Environmental Concern				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue designation and management of four existing ACECs (Map 3-16)— • North Caineville Mesa (2,200 acres) • South Caineville Mesa (4,100 acres)* • Gilbert Badlands (3,680 acres)* • Beaver Wash Canyon (4,800 acres)* **Total acres: 14,780**	Designate no ACECs.	Designate and manage the following areas as ACECs (Map 2-43)— • North Caineville Mesa (2,200 acres) • Old Woman Front (330 acres) **Total acres: 2,530**	Designate and manage the following areas as ACECs (Map 2-44)— • Badlands (includes existing North and South Caineville Mesas and Gilbert Badlands ACECs, 88,900 acres)* • Bull Creek Archaeological District (4,800 acres) • Dirty Devil (includes Beaver Wash Canyon ACEC, 205,300 acres)* • Fremont Gorge/Cockscomb (34,300 acres)* • Henry Mountains (includes No Man's Mesa Potential ACEC, 288,200 acres)* • Horseshoe Canyon (Richfield RFO portion only, 40,900 acres)* • Kingston Canyon (22,100 acres)	

Table 2-22. Areas of Critical Environmental Concern Decisions

*All or portions of these potential ACECs overlay WSAs which are managed pursuant to the IMP.			• Little Rockies (49,200 acres)* • Lower Muddy Creek (Richfield RFO only, 16,200 acres) • Old Woman Front (330 acres) • Parker Mountain (107,900 acres) • Quitchupah (180 acres) • Rainbow Hills (4,000 acres) • Sevier Canyon (8,900 acres) • Thousand Lakes Bench (500 acres) • Special Status Species (15,100 acres)* **Total acres: 886,810** *All or portions of these potential ACECs overlay WSAs which are managed pursuant to the IMP.	
Issue: Designation and Management of North Caineville Mesa ACEC (2,200 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue designation of the North Caineville Mesa ACEC (Map 3-16). Manage to protect the relevant and important relict vegetation values: • Allow no uses that would cause irreparable damage to relevant and important values • Close to OHV use • Manage as open to oil and gas leasing with major constraints (no surface occupancy) • Unavailable for livestock grazing • Identify area as withdrawn from consideration for leasing for surface coal mining	• Do not designate the North Caineville Mesa ACEC. • Manage the North Caineville Mesa area in the manner identified under other resource headings for Alternative A.	Continue designation of the North Caineville Mesa ACEC (Map 2-43). Manage to protect the relevant and important relict vegetation values: • Allow no uses that would cause irreparable damage to relevant and important values • Close to OHV use • Manage as open to oil and gas leasing with major constraints (no surface occupancy) • Unavailable for livestock grazing • Identify area as unsuitable for surface coal mining • Acquire inholdings within ACEC	Manage the North Caineville Mesa area as part of the Badlands ACEC. (See the Badlands ACEC for special management prescriptions.)	

Table 2-22. Areas of Critical Environmental Concern Decisions

• Acquire inholdings within ACEC • Consider withdrawing from mineral entry		• Recommend withdrawing from mineral entry.		
Issue: Designation and Management of South Caineville Mesa ACEC (4,100 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue designation of the South Caineville Mesa ACEC (Map 3-16). Manage the area to protect the relevant and important values: • Allow no uses that would cause irreparable damage to relevant and important values • Close to OHV use • Manage as open to oil and gas leasing with major constraints (no surface occupancy) • Unavailable for livestock grazing • Identify area as withdrawn from consideration for leasing for surface coal mining • Nominate cabin on South Caineville Mesa to National Register of Historic Places • Increase public awareness of cultural resources, increase law enforcement presence and if necessary, fence or otherwise directly protect	• Do not designate the South Caineville Mesa ACEC. • Manage the South Caineville Mesa area in the manner identified under other resource headings for Alternative A.	• Do not designate the South Caineville Mesa ACEC. • Manage the South Caineville Mesa area in the manner identified under other resource headings for Alternative B.	Manage the South Caineville Mesa area as part of the Badlands ACEC. (See the Badlands ACEC for special management prescriptions.)	

Table 2-22. Areas of Critical Environmental Concern Decisions

important sites, and maintain stability of cabin on South Caineville Mesa • Consider withdrawal from mineral entry, if area is released from wilderness consideration.				
Issue: Designation and Management of Beaver Wash Canyon ACEC (4,800 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue Beaver Wash Canyon ACEC designation, to be managed for protection of relevant and important ecologic (riparian) values (Map 3-16). Manage Beaver Wash with the following special management to protect the relevant and important values from irreparable damage: • Close to OHV use • Close to oil and gas leasing • Pursue land tenure adjustment, including acquisition through exchange of all state sections in the area. • Unavailable for livestock grazing from south boundary of Section 25 northward. • Recommend withdrawing from mineral entry.	• Do not designate the Beaver Wash Canyon ACEC. • Manage the Beaver Wash Canyon area in the manner identified under other resource headings for Alternatives A and B.		Manage the Beaver Wash Canyon area as part of the Dirty Devil ACEC. See Dirty Devil ACEC (below) for special management prescriptions.	

Table 2-22. Areas of Critical Environmental Concern Decisions

Issue: Designation and Management of Gilbert Badlands ACEC (3,680 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue Gilbert Badlands ACEC and Research Natural Area (RNA) designations, to be managed for protection of relevant and important natural systems or processes and in accordance with 43 CFR 8223.1 (Map 3-16). Manage the Gilbert Badlands ACEC with the following special management to protect the relevant and important values from irreparable damage— • Close to OHV use • Manage as open to oil and gas leasing with major constraints (no surface occupancy) • Consider withdrawing from mineral entry • Prohibit all surface disturbing activities • Acquire in-holdings within ACEC	• Do not designate the Gilbert Badlands ACEC or RNA. • Manage the Gilbert Badlands area in the manner identified under other resource headings for Alternatives A and B.		Manage the Gilbert Badlands area as part of the Badlands ACEC. (See the Badlands ACEC for special management prescriptions.)	
Issue: Designation and Management of Potential Badlands ACEC (88,900 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Continue managing the existing North Caineville, South Caineville, and Gilbert Badlands ACECs to protect their relevant and important	• Do not designate the Badlands ACEC or Research Natural Area. • Manage identified under other resource headings for Alternatives A and B.		Designate the Badlands ACEC and RNA, to be managed to protect relevant and important values, including scenic, special status plants, natural processes, and riparian and relict vegetation from irreparable damage (Map 2-44). Special management of the area to protect these values includes:	

Table 2-22. Areas of Critical Environmental Concern Decisions

values as prescribed above.		• Allow no uses that would cause irreparable damage to relevant and important values. **Vegetation** • Continue unavailability for grazing on North and South Caineville Mesas to protect relict vegetation **Cultural Resources** • Increase public awareness of cultural resources, increase law enforcement presence and if necessary, fence or otherwise directly protect important sites, and maintain stability of cabin on South Caineville Mesa. Fencing or other surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics in Alternative D. **Visual Resources** • Designate Class A scenery (outside of WSAs and outside of non-WSA lands with wilderness characteristics (Alternative D only)) as VRM Class II, and implement VRM best management practices. **Special Status Species** • Increase law enforcement patrols, educate the public about values of listed cacti, evaluate proposed upstream water developments to determine impacts on fish species, and, based on that evaluation, take appropriate action to protect special status species. **Travel Management** • Close mesa tops to OHV use. In Alternative D, close non-WSA lands with wilderness characteristics to OHV use. Limit OHV use to designated routes in the remainder of the ACEC to prevent irreparable damage to cultural resources, badlands topography, listed species of cacti, and scenic values. **Lands and Realty** • Recommend withdrawing the non-WSA lands with wilderness characteristics (Alternative D only) and Class A scenery outside WSA from mineral entry. **Minerals** • Close to oil and gas leasing.

Table 2-22. Areas of Critical Environmental Concern Decisions

Issue: Management of Potential Bull Creek Archaeological ACEC (4,800 acres)				
Management Actions				
Alternative N (No Action)	Alternative A	Alternative B (Preferred Alternative)	Alternative C	Alternative D
• Do not designate the Bull Creek Archaeological District as an ACEC. • Manage the Bull Creek Archaeological District consistent with properties listed on the National Register of Historic Places.			Designate the Bull Creek Archaeological District as an ACEC for the purpose of protecting relevant and important cultural resource values (Map 2-44). Special management to protect these values from irreparable damage includes: **Cultural Resources** • Increase public awareness of cultural resource values, increase law enforcement presence, and if necessary, install fencing or other direct protection of important sites. Fencing or other surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics in Alternative D. **Travel Management** • Limit OHV use to designated routes to protect cultural resources from damage. In Alternative D, close non-WSA lands with wilderness characteristics to OHV use.	

Table 2-22. Areas of Critical Environmental Concern Decisions

Issue: Designation and Management of Potential Dirty Devil/North Wash ACEC (205,300 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Manage Beaver Wash Canyon ACEC (a portion of the potential Dirty Devil ACEC) according to the management prescriptions outlined above for that ACEC. • Manage remainder of the potential Dirty Devil ACEC according to other decisions outlined in the 1982 Henry Mountain MFP, as amended.	• Do not designate the Dirty Devil/North Wash potential ACEC. • Manage the Dirty Devil/North Wash area in the manner identified under other resource headings for Alternative A.	• Do not designate the Dirty Devil/North Wash potential ACEC. • Manage the Dirty Devil River corridor to protect the outstandingly remarkable values associated with its suitability for inclusion in the National Wild and Scenic River System. The area is also included in the Dirty Devil SRMA, and would be managed according to those prescriptions. Areas not included within the Dirty Devil SRMA or Wild and Scenic River corridor would be managed in the manner identified under other resource headings for Alternative B.	Designate the Dirty Devil/North Wash area as an ACEC for protection of relevant and important values, including scenic, cultural, paleontological, wildlife, and special status species (Map 2-44). Special management for protection of these values includes: **Prevent Irreparable Damage** • Allow no uses that would cause irreparable damage to relevant and important values. **Riparian** • Restore, maintain, and improve riparian areas to proper functioning condition (PFC). • Fence riparian areas to exclude livestock. Fencing or other surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics in Alternative D. • Rehabilitate springs. • Plant willows and cottonwoods. **Fire and Fuels Management** • Allow no prescribed or wildland fire use in Mexican spotted owl core areas and nest protection areas at any time. • Suppress wildland fires that threaten Mexican spotted owl core areas and nest protection areas. **Cultural Resources** • Reduce vandalism of cultural resources by increasing public awareness of their value, increasing law enforcement presence and, if necessary, fencing or otherwise directly protecting important sites. Fencing or other surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics in Alternative D. **Visual Resources** • Designate Class A scenery outside of WSAs (Alternatives C and D) and outside of non-WSA lands with wilderness characteristics (Alternative D) as VRM Class II. • Designate remainder of ACEC (outside of non-WSA lands with wilderness characteristics - Alternative D only) as VRM Class III.	

Table 2-22. Areas of Critical Environmental Concern Decisions

			• Implement best management practices appropriate to the VRM class to protect scenic values. **Special Status Species** • Manage the Mexican spotted owl in cooperation with USFWS and UDWR. • Restrict motorized access in sensitive plant areas. • Increase law enforcement patrols. **Wildlife** • Manage desert bighorn sheep in cooperation with UDWR. • Allow water developments that would benefit desert bighorn sheep. Water developments would not be allowed in non-WSA lands with wilderness characteristics (Alternative D only). **Livestock grazing** • Permit no domestic sheep grazing to protect bighorn sheep from disease. • Keep Beaver Wash unavailable for grazing to protect riparian values. **Recreation** • Construct no camping facilities in the Mexican spotted owl nest protection core areas or within non-WSA lands with wilderness characteristics (Alternative D only). • Reduce harassment to bighorn sheep and Mexican spotted owls by regulating the number of recreational parties, party size, and season of use. • Limit recreation use through use of permits, if determined necessary to protect relevant and important values. **Travel Management** • Limit OHVs to designated routes to protect scenic values. During management plan development for this ACEC, OHV route designations would be reviewed and revised if necessary (with appropriate NEPA review) to protect scenic values. In Alternative D, close non-WSA lands with wilderness characteristics to OHV use. • Discourage recreation use within one-half mile of known Mexican spotted owl nest sites during breeding season (February 1 to August 31). **Lands and Realty** • Avoid authorizing rights-of-way in VRM Class I or II areas.

Table 2-22. Areas of Critical Environmental Concern Decisions

			• Retain ACEC in public ownership. • Acquire inholdings within the ACEC from willing sellers. • Recommend withdrawing Class A scenery designated as VRM Class II from mineral entry. **Minerals** • Manage VRM Class II areas as open to oil and gas leasing with major constraints, such as no surface occupancy. • Close non-WSA lands with wilderness characteristics (Alternative D only) to oil and gas leasing. • Manage remainder of ACEC as open to oil and gas leasing subject to controlled surface use and/or timing limitations. • Use best management practices to protect scenic values. • Include seasonal restriction stipulations in lease permits during the Mexican spotted owl breeding season (February 1 to August 31) for all mineral development activities within one-half mile around known nest sites. • Restrict oil and gas exploration and development activities from February 1 through August 31 in Mexican spotted owl nest protection areas.	
Issue: Designation and Management of Potential Fremont Gorge/Cockscomb ACEC (34,300 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Do not designate the Fremont Gorge/Cockscomb ACEC. • Manage the Fremont Gorge/Cockscomb area in accordance with existing land use plan.	• Do not designate the Fremont Gorge/Cockscomb ACEC. • Manage the Fremont Gorge/Cockscomb area in the manner identified under other resource headings for Alternative A.	• Do not designate the Fremont Gorge/Cockscomb ACEC. • Manage the Fremont Gorge/ Cockscomb area in the manner identified under other resource headings for Alternative B. • The area is located within the Capitol Reef Gateway SRMA, and would be managed according to those prescriptions.	Designate the Fremont Gorge/ Cockscomb area as an ACEC for protection of relevant and important values, including cultural, scenic, riparian, plant, and wildlife (Map 2-44). Special management for protection of these values includes: **Prevent Irreparable Damage** • Allow no uses that would cause irreparable damage to relevant and important values. **Riparian** • Evaluate proposed upstream water developments to determine possible adverse impacts on riparian areas. • Limit recreation use in riparian areas, if needed to protect riparian values. **Cultural Resources** • Reduce vandalism of cultural resources by increasing public awareness of their value, increasing law enforcement	

Table 2-22. Areas of Critical Environmental Concern Decisions

			presence, and, if necessary, fencing or otherwise directly protecting important sites. Fencing or other surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics under Alternative D. **Visual Resources** • Designate Class A scenery outside of WSAs (Alternatives C and D) and outside of non-WSA lands with wilderness characteristics (Alternative D) as VRM Class II. • Designate remainder of ACEC (outside of non-WSA lands with wilderness characteristics - Alternative D only) as VRM Class III. • Implement VRM best management practices appropriate to VRM Class to protect scenic values. **Fire** • Suppress wildfire in crucial mule deer habitat containing browse species. **Recreation** • Limit recreation use in Fish Creek Cove and Beas Lewis Flats to protect cultural resources, if needed. **Travel Management** • Manage OHVs as limited to designated routes to protect scenic values. In Alternative D, close non-WSA lands with wilderness characteristics to OHV use. **Lands and Realty** • Maintain crucial mule deer habitat in public ownership. • Recommend withdrawing Class A scenery outside WSA and non-WSA lands with wilderness characteristics (Alternative D only) from mineral entry. **Minerals** • Manage VRM II areas as open to oil and gas leasing with major constraints, such as no surface occupancy. • Manage VRM III areas as open to leasing subject to controlled surface use and/or timing limitations. • Manage VRM Class I areas in non-WSA lands with wilderness characteristics (Alternative D only) as closed to oil and gas leasing.
Issue: Designation and Management of Proposed Henry Mountains ACEC (288,200 acres)			
Management Actions			

Table 2-22. Areas of Critical Environmental Concern Decisions

Alternative N (No Action)	Alternative A	Alternative B (Preferred Alternative)	Alternative C	Alternative D
• Do not designate the Henry Mountains ACEC. • Manage the Henry Mountains area in accordance with the existing land use plan (Alternative N) and in the manner identified under other resource headings for Alternatives A and B.			Designate the Henry Mountains area as an ACEC for protection of relevant and important values, including wildlife (e.g., bison and deer), special status species (e.g., Townsend's big-eared bat, ferruginous hawk, burrowing owl, hole-in-the-rock prairie clover, Dana's milkvetch, and Barneby milkvetch), scenic, and ecological values (Map 2-44). Special management for protection of these values includes: **Prevent Irreparable Damage** • Allow no uses that would cause irreparable damage to relevant and important values. **Riparian** • Restore, maintain, and improve riparian areas to bring them into PFC. Surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics under Alternative D. • Maintain erosion control structures in Nasty Flat area. **Vegetation** • Manage vegetation to benefit mule deer and bison habitat. • Manage No Man's Mesa to protect relict vegetation. **Cultural Resources** • Reduce vandalism of cultural resources by increasing public awareness of their value, increasing law enforcement presence and, if necessary, fencing or otherwise directly protecting important sites. Fencing or other surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics under Alternative D. • Close Starr Ranch to recreation/interpretation use until stabilization can be accomplished. **Visual Resources** • Designate Class A scenery outside of WSAs (Alternatives C and D) and outside of non-WSA lands with wilderness characteristics (Alternative D) as VRM Class II. • Designate remainder of ACEC as VRM Class III in order to allow manipulation of habitat to benefit wildlife and mule deer; in all cases, apply appropriate VRM class best management practices. **Special Status Species**	

Table 2-22. Areas of Critical Environmental Concern Decisions

	• Restrict motorized access in sensitive plant areas. • Increase law enforcement patrols. **Wildlife** • Manage mule deer and bison habitat in cooperation with UDWR. • Allow manipulation of habitat to benefit wildlife. Surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics in Alternative D. • Allow range improvements that benefit wildlife. Fencing or other surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics under Alternative D. • Develop a Habitat Management Plan for bison and mule deer within the ACEC. **Fire and Fuels Management** • Use appropriate management response to protect and enhance relevant and important values. • Suppress all fires near Starr Ranch to protect historical values. **Livestock Grazing** • Change class of livestock on the Pennell Allotment from sheep to cattle. **Recreation** • Allow continued maintenance, upgrade, and use of existing campgrounds and picnic facilities within the ACEC at Starr Springs, Lonesome Beaver, McMillan Spring, and Dandelion Flat. Additional recreation facilities may be developed in response to user demand and for resource protection if it will not cause irreparable damage to relevant and important values. **Travel Management** • Limit OHV use in the Nasty Flat area to designated routes. • Limit OHV use to designated routes to protect scenic and cultural resources and bison habitat. During management plan development for this ACEC, OHV route designations would be reviewed and revised if necessary (with appropriate NEPA review) to protect these relevant and important values. • Close No Man's Mesa to OHVs. In Alternative D, close

Table 2-22. Areas of Critical Environmental Concern Decisions

			non-WSA lands with wilderness characteristics to OHV use. **Lands and Realty** • Authorize no new rights-of-way in VRM Class I and II areas. • Retain ACEC in public ownership. • Acquire inholdings from willing sellers within the ACEC. • Recommend withdrawing No Man's Mesa and areas with Class A scenery designated as VRM Class II from mineral entry. **Minerals** • Manage VRM Class II areas and non-WSA lands with wilderness characteristics (Alternative D only) as closed to oil and gas leasing. • Manage VRM Class III areas as open to oil and gas leasing subject to controlled surface use and/or timing limitations. • Close No Man's Mesa to oil and gas leasing.	
Issue: Designation and Management of Potential Horseshoe Canyon ACEC (40,900 acres - RFO only)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Do not designate the Horseshoe Canyon ACEC. • Manage the Horseshoe Canyon area in accordance with the existing land use plan (Alternative N) and in the manner identified under other resource headings for Alternatives A and B.			Designate the Horseshoe Canyon area as an ACEC for protection of relevant and important values including scenic, cultural (e.g., Cowboy Cave), riparian, and special status species (e.g., Townsend's big-eared bat) (Map 2-44). Special management for protection of these values includes: **Prevent Irreparable Damage** • Allow no uses that would cause irreparable damage to relevant and important values. **Riparian** • Rehabilitate springs to bring them into PFC. • Plant willows and cottonwoods in riparian areas. **Cultural Resources** • Reduce vandalism of cultural resources by increasing public awareness of their value, increasing law enforcement presence and, if necessary, fencing or otherwise directly protecting important sites. Fencing or other surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics in Alternative D. **Visual Resources**	

Table 2-22. Areas of Critical Environmental Concern Decisions

	• Designate Class A scenery outside of WSAs (Alternatives C and D) and outside of non-WSA lands with wilderness characteristics (Alternative D) as VRM Class II. **Livestock Grazing** • Fence riparian areas to exclude livestock. Fencing or other surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics in Alternative D. **Recreation** • Limit recreation use through use of permits, if needed, to protect sensitive resources. **Travel Management** • Limit OHVs to designated routes to protect scenic, special status species, and cultural values. During management plan development for this ACEC, OHV route designations would be reviewed and revised if necessary (with appropriate NEPA review) to protect these relevant and important values. In Alternative D, close non-WSA lands with wilderness characteristics to OHV use. **Lands and Realty** • Authorize no new rights-of-way in VRM Class I and II areas. • Retain ACEC in public ownership. • Acquire inholdings from willing sellers within the ACEC. • Recommend withdrawing areas with Class A scenery designated as VRM Class II from mineral entry. **Minerals** • Manage VRM Class II areas as open to oil and gas leasing with major constraints, such as no surface occupancy. • Manage VRM Class I areas in non-WSA lands with wilderness characteristics (Alternative D only) as closed to oil and gas leasing.

Issue: Designation and Management of Potential Kingston Canyon ACEC (22,100 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Do not designate the Kingston Canyon ACEC. • Manage the Kingston Canyon area in accordance with the existing land use plan (Alternative N) and in the manner identified under other resource headings for Alternatives A and B.			Designate and manage the Kingston Canyon area as an ACEC for protection of relevant and important values including riparian and mule deer habitat (Map 2-44). Special management for protection of these values includes:	

Table 2-22. Areas of Critical Environmental Concern Decisions

			Prevent Irreparable Damage • Allow no uses that would cause irreparable damage to relevant and important values. **Fire** • Suppress unwanted wildland fire in crucial deer winter range. **Travel Management** • Limit OHV use to designated routes. • In Alternative D, close non-WSA lands with wilderness characteristics to OHV use. • Limit OHV use with seasonal closures (December 15 through April 15) to protect mule deer habitat. **Lands and Realty** • Acquire in-holdings in the riparian corridor. • Retain the ACEC in public ownership.	
Issue: Designation and Management of Potential Little Rockies ACEC (49,200 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Do not designate the Little Rockies ACEC. • Manage the Little Rockies area in accordance with the existing land use plan (Alternative N) and in the manner identified under other resource headings for Alternatives A and B.			Designate the Little Rockies area as an ACEC for protection of relevant and important values, including scenic and wildlife values, notably desert bighorn sheep and Townsend's big-eared bat, special status plant species including hole-in-the-rock prairie clover, and ecologic values (Map 2-44). Special management for protection of these values includes: **Prevent Irreparable Damage** • Allow no uses that would cause irreparable damage to relevant and important values. **Visual Resources** • Designate Class A scenery outside of WSAs (Alternatives C and D) and outside of non-WSA lands with wilderness characteristics (Alternative D) as VRM Class II. **Wildlife** • Manage desert bighorn sheep in cooperation with UDWR in accordance with the Henry Mountains Desert Bighorn Habitat Management Plan, as revised. • Continue to cooperate with UDWR in transplants of desert bighorn sheep into the area consistent with carrying	

Table 2-22. Areas of Critical Environmental Concern Decisions

	capacity. • Allow range improvements that would benefit desert bighorn, primarily water developments. Surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics under Alternative D. **Livestock Grazing** • Convert domestic sheep use in Trachyte Allotment to cattle to prevent transmitting disease to desert bighorn sheep. **Recreation** • Regulate recreation impacts by limiting party size, season of use, and/or location to minimize harassment of desert bighorn sheep, if needed. • Limit recreation access and party size in Maidenwater and Trachyte canyons to protect ecological values, if needed. **Travel Management** • Limit OHV use to designated routes. In Alternative D, close non-WSA lands with wilderness characteristics to OHV use. **Lands and Realty** • Authorize no new rights-of-way in non-WSA lands with wilderness characteristics (Alternative D only) or in areas with Class A scenery. • Retain ACEC in public ownership. • Acquire inholdings from willing sellers within the ACEC. • Recommend withdrawing Class A scenery designated as VRM Class II from mineral entry. **Minerals** • Manage VRM II areas as open to oil and gas leasing with major constraints, such as no surface occupancy. • Close in non-WSA lands with wilderness characteristics (Alternative D only) to oil and gas leasing.

Issue: Designation and Management of Potential Lower Muddy Creek ACEC (16,200 acres - RFO portion)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Do not designate the Lower Muddy Creek ACEC. • Manage the Lower Muddy Creek area in accordance with the existing land use plan (Alternative N) and in the manner identified under other resource headings for Alternatives A and B.			Designate the Lower Muddy Creek area as an ACEC for protection of relevant and important values, including scenic, riparian, and special status plant (e.g., Wright fishhook and Heil's beavertail cacti) values (Map 2-44). Special	

Table 2-22. Areas of Critical Environmental Concern Decisions

	management for protection of these values includes: **Prevent Irreparable Damage** • Allow no uses that would cause irreparable damage to relevant and important values. **Visual Resources** • Designate Class A scenery outside of WSAs (Alternatives C and D) and outside of non-WSA lands with wilderness characteristics (Alternative D) as VRM Class II. **Special Status Species** • Increase law enforcement patrols to deter illegal cacti collecting. • Increase public education. **Travel Management** • Limit OHVs to designated routes to protect listed plant species. During management plan development for this ACEC, OHV route designations would be reviewed and revised if necessary (with appropriate NEPA review) to protect listed plant species. In Alternative D, close non-WSA lands with wilderness characteristics to OHV use. **Lands and Realty** • Authorize rights-of-way consistent with VRM Class II objectives. No new rights-of-way would be authorized in non-WSA lands with wilderness characteristics (Alternative D only). • Retain ACEC in public ownership. • Acquire inholdings within the ACEC from willing sellers. **Minerals** • Close area to oil and gas leasing.

Issue: Designation and Management of Potential Old Woman Front ACEC (330 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Do not designate the Old Woman Front ACEC and RNA. • Manage the Old Woman Front area in accordance with the existing land use plan (Alternative N) and in the manner identified under other resource headings for Alternative A.		Designate the Old Woman Front area as an RNA ACEC for protection of the relevant and important values of relict vegetation. • Coordinate special management for protection of relict vegetation with the USFS Old Woman Cove RNA Plan. • Manage the area for multiple use, while protecting the relict vegetation. **Ecological Processes**		

Table 2-22. Areas of Critical Environmental Concern Decisions

	• Permit no human activities that directly or indirectly modify ecological processes. **Wildlife** • Allow no wildlife habitat manipulation. • Prohibit the introduction or spread of exotic animal species. **Fire and Fuels Management** • Allow natural fires to burn only within the parameters of an approved fire plan and only under a prescription designed to accomplish the objectives of the area. • Suppress fires using minimal impact tools and techniques. • Avoid the use of heavy equipment. • Avoid post-fire rehabilitation; if needed, use seed of indigenous species, and locally adapted ecotypes. **Forest Products** • Allow no logging or harvest of woodland products, fuelwood gathering, or Christmas tree cutting. **Livestock Grazing** • Unavailable for livestock grazing. • Construct no range improvements. **Recreation** • Issue no special recreation permits. **Travel Management** • Close area to OHV use. **Facilities** • Authorize no roads, new trails, fences, signs, buildings, or other physical improvements. **Lands and Realty** • Recommend withdrawing from mineral entry. **Minerals** • Manage as open to oil and gas leasing with major constraints, such as no surface occupancy.

Issue: Designation and Management of Potential Parker Mountain ACEC (107,900 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Do not designate Parker Mountain ACEC. • Manage the Parker Mountain area in accordance with the existing land use plan (Alternative N) and in the manner identified under other resource headings for Alternatives A and B. Continue to consider ongoing land management practices, vegetative treatments,			Designate Parker Mountain area as an ACEC for protection of relevant and important values including sagebrush-steppe habitat and wildlife values, notably the greater sage grouse, Utah prairie dog, and pygmy rabbit (Map 2-44). Special	

Table 2-22. Areas of Critical Environmental Concern Decisions

and grazing regimes, and continue to coordinate management efforts with Parker Mountain Adaptive Resource Management (PARM), BLM, UDWR, USFWS, and Utah State University to address vegetative treatments specific to improving the sagebrush-steppe community.	management for protection of these values includes: **Prevent Irreparable Damage** • Allow no uses that would cause irreparable damage to relevant and important values. **Vegetation** • Actively manage invasive species. • Evaluate potential vegetation treatments to ensure they are beneficial to sagebrush-steppe habitat and pygmy rabbits, greater sage grouse, and Utah prairie dogs. **Wildlife** • Educate hunters on pygmy rabbit identification. **Fire and Fuels Management** • Suppress unwanted wildland fire in sagebrush-steppe habitat. **Livestock Grazing** • Continue to implement proper grazing management through coordination with PARM. • Base stocking rates on timing and amount of precipitation and the condition of the range. **Travel Management** • Limit OHV use to designated routes. **Lands and Realty** • Retain ACEC in public ownership. • Acquire inholdings within the ACEC from willing sellers.

Issue: Management of Potential Quitchupah ACEC (180 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Do not designate the Quitchupah ACEC. • Manage the Quitchupah area in accordance with the existing land use plan (Alternative N) and in the manner identified under other resource headings for Alternatives A and B.			Designate the Quitchupah area as an ACEC for protection of relevant and important cultural and riparian values (Map 2-44). Special management for protection of these values includes: **Prevent Irreparable Damage** • Allow no uses that would cause irreparable damage to relevant and important values. **Cultural Resources** • Reduce vandalism of cultural resources by increasing public awareness of their value, increasing law enforcement	

Table 2-22. Areas of Critical Environmental Concern Decisions

			presence and, if necessary, fencing or otherwise directly protecting important sites. Fencing or other surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics in Alternative D. **Travel Management** • Restrict OHV use to designated routes to protect cultural and ecological resources and riparian areas from damage. Under Alternative D, close non-WSA lands with wilderness characteristics to OHV use. **Lands and Realty** • Avoid granting new rights-of-way; if rights-of-way are granted, mitigate impacts to ACEC values. Under Alternative D, new rights-of-way would not be authorized in non-WSA lands with wilderness characteristics.	
Issue: Designation and Management of Potential Rainbow Hills ACEC (4,000 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Do not designate the Rainbow Hills ACEC. • Manage the Rainbow Hills area in accordance with the existing land use plan (Alternative N) and in the manner identified under other resource headings for Alternatives A and B.			Designate the Rainbow Hills area as an ACEC for protection of relevant and important values including mule deer habitat, natural systems, and special status species, including Utah phacelia, Arapien stickleaf, Ward's penstemon, rainbow rabbitbrush, Sigurd townsendia, and Glenwood milkvetch (Map 2-44). Special management for protection of these values includes: **Prevent Irreparable Damage** • Allow no uses that would cause irreparable damage to relevant and important values. **Mule Deer** • Suppress unwanted wildland fire in crucial mule deer winter range to protect important browse species. **Travel Management** • Close to OHV use. **Lands and Realty** • Retain ACEC in public ownership. • Acquire inholdings from willing sellers. • Avoid granting new rights-of-way. • Recommend withdrawing from mineral entry.	

Table 2-22. Areas of Critical Environmental Concern Decisions

			Minerals • Allow leasing with no surface occupancy to protect special status and endemic plants and the naturally functioning system from major human disturbances.	
Issue: Designation and Management of Potential Sevier Canyon ACEC (8,900 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Do not designate the Sevier Canyon ACEC. • Manage the Sevier Canyon area in accordance with the existing land use plan (Alternative N) and in a manner identified under other resource headings for Alternatives A and B.			Designate the Sevier Canyon area as an ACEC for protection of relevant and important values, including mule deer habitat, riparian, and special status species values (Map 2-44). Special management for protection of these values includes: **Prevent Irreparable Damage** • Allow no uses that would cause irreparable damage to relevant and important values. **Fire and Fuels Management** • Suppress unwanted wildland fire in crucial mule deer winter range to protect important browse species. **Travel Management** • Limit OHV use to designated routes. • Limit OHVs seasonally (December 15 through April 15) to protect mule deer habitat. **Lands and Realty** • Retain ACEC in public ownership. • Acquire inholdings from willing sellers.	
Issue: Designation and Management of Potential Thousand Lakes Bench ACEC (500 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Do not designate the Thousand Lakes Bench ACEC. • Manage the Thousand Lakes Bench area in accordance with the existing land use plan (Alternative N) and in the manner identified under other resource heading for Alternatives A and B.			Designate the Thousand Lakes Bench area as an ACEC for protection of relevant and important values, including cultural resources, special status plants, and riparian areas (Map 2-44). Special management for protection of these values includes: **Prevent Irreparable Damage** • Allow no uses that would cause irreparable damage to relevant and important values.	

Table 2-22. Areas of Critical Environmental Concern Decisions

			Cultural Resources • Reduce vandalism of cultural resources by increasing public awareness of their value, increasing law enforcement presence and, if necessary, fencing or otherwise directly protecting important sites. Fencing or other surface disturbing activities would not be allowed in non-WSA lands with wilderness characteristics under Alternative D. **Special Status Species** • Increase law enforcement presence to deter collection of Wright fishhook cactus. **Travel Management** • Limit OHVs to designated routes to protect cultural resources, riparian areas, and special status plants. During management plan development for this ACEC, OHV route designations would be reviewed and revised if necessary (with appropriate NEPA review) to protect these relevant and important values. Under Alternative D, close non-WSA lands with wilderness characteristics to OHV use.	
Issue: Designation and Management of Potential Special Status Species ACEC (15,100 acres)				
Management Actions				
Alternative N (No Action)	**Alternative A**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
• Do not designate the Special Status Species ACEC. • Manage the Special Status Species ACEC area in accordance with existing land use plans (Alternative N) and in the manner identified under other resource headings for Alternatives A and B. • Manage special status species and their habitats in coordination with the USFWS, UDWR, and other resource management agencies.			Designate the Special Status Species ACEC to protect relevant and important special status species values listed above (Map 2-44). Special management for protection of these values includes: **Prevent Irreparable Damage** • Allow no uses that would cause irreparable damage to relevant and important values. **Vegetation** • Avoid or mitigate impacts to special status species and their habitats when conducting vegetative treatments. **Special Status Species** • Increase law enforcement patrols to deter collecting and poaching. **Recreation** • If monitoring shows that adverse impacts are or could occur	

	to special status species, limit recreation use as necessary. **Travel Management** • Limit OHVs to designated routes in special status species habitat. During management plan development for this ACEC, OHV route designations would be reviewed and revised if necessary (with appropriate NEPA review) to protect these special status species. **Lands and Realty** • Retain special status species documented locations in public ownership. • Where determined necessary to acquire important habitat for special status species, pursue acquisition of non-Federal lands from willing sellers. • Avoid granting rights-of-way and other land use authorizations that would impact special status species and their habitats. **Minerals** • Manage special status species areas as open to oil and gas leasing subject to controlled surface use and/or timing limitations. • Manage special status species areas as open to disposal of mineral materials subject to controlled surface use and/or timing limitations.

2.6.4 Transportation

Table 2-23. Transportation Facilities Decisions

Desired Outcomes (Goals and Objectives)
• Provide a safe and effective transportation system across public lands.
Issue: Management of Transportation Facilities
Management Actions
Common to All Alternatives
• Continue to maintain roads for resource management purposes. • Continue to support Sanpete, Sevier, Piute, Garfield and Wayne Counties and the State of Utah in providing a network of roads for movement of people, goods, and services across public lands. • Review requests for administrative access on a case-by-case basis. • Develop, implement and maintain cooperative agreements with Counties and the State of Utah for maintenance of the transportation system.

- Require reclamation of redundant road systems and/or roads that no longer serve their intended purpose in order to reduce road density and reduce habitat fragmentation.
- Manage designated scenic byway and backway corridors for the purposes for which they were designated.
- Install directional, informational, regulatory and interpretive signs at appropriate locations throughout the planning area.
- There are a number of locations throughout the RFO that are commonly known and consistently used for aircraft landing and departure activities that, through such casual use, have evolved into backcountry airstrips (the definition contained in Section 345 of Public Law 106-914, the Interior and Related Agencies Appropriation Act of 2001). In accordance with that law, any closure of an aircraft landing strip would require full public notice, consultation with local and State government officials, the Federal Aviation Administration (FAA), and compliance with all applicable laws including NEPA.

2.6.5 Health and Safety

Table 2-24. Health and Safety

Desired Outcomes (Goals and Objectives)

- The BLM would strive to ensure that human health and safety concerns on public lands remain a major priority.
- All hazardous or potentially hazardous sites and situations, including hazardous materials, hazardous or solid wastes, abandoned mine sites, abandoned well sites, and other potential hazards on public lands would be mitigated or eliminated.
- The potential for intentional or accidental releases of hazardous materials or wastes and solid wastes onto public lands would be minimized or eliminated.

Issue: Management of Abandoned Mine Lands

Management Actions

Common to All Alternatives

In conformance with BLM's long-term strategies and National Policies regarding Abandoned Mine Lands (AML), this RMP recognizes the need to work with state agencies toward identifying and addressing physical safety and environmental hazards at all AML sites on public lands. In order to accomplish this long-term goal, the following criteria would be established to assist in determining priorities for site and area mitigation and reclamation.

The criteria that would be used to establish physical safety hazard program priorities are:

- The highest priority of the AML physical safety program would be the cleaning up of those AML sites where (a) a death or injury has occurred, (b) the site is situated on or in immediate proximity to developed recreation sites and areas with high visitor use, and (c) upon formal risk assessment, a high or extremely high risk level is indicated;
- AML would be factored into future recreation management area designations, land use planning assessments, and all applicable use authorizations;
- Sites listed or eligible for listing would be entered in the Abandoned Mine Site Cleanup Module of Protection and Response Information System; and
- AML hazards should be, to the extent practicable, mitigated or remediated.

The criteria that would be used to establish water-quality based AML program priorities are:

- Watersheds identified by the state as a priority based on (a) one or more water laws or regulations; (b) a threat to public health or safety; and (c) a threat to the environment;
- Projects reflecting a collaborative effort with other land managing agencies;
- Sites listed or eligible for listing in the Abandoned Mine Site Cleanup Module of the Protection and Response Information System; and
- Projects that would be funded by contributions from collaborating agencies.

The State Multi-Year Work Plan would be maintained and updated as needed to reflect current policies for identifying program physical safety and water quality

AML sites priorities for reclamation or remediation. Public access to abandoned mine and well sites would be controlled by providing warning signage and barriers, as appropriate.
Issue: Management of Hazardous Materials
Management Actions
Common to All Alternatives
• Identify and clean up unauthorized dumping sites and hazardous materials spills in the RFO as required to comply with applicable state, local, and Federal laws and regulations. • Clean up and restore areas known to have hazardous materials, hazardous wastes, or solid wastes. Areas that have been cleaned up and restored would be maintained and monitored. • The BLM would actively seek responsible parties to reimburse hazardous materials cleanup costs.

2.7 IMPACTS SUMMARY TABLE

Table 2-25 provides a summary of impacts that would occur from implementing the five alternatives described in this chapter. Chapter 4 provides more detailed impact analysis.

Table 2-25. Summary Comparison of Impacts

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Air Quality	None of the proposed decisions in Chapter 2 would have a major impact on air quality. Rather, it is more likely that impacts to air quality within the planning area over the next 15 to 20 years would result from activities on private lands, including growth of cities and towns, increased vehicle traffic on highways and roads, and industrial development (e.g., coal-fired power plants). The public land activity likely to have the greatest impact on air quality would be wildland fire and fuels management, which varies by alternative as shown below.				
	Alternative N's minimal wildland fire use, prescribed fire, and non-fire fuel treatments would minimize smoke and other emissions in the short-term, but would result in increased fuel build-up, more frequent and larger wildland fires, and greater emissions in the long-term.	The types of impacts experienced under these alternatives would be similar to those described for Alternative N except that under Alternatives A and B treatments would average 73,600 acres annually with a maximum acreage limit set over the life of the plan (up to 1,472,000 acres). In contrast with Alternative N, Alternatives A and B would potentially decrease the level of suppression being used on wildfires through AMR, a strategy to meet Fire Management Unit (FMU) objectives. In the short-term, more acres could burn and smoke and particulate emissions could increase. In the long-term, the potential for severe and uncontrollable types of wildfires would be predicted to decrease, enabling BLM to manage wildfire and associated emissions more effectively. In the short-term, smoke management is a critical component of wildland fire use planning and it is considered in developing the AMR for each wildland fire.		The types of impacts experienced under these alternatives would be similar to those described for Alternatives A and B except that under Alternatives C and D the average annual treatment acres (26,000) and maximum acreage over the life of the plan (520,000) would be less. Similar to Alternatives A and B, Alternatives C and D would potentially decrease the level of suppression being used on wildfires through adoption of AMR (including smoke management considerations). In the short-term, relying on prescribed fire as the main fuels management tool would likely increase the acres burned and accompanying smoke and particulate emissions compared with Alternatives A and B. In the long-term, the potential for severe and uncontrollable types of wildfires would likely decrease, but not as much as under Alternatives A and B due to the limitations on fuels treatments. The consequent impacts to air quality could be greater than Alternatives A and B but less than Alternative N.	
Soil Resources	The potential for impacts to soils under Alternative N would be greatest among all the alternatives, due to: • Allowing cross-	The potential for impacts to soils under Alternative A would be less than under Alternative N but greater than Alternatives B, C or D because of	The potential for impacts to soils under Alternative B would be less than Alternatives N or A but greater than Alternatives C and D because of	The potential for impacts to soils under Alternative C would be less than under Alternatives N, A and B but greater than	The potential for impacts to soils would be least under Alternative D because of limitations on surface disturbing activities resulting from:

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Soil Resources	country OHV use on 77% of the RFO. • Allowing oil and gas leasing on 78% of the RFO. • Designating 75% of the RFO as VRM Classes III or IV.	the potential for surface disturbing activities resulting from: • Allowing cross-country OHV use on 21% of the RFO. • Allowing oil and gas leasing on 79% of the RFO. • Designating 79% of the RFO as VRM Classes III or IV. • Recommending no ACECs or suitable wild and scenic rivers.	limitations on surface disturbing activities resulting from: • Allowing cross-country OHV use on less than 1% of the RFO. • Closing to leasing or allowing no surface occupancy on 26% of the RFO. • Designating 31% of the RFO as VRM Classes I or II. • Recommending two eligible wild and scenic river segments as suitable.	Alternative D because of limitations on surface disturbing activities resulting from: • Allowing no cross-country OHV use. • Closing to oil and gas leasing or allowing no surface occupancy on 35% of the RFO. • Designating 32% of the RFO as VRM Classes I or II. • In addition to existing withdrawals, recommending withdrawal of 8% of the RFO from mineral entry. • Designating all potential ACECs. • Recommending all eligible wild and scenic river segments as suitable.	• Allowing no cross-country OHV use. • Closing to oil and gas leasing or allowing no surface occupancy on 57% of the RFO. • Designating 56% of the RFO as VRM Classes I or II. • In addition to existing withdrawals, recommending withdrawal of 35% of the RFO from mineral entry. • Designating all potential ACECs. • Recommending all eligible wild and scenic river segments as suitable. • Protecting all non-WSA lands with wilderness characteristics.
Water Resources	Surface disturbing activities would be restricted within 500 feet of all waters, limiting damage to riparian vegetation and sedimentation into streams.	Surface disturbing activities would be restricted within 330 feet of all waters, which would protect water sources, although less than Alternatives N, C or D.		Surface disturbing activities would be restricted within 660 feet of all waters, which would protect water sources more than Alternatives N, A and B.	
	Allowing cross-country OHV use on 77% of the RFO and designating 4,315 miles of routes with 539 stream crossings would result in the greatest potential for	Allowing cross-country use on 21% of the RFO, and designating 4,312 miles of routes with 443 stream crossings would have less potential for impacts to water	Allowing cross-country OHV use on less than 1% of the RFO reduces potential impacts over Alternatives A and B, and would be similar to Alternatives C and D.	No cross-country OHV use would be allowed which would be similar to Alternatives B and D. The potential for impacts to water resources under Alternative C would be	As in Alternative C, no cross-country OHV use would be allowed. The potential for impacts to water resources would be least under Alternative D because of

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
	impacts to water resources.	resources than Alternative N, but greater than Alternatives B, C and D.	There would be 4,176 miles of designated routes with 400 stream crossings which would have greater potential for impacts to water resources over Alternatives C and D.	less than under Alternatives N, A and B but greater than Alternative D because of the designation of 3,216 miles of routes with 273 stream crossings.	the designation of only 3,067 miles of routes with 266 stream crossings.
Vegetation	Managing fire using a full suite of tools would allow for the graduated movement to a more ecologically sustainable condition and reduction of hazardous fuels. Continuing minimal treatments on a case-by-case basis could continue the existing trend of pinyon-juniper woodland encroachment and increase the risk of large or intense wildfires. Vegetation across a large portion of the RFO (77%) would continue to be subject to potential impacts from cross-country OHV use.	Adopting an appropriate management response strategy to wildfire would reduce pinyon-juniper woodland encroachment and decrease the risk of large or intense wildfires and their effects on vegetation. Vegetation on 21% of the RFO would continue to be subject to potential impacts from cross-country OHV use, less than Alternative N but more than Alternatives B, C and D. Options for managing vegetation would be greatest under Alternative A because it provides the most tools for managing vegetation and the fewest restrictions.	Adopting an appropriate management response strategy to wildfire would reduce pinyon-juniper woodland encroachment and decrease the risk of large or intense wildfires (same as Alternative A). Managing less than 1% of the RFO as open for cross-country OHV use could result in the removal of existing vegetation and soil compaction, but on dramatically less acres than Alternatives N and A. Tools for managing vegetation are the same as Alternative A, but visual resource management and other restrictions would reduce opportunities for vegetation management in some areas.	Adopting an appropriate management response strategy to wildfire would reduce pinyon-juniper woodland encroachment and decrease the risk of large or intense wildfires (same as Alternatives A, B and D). There would be no areas open for cross-country OHV use, eliminating these impacts to vegetation. Alternative C would protect existing vegetation from disturbance because of its restrictions on VRM, off-highway vehicles, and vegetation management tools. However, it would allow less flexibility for vegetation management than Alternatives N, A and B because some of these same restrictions could limit the effective management of pinyon-juniper woodland and sagebrush-steppe vegetation communities.	Adopting an appropriate management response strategy to wildfire would reduce pinyon-juniper woodland encroachment and decrease the risk of large or intense wildfires (same as Alternatives A, B and C). There would be no areas open for cross-country OHV use, eliminating these impacts to vegetation. Alternative D would best protect existing vegetation from disturbance because of its restrictions on VRM, off-highway vehicles, and vegetation management tools. However, it would allow the least flexibility for vegetation management among the alternatives because some of these same restrictions could limit the effective management of pinyon-juniper woodland and sagebrush-steppe vegetation communities.

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Vegetation - Riparian	Surface disturbing activities are the primary cause of adverse impacts to riparian resources. Conversely, proposed decisions to limit surface disturbing activities would help protect riparian resources. Significant impacts to riparian resources would not be anticipated under any of the alternatives. Under all alternatives, actions in riparian areas would be guided by the Utah Riparian Management Policy and the decisions made through this planning effort.				
	Management of riparian and wetland areas includes the avoidance of surface disturbing activities within 500 feet of riparian areas. This would benefit riparian vegetation.	Impacts would be similar to those under Alternative N except that the size of the buffer zone in which no surface disturbance would be allowed is 330 feet on each side of the riparian area. Thus, Alternatives A and B would protect a smaller area around the riparian/wetland zones from surface disturbance than Alternative N. However, projects to improve habitat conditions within these riparian zones could still be performed, even within the buffer zone.		The types of impacts experienced as a result of riparian management would be similar to those described for Alternative N except that the size of the buffer zone in which no surface disturbance would be allowed is 660 feet on each side of the riparian area. Thus, these alternatives would protect a larger area around the riparian/wetland zones from surface disturbing activities than Alternatives N, A, or B.	
	The potential for impacts to riparian resources under Alternative N would be greatest among all the alternatives, due to: • Allowing cross-country OHV use on 77% of the RFO. • 539 stream crossings from OHV routes.	The potential for impacts to riparian resources under Alternative A would be less than under Alternative N but greater than Alternatives B, C or D because of the potential for surface disturbing activities resulting from: • Allowing cross-country OHV use on 21% of the RFO. • 443 stream crossings from OHV routes. • Recommending no ACECs or suitable wild and scenic rivers.	The potential for impacts to riparian resources under Alternative B would be less than Alternatives N or A, but greater than Alternatives C and D because of limitations on surface disturbing activities resulting from: • Allowing cross-country OHV use on less than 1% of the RFO. • 400 stream crossings from OHV routes. • Closing to leasing or allowing no surface occupancy on 26% of the RFO. • Designating 31% of the RFO as VRM Classes I or II. • Recommending two eligible wild and scenic rivers as suitable. • Designating two	The potential for impacts to riparian resources under Alternative C would be less than under Alternatives N, A and B but greater than Alternative D because of limitations on surface disturbing activities resulting from: • Allowing no cross-country OHV use. • 273 stream crossings from OHV routes. • Closing to oil and gas leasing or allowing no surface occupancy on 35% of the RFO. • Designating 32% of the RFO as VRM Classes I or II. • In addition to existing withdrawals, recommending withdrawal of 8% of the RFO from mineral entry. • Designating all potential ACECs.	The potential for impacts to riparian resources would be least under Alternative D because of limitations on surface disturbing activities resulting from: • Allowing no cross-country OHV use. • 266 stream crossings from OHV routes. • Closing to oil and gas leasing or allowing no surface occupancy on 56% of the RFO. • Designating 56% of the RFO as VRM Classes I or II. • In addition to existing withdrawals, recommending withdrawal of 35% of the RFO from mineral entry. • Designating all potential ACECs. • Recommending all eligible wild and scenic rivers as

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
			ACECs (2,500 acres)	• Recommending all eligible wild and scenic rivers as suitable.	suitable. • Protecting all non-WSA lands with wilderness characteristics.
Vegetation – Invasive, Non-Native Species	Alternatives N, A, and B would allow a full range of weed control methods (mechanical, biological, manual, fire, and chemical) to be utilized and would afford the best opportunity for controlling weeds.			Alternatives C and D would preclude the use of mechanical, manual and chemical methods. Control of some noxious weeds under these alternatives would not be possible in some areas because of lack of suitable substitute treatments, potentially allowing the weeds to spread.	
	Weed seeds are often transported from one place to another on the tires and undercarriages of vehicles. Allowing motorized access into more areas and on more routes would increase the potential for expanding noxious weeds infestations; limiting access decreases the potential.				
	The potential for the spread of weeds by vehicles would be greatest under Alternative N because cross-country OHV use would continue to be allowed on 77% of the RFO and 10% would be closed to OHV use.	The potential for the spread of weeds by vehicles under Alternative A would be less than under Alternative N but greater than Alternatives B, C or D because cross-country OHV use would be allowed on 21% of the RFO and no areas would be closed to OHV use.	The potential for the spread of weeds by vehicles under Alternative B would be less than under Alternatives N and A but greater than Alternatives C or D because cross-country OHV use would be allowed on less than 1% of the RFO and 10% would be closed to OHV use.	The potential for the spread of weeds by vehicles under Alternative C would be less than under Alternatives N, A and B but greater than Alternative D because no cross-country OHV use would be allowed and 32% of the RFO would be closed to OHV use.	The potential for the spread of weeds by vehicles under Alternative D would be least among all alternatives because no cross-country OHV use would be allowed and 54% of the RFO would be closed to OHV use.
Cultural Resources	All permitted activities regulated by the BLM are subject to the legal and policy protections and mitigation afforded cultural resources. Unregulated uses that could impact cultural resources include wildland fire suppression, dispersed recreation, and OHV use in areas designated as open. Special designations such as WSAs, ACECs, and WSRs, and decisions to protect non-WSA lands with wilderness characteristics (Alternative D only) would have a largely beneficial impact on cultural resources because the management prescriptions associated with those designations limit surface disturbing activities.				
	The potential for inadvertent impacts to cultural resources under Alternative N would be greatest among all the alternatives, due to: • Allowing cross-	The potential for inadvertent impacts to cultural resources under Alternative A would be less than under Alternative N but greater than Alternatives B, C or	The potential for inadvertent impacts to cultural resources under Alternative B would be less than Alternatives N or A but greater than Alternatives C and D	The potential for inadvertent impacts to cultural resources under Alternative C would be less than under Alternatives N, A and B but greater than	The potential for inadvertent impacts to cultural resources would be least under Alternative D because of limitations on surface disturbing activities

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
	country OHV use on 77% of the RFO. • Allowing oil and gas leasing on 78% of the RFO. • Designating 75% of the RFO as VRM Classes III or IV.	D because of the potential for surface disturbing activities resulting from: • Allowing cross-country OHV use on 21% of the RFO. • Allowing oil and gas leasing on 79% of the RFO. • Designating 79% of the RFO as VRM Classes III or IV. • Recommending no ACECs or suitable wild and scenic rivers.	because of limitations on surface disturbing activities resulting from: • Allowing cross-country OHV use on less than 1% of the RFO. • Closing to leasing or allowing no surface occupancy on 26% of the RFO. • Designating 31% of the RFO as VRM Classes I or II. • Recommending two eligible wild and scenic rivers as suitable.	Alternative D because of limitations on surface disturbing activities resulting from: • Allowing no cross-country OHV use. • Closing to leasing or allowing no surface occupancy on 35% of the RFO. • Designating 32% of the RFO as VRM Classes I or II. • In addition to existing withdrawals, recommending withdrawal of 8% of the RFO from mineral entry. • Designating all potential ACECs. • Recommending all eligible wild and scenic rivers as suitable.	resulting from: • Allowing no cross-country OHV use. • Closing to leasing or allowing no surface occupancy on 57% of the RFO. • Designating 56% of the RFO as VRM Classes I or II. • In addition to existing withdrawals, recommending withdrawal of 35% of the RFO from mineral entry. • Designating all potential ACECs. • Recommending all eligible wild and scenic rivers as suitable. • Protecting all non-WSA with wilderness characteristics.
Paleontological Resources	All permitted activities regulated by the BLM are subject to the legal and policy protections and mitigation afforded paleontological resources. Impacts on paleontological resources occur from natural weathering and erosion, surface disturbing activities, excavation, and theft or vandalism. Unregulated uses that could impact paleontological resources include wildland fire suppression, dispersed recreation, and OHV use in areas designated as open. Special designations such as WSAs, ACECs, and WSRs, and decisions to protect non-WSA lands with wilderness characteristics (Alternative D only) would have a largely beneficial impact on paleontological resources because the management prescriptions associated with them limit surface disturbing activities.				
	The potential for inadvertent impacts to paleontological resources under Alternative N would be greatest among all the alternatives, due to: • Allowing cross-country OHV use on 77% of the RFO.	The potential for inadvertent impacts to paleontological resources under Alternative A would be less than under Alternative N but greater than Alternatives B, C or D because of the potential for surface	The potential for inadvertent impacts to paleontological resources under Alternative B would be less than Alternatives N or A but greater than Alternatives C and D because of limitations on surface disturbing	The potential for inadvertent impacts to paleontological resources under Alternative C would be less than under Alternatives N, A and B but greater than Alternative D because of limitations on surface	The potential for inadvertent impacts to paleontological resources would be least under Alternative D because of limitations on surface disturbing activities resulting from: • Allowing no cross-country OHV use.

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
	• Allowing oil and gas leasing on 78% of the RFO. • Designating 75% of the RFO as VRM Classes III or IV.	disturbing activities resulting from: • Allowing cross-country OHV use on 21% of the RFO. • Allowing oil and gas leasing on 79% of the RFO. • Designating 79% of the RFO as VRM Classes III or IV. • Recommending no ACECs or suitable wild and scenic rivers.	activities resulting from: • Allowing cross-country OHV use on less than 1% of the RFO. • Closing to leasing or allowing no surface occupancy on 26% of the RFO. • Designating 31% of the RFO as VRM Classes I or II. • Recommending two eligible wild and scenic rivers as suitable.	disturbing activities resulting from: • Allowing no cross-country OHV use. • Closing to leasing or allowing no surface occupancy on 35% of the RFO. • Designating 32% of the RFO as VRM Classes I or II. • In addition to existing withdrawals, recommending withdrawal of 8% of the RFO from mineral entry. • Designating all potential ACECs. • Recommending all eligible wild and scenic rivers as suitable.	• Closing to leasing or allowing no surface occupancy on 57% of the RFO. • Designating 56% of the RFO as VRM Classes I or II. • In addition to existing withdrawals, recommending withdrawal of 35% of the RFO from mineral entry. • Designating all potential ACECs. • Recommending all eligible wild and scenic rivers as suitable. • Protecting all non-WSA lands with wilderness characteristics.
Visual Resources	Under Alternative N, 25% of the RFO would be designated VRM Classes I or II. This would provide more protection for scenic resources than Alternative A and less than Alternatives B, C and D.	Under Alternative A, 21% of the RFO would be designated VRM Classes I or II, providing the least protection for scenic resources among the alternatives.	Under Alternative B, 31% of the RFO would be designated VRM Classes I or II. This would provide more protection for scenic resources than Alternatives N or A and less than Alternatives C and D.	Under Alternative C, 32% of the RFO would be designated VRM Classes I or II. This would provide more protection for scenic resources than Alternatives N, A or B and less than Alternative D.	Under Alternative C, 56% of the RFO would be designated VRM Classes I or II, providing the greatest protection for scenic resources among the alternatives.
	Under Alternative N, 77% of the RFO would be open to cross-country OHV use, including 206,000 acres in VRM Class II areas. The potential for impacts to	Under Alternative A, 21% of the RFO would be open to cross-country OHV use. The potential for impacts to scenic resources from OHV use would be less than	Under Alternative B, less than 1% of the RFO would be open to cross-country OHV use, reducing the potential for impacts substantially over Alternatives N and	No cross-country OHV use would be allowed, eliminating the potential for impacts to scenic resources from OHV use. Alternatives C and D provide the greatest protection for scenic resources.	

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
	scenic resources from OHV use would be greatest under this alternative.	Alternative N, but greater than Alternatives B, C and D.	A.		
Special Status Species	The implementation of decisions that would have the greatest potential adverse effects on special status species would be actions that allow surface disturbing activities. The implementation of decisions that would have the greatest potential beneficial effects to special status species would be actions that would directly protect special status species and their habitat or indirectly protect special status species through surface restrictions. These actions would include: • Special status species management • Protecting non-WSA lands with wilderness characteristics • Special Designations (ACECs, wild and scenic rivers, wilderness study areas) • Visual Resource Management Class I or II designations				
	The potential for impacts to special status species under Alternative N would be greatest among all the alternatives, due to: • Allowing cross-country OHV use on 77% of the RFO. • Minimal restrictions on other surface disturbing activities.	The potential for impacts to special status species under Alternative A would be less than under Alternative N but greater than Alternatives B, C or D because of the potential for surface disturbing activities resulting from: • Allowing cross-country OHV use on 21% of the RFO. • Minimal restrictions on other surface disturbing activities. • Recommending no ACECs or suitable wild and scenic rivers.	The potential for impacts to special status species under Alternative B would be less than Alternatives N or A, but greater than Alternatives C and D because of limitations on surface disturbing activities resulting from: • Allowing cross-country OHV use on less than 1% of the RFO. • Closing to leasing or allowing no surface occupancy on 26% of the RFO. • Designating 31% of the RFO as VRM Classes I or II. • Recommending two eligible wild and scenic rivers as suitable. • Designating two	The potential for impacts to special status species under Alternative C would be less than under Alternatives N, A and B but greater than Alternative D because of limitations on surface disturbing activities resulting from: • Allowing no cross-country OHV use. • Closing to oil and gas leasing or allowing no surface occupancy on 35% of the RFO. • Designating 32% of the RFO as VRM Classes I or II. • In addition to existing withdrawals, recommending withdrawal of 8% of the RFO from mineral entry. • Designating all potential ACECs.	The potential for impacts to special status species would be least under Alternative D because of limitations on surface disturbing activities resulting from: • Allowing no cross-country OHV use. • Closing to oil and gas leasing or allowing no surface occupancy on 57% of the RFO. • Designating 56% of the RFO as VRM Classes I or II. • In addition to existing withdrawals, recommending withdrawal of 35% of the RFO from mineral entry. • Designating all potential ACECs. • Recommending all eligible wild and scenic rivers as

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
			ACECs (2,530 acres)	• Recommending all eligible wild and scenic rivers as suitable.	suitable. • Protecting all non-WSA lands with wilderness characteristics.
Fish and Wildlife	Under Alternative N, managing fire using a full suite of tools would allow for the graduated movement to a more ecologically sustainable condition and reduction of hazardous fuels. However, continuing minimal treatments on a case-by-case basis could contribute to fuel loading, setting the stage for catastrophic fires, and consequent loss of wildlife habitat. Current forage allocations would continue, providing no additional benefits to wildlife. Seventy-seven percent of the lands managed by the RFO would remain open to cross-country OHV use, leaving wildlife vulnerable to displacement and harassment and habitat susceptible to degradation.	Under Alternative A, implementing an appropriate management response strategy would allow the use of wildland fire as a vegetation management tool, benefiting wildlife species and habitat. A full range of tools would be available for fuels management and other vegetation treatments, allowing the greatest amount of flexibility to enhance wildlife habitats. Current forage allocations would continue, providing no additional benefits to wildlife. Twenty-one percent of the lands managed by the RFO would remain open to cross-country OHV use, reducing the potential for wildlife displacement and harassment, and habitat degradation compared to Alternative N.	Under Alternative B, implementing an appropriate management response strategy would allow the use of wildland fire as a vegetation management tool, benefiting wildlife species and habitat (same as Alternative A). A full range of tools would be available for fuels management and other vegetation treatments, allowing the greatest amount of flexibility to enhance wildlife habitats (same as Alternative A). Less than 1% of the lands managed by the RFO would remain open to cross-country OHV use, greatly reducing the potential for wildlife displacement and harassment, and habitat degradation compared to Alternatives N and A.	Under Alternatives C and D, implementing an appropriate management response strategy would allow the use of wildland fire as a vegetation management tool, benefiting wildlife species and habitat (same as Alternatives A and B). Only prescribed fire and other natural means would be used to manage fuel and other vegetation, limiting options for treatment that in some cases might not be effective, reducing the benefit to wildlife compared with Alternatives A and B. None of the lands managed by the RFO would remain open to cross-country OHV use, eliminating the possibility of displacement, harassment, and habitat degradation. Establishing the Henry Mountains ACEC for bison and mule deer values would recognize the relevance and importance of these resources and provide special management emphasis to enhance them.	
	Alternatives N and A, with their accommodation for oil and gas development and cross-country OHV use, would have the greatest adverse impacts on fish, wildlife and their habitats.		Alternative B would balance the impacts of development with the need to protect fish, wildlife and their habitats.	Alternatives C and D, with their special designations and emphasis on conservation, would be most beneficial to fish, wildlife and their habitats.	

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Wild Horses and Burros	The preliminary appropriate management level for the wild burros would maintain a viable population. Forage allocations are sufficient for the wild burros in the northern portions of the HMA; however, there could be competition for forage resources in the southern portions. The potential for displacement of wild burros from OHV use exists.		Establishing a formal wild burro AML would maintain the viability of the population, and result in the long-term maintenance of wild burro habitat components. This alternative could eliminate habitat competition between livestock and wild burros, but displacement from OHV use would continue. None of the impacts are anticipated to be significant.	The wild burro AML would be the largest of the alternatives, which could increase competition for habitat resources with wildlife and livestock.	
Fire and Fuels Management	Under all alternatives: • Maintaining State of Utah air quality standards could result in fewer acres burned using prescribed fires or wildland fire use because National Ambient Air Quality Standards could be exceeded. If the air quality of Class I airsheds were adversely impacted, wildland fire use and prescribed fires could be suspended. Consideration of regional haze could increase the restrictions on wildland fire use or prescribed fire. • Managing WSAs under the IMP precludes the use of mechanical (chaining, harrowing) and manual (chainsaw) fuels reduction treatments. This could limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels in WSAs, including those in the Dirty Devil, Horseshoe Canyon and Henry Mountains areas.				
	• Allowing vegetation treatment using mechanical, wildland and/or prescribed fire, and chemical treatments on a case-by-case basis would move vegetation toward a more ecologically sustainable condition over a multiple year period. • Proposed decisions for visual resource management could	• Allowing use of a full range of vegetation management tools including mechanical, biological, manual, prescribed and wildland fire use, and chemical (herbicides) would complement the ability to maintain and restore properly functioning vegetation and reduce hazardous fuels. • Proposed decisions for visual resource	• Allowing use of a full range of vegetation management tools including mechanical, biological, manual, prescribed and wildland fire use, and chemical (herbicides) would complement the ability to maintain and restore properly functioning vegetation and reduce hazardous fuels. • Proposed decisions for visual resource	• Restrictions on the use of non-fire treatments which would limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels in some areas. • Proposed decisions for visual resource management could preclude some types of treatments within the 21% of the RFO designated as VRM	• Restrictions on the use of non-fire treatments which would limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels in some areas. • Proposed decisions for visual resource management could preclude some types of treatments within the 53% of the RFO designated as VRM

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
	impact the design of non-fire treatment projects, particularly within the 25% of the RFO designated as VRM Class II.	management could preclude some types of treatments within the 21% of the RFO designated as VRM Class I, less than in Alternative N.	management could preclude some types of treatments within the 21% of the RFO designated as VRM Class I and impact the design of non-fire fuels treatment projects, particularly in VRM Class II areas (10%) in the Henry Mountains and near the towns of Torrey, Grover, and Teasdale. Treatment acres and success may be reduced over Alternative N and A, but would be greater than under Alternative C and D.	Class I and impact the design of non-fire fuels treatment projects, particularly in VRM Class II areas (11%) in the Henry Mountains and near the towns of Torrey, Grover, and Teasdale. Treatment acres and success would be reduced over Alternatives N, A and B, but would be greater than under Alternative D. • Proposed management direction for suppressing wildfires in the Fremont Gorge/Cockscomb, Henry Mountains, Kingston Canyon, Parker Mountain, and Sevier Canyon ACECs could limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels.	Class I and impact the design of non-fire fuels treatment projects, particularly in VRM Class II areas (3%) in the Henry Mountains and near the towns of Torrey, Grover, and Teasdale. Alternative D would restrict treatment projects on the greatest amount of acres. • Proposed management direction for suppressing wildfires in the Fremont Gorge/Cockscomb, Henry Mountains, Kingston Canyon, Parker Mountain, and Sevier Canyon ACECs could limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels. • Protecting the non-WSA lands with wilderness characteristics would preclude the use of mechanical (chaining, harrowing) and manual (chainsaw) fuels reduction treatments on these lands. This could limit the ability to maintain

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
					or restore properly functioning vegetation and reduce hazardous fuels in some areas, such as parts of the Henry Mountains.
Non-WSA Lands with Wilderness Characteristics	Impacts to non-WSA lands with wilderness characteristics would be the greatest among the alternatives: • 96% of these lands would be open to cross-country OHV use. • 85% of these lands would be open to oil and gas leasing with standard stipulations. • 13% of these lands would be open to oil and gas leasing with minor constraints. • 1% of these lands would be open to oil and gas leasing with major constraints (NSO).	Impacts to non-WSA lands with wilderness characteristics would be less than Alternative N and greater than Alternatives B, C and D: • 32% of these lands would be open to cross-country OHV use. • 48% of these lands would be open to oil and gas leasing with standard stipulations. • 52% of these lands would be open to oil and gas leasing with minor constraints.	Impacts to the non-WSA lands with wilderness characteristics would be less than Alternatives N and A and greater than Alternatives C and D: • Less than 1% of these lands would be open to cross-country OHV use. • 35% of these lands would be open to oil and gas leasing with standard stipulations. • 51% of these lands would be open to oil and gas leasing with minor constraints. • 13% of these lands would be open to oil and gas leasing with major constraints (NSO). • 2% of these lands would be recommended for withdrawal from mineral entry.	Impacts to non-WSA lands with wilderness characteristics would be less than Alternatives N, A and B but greater than Alternative D: • None of these lands would be open to cross- country OHV use. • 30% of these lands would be open to oil and gas leasing with standard stipulations. • 39% of these lands would be open to oil and gas leasing with minor constraints. • 1% of these lands would be recommended for withdrawal from mineral entry.	Impacts to non-WSA lands with wilderness characteristics would be the least among the alternatives: • None of these lands would be open to cross-country OHV use. • None of these lands would be open to oil and gas leasing. • All of these lands would be recommended for withdrawal from mineral entry. • All would be Class I VRM.

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Forestry and Woodland Products	Alternative N would continue restrictions on timber harvesting and commercial woodland product sales included in current management plans. The potential production of forest and woodland resources would likely be less than Alternatives A and B, but more than Alternatives C and D.	Alternative A would allow timber sales, woodland products harvesting and seed and live plant collecting on the most acres with the most tools and fewest restrictions among the alternatives. This alternative would provide the greatest availability of forest and woodland products and the greatest opportunities to restore, maintain, and improve forest and woodland health.	Alternative B would allow timber sales, woodland products harvesting, and seed and live plant collecting with the same tools as Alternative A, but on slightly less acres due to the addition of two suitable WSR corridors that would be restricted. The potential production of forest and woodland products and potential forest and woodland health could be slightly less than Alternative A but more than Alternatives N, C or D.	Under Alternative C, commercial timber sales would be precluded, greatly diminishing the availability of timber products for commercial use. Woodland products harvesting and seed and live plant collecting would be the same as Alternatives A and B but on less acres due to restrictions in all 12 suitable WSR corridors. The potential production of forest and woodland products and potential forest and woodland health would be less than Alternatives A and B, similar to Alternative N, but more than Alternative D.	Under Alternative D, commercial timber sales would be precluded, no commercial or non-commercial use of forest and woodland products or seed and live plants would be allowed within suitable WSR corridors and non-WSA lands with wilderness characteristics. This alternative would result in the least production of forest and woodland products and could result in the greatest impacts to forest and woodland health.
Livestock Grazing	Under all alternatives: • Oil and gas development could reduce land available for livestock grazing under all alternatives by a maximum of 3,080 acres based on the Reasonably Foreseeable Development (RFD) Scenario for Oil and Gas, equating to a loss of 385 AUMs and possibly affecting the viability of some allotments. • Increasing recreational use could increase conflicts between recreationists and livestock. • Increasing OHV use could increase conflicts between OHVs and livestock in some areas.				
	Decisions likely to impact grazing opportunities include: • Continuing to allow cross-country OHV use on 77% of the RFO.	Decisions likely to impact grazing opportunities include: • Allowing cross-country OHV use on 21% of the RFO. • Disposing of 13,400 acres of public land (Section 203 sales) that would reduce available and could impact the viability of	Decisions likely to impact grazing opportunities include: • Disposing of 13,400 acres of public land (Section 203 sales) that would reduce available AUMs and could impact the viability of some allotments.	Under Alternatives C and D, decisions likely to impact grazing opportunities include: • Fewer acres identified for vegetation treatment than Alternatives A and B. • Limitations on the use of chemicals (pesticides and herbicides) for treating noxious weed and insect pest problems.	

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
		some allotments.			
Recreation	Alternative N would provide the greatest opportunities for motorized recreation uses and would cause the greatest adverse impacts to non-motorized uses. Seventy-seven percent of the RFO would continue to be open to cross-country OHV use and 4,315 miles of routes would continue to be open to motor vehicles, the most under any of the alternatives. One SRMA (managed by the Fillmore FO) would continue, but no new SRMAs would be established. There would be no VRM Class I areas, 25% of the RFO would be managed as VRM Class II, which supports primitive and semi-primitive recreation opportunities. Seventy-five percent of the RFO would be managed as VRM Classes III and IV supporting all types of recreation, including motorized use. Conflicts between motorized and non-motorized users would continue and adverse effects on primitive and semi-	Alternative A would provide fewer opportunities for motorized recreation than Alternative N, but more than Alternatives B, C and D. Twenty-one percent of the RFO would be open to cross-country OHV use. The open areas include those currently used for cross-country travel, plus additional areas for growth. OHV use in 79% of the RFO would be limited to designated trails. Designated routes would total 4,312 miles, essentially the same as those open under Alternative N. No areas would be closed to OHVs. The Dirty Devil SRMA would provide opportunities for primitive and semi-primitive motorized and non-motorized recreation; the Factory Butte, Sahara Sands and Big Rocks SRMAs would provide opportunities for cross-country OHV use; and the Otter Creek SRMA would provide opportunities for dispersed camping. Twenty-one percent of	Alternative B would provide a balance of motorized and non-motorized recreation opportunities. It would provide fewer opportunities for motorized recreation than Alternatives N and A, but more than Alternatives C and D. Less than 1% of the RFO would be open to cross-country OHV use; however, the five open areas, Big Rocks, Factory Butte, Glenwood, Mayfield, and Aurora, are the areas currently most used by riders. OHVs would be limited to designated trails on 90% of the RFO's land. Designated routes would total 4,176 miles. Ten percent of the lands managed by the RFO would be closed to OHVs. The Henry Mountains, Capitol Reef Gateway, and Dirty Devil SRMAs would provide opportunities for primitive and semi-primitive motorized and non-motorized recreation; the Factory Butte and Big Rocks SRMAs would provide	Alternative C would provide more opportunities for non-motorized recreation than Alternatives N, A and B and more opportunities for motorized recreation than Alternative D. No areas would be open to cross-country OHV use. OHVs would be limited to designated routes on 68% of the RFO. Designated routes would total 3,192 miles, 74% of the routes open under Alternative N. Thirty-two percent of the lands managed by the RFO would be closed to OHVs. The Henry Mountains, Capitol Reef Gateway, Dirty Devil, and Sevier Canyon SRMAs would provide opportunities for primitive, semi-primitive motorized and non-motorized, and roaded natural recreation. Thirty-two percent of the RFO would be designated as VRM Classes I and II supporting primitive and semi-primitive recreation, 68% would be designated as VRM Classes III and IV,	Alternative D would provide the greatest opportunities for non-motorized recreation, the fewest opportunities for motorized recreation uses, and have the greatest adverse impact on motorized users. No areas would be open to cross-country OHV use. OHVs would be limited to designated routes on 46% of the RFO. Designated routes would total 3,043 miles, 71% of the routes open under Alternative N Fifty-four percent of the RFO would be closed to OHVs. Seven SRMAs would be established to provide opportunities for primitive, semi-primitive motorized and non-motorized recreation. Portions of two of these SRMAs would provide some areas with opportunities for dispersed recreation. Fifty-six percent of the RFO would be designated as VRM Classes I and II supporting primitive and semi-primitive recreation; 44% would be designated as VRM Classes III and IV

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Recreation	primitive recreation settings would continue to increase.	the RFO would be designated as VRM Class I supporting primitive recreation. No lands would be designated as VRM Class II. Seventy-nine percent of the RFO would be designated as VRM Classes III and IV supporting all types of recreation, including motorized use. The decisions in this alternative would help resolve conflicts between motorized and non-motorized users.	opportunities for cross-country OHV use. Thirty-one percent of the RFO would be designated as VRM Classes I and II supporting primitive and semi-primitive recreation, 69% would be designated as VRM Classes III and IV supporting all types of recreation, including motorized use. The decisions in this alternative would help resolve conflicts between motorized and non-motorized users.	supporting all types of recreation, including motorized use. While this alternative would reduce adverse effects on primitive and semi-primitive recreation settings, conflicts between motorized and non-motorized users could be exacerbated because of the limited opportunities for motorized use.	supporting all types of recreation, including motorized use. While this alternative would reduce adverse effects on primitive and semi-primitive recreation settings, conflicts between motorized and non-motorized users could be exacerbated because of the limited opportunities for motorized use.
Travel Management	Management decisions that involve changes to miles of roads open for public or administrative use, number of acres open to off-road travel, or specific travel restrictions (vehicle size, season restrictions, etc.) would affect access into and across the RFO.				
	Alternative N provides the greatest opportunity for unrestricted motorized use and access with 77% of the RFO designated as open to motorized use, and 13% limited to designated routes (4,315 miles). Access would be restricted within 10% of the RFO designated as closed for the protection of WSAs, ACECs and cultural resources.	Under Alternative A, open motorized use areas would be reduced to 21%, with the remainder of the RFO limited to designated routes (4,312 miles). This alternative provides fewer acres for unrestricted motorized use than Alternative N, but more than Alternatives B, C and D. The miles of routes available would only be reduced by three miles from Alternative N. SRMA management within 49% of the open	Under Alternative B, open motorized use would be reduced significantly from Alternatives N and A, to less than 1% which would impact motorized use and access. Limited acres would be 90%, the most of any alternative. Motorized use would be allowed on 4,176 miles of routes which would be less than Alternatives N and A, but more than Alternatives C and D. SRMA management within 34% of the open areas could enhance the	Under Alternative C, no open motorized use areas would be designated eliminating cross-country travel. Access would be allowed in 68% of the RFO with use limited to designated routes (3,192 miles). The acres and miles of routes available for travel would be less than Alternatives N, A and B, but more than Alternative D. Access would be restricted within 32% of the RFO designated as closed for the protection	Under Alternative D, no open motorized use areas would be designated eliminating cross-country travel. Access would be allowed in 45% of the RFO with use limited to designated routes (3,735 miles). The acres and miles of routes available for travel would be the least of any of the alternatives. Access would be restricted within 54% of the RFO designated as closed for the protection of WSAs, WSR

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
		areas could enhance the open motorized experiences in those areas. No areas would be closed under Alternative A.	open motorized experiences in those areas. Access would be restricted within 10% of the RFO designated as closed for the protection of WSAs, WSR corridors, ACECs, and SRMAs. The potential for impacts from closed areas would be the same as Alternative N, greater than alternative A, and less than Alternatives C and D.	of WSAs, WSR corridors, ACECs, and SRMAs. The potential for impacts from closed areas would be greater than Alternatives N, A, and C, but less than Alternative D.	corridors, non-WSA lands with wilderness characteristics, ACECs, and SRMAs. The potential for impacts from closed areas would be the greatest under this alternative.
Lands and Realty	Under this alternative, 280 acres are identified as available for FLPMA Section 203 sales. In-holdings within the wilderness study areas and four existing ACECs would be priorities for acquisition.	One hundred and eighteen parcels totaling 13,400 acres would be available for sale under FLPMA Section 203. These sales would improve the manageability of the public land estate by disposing of parcels isolated and/or difficult to manage and could provide opportunities for community expansion. Conversely, grazing land, open space, wildlife habitat and land available for other public land uses would be lost. Inholdings within the WSAs (Alternatives A and B), two suitable wild and scenic river corridors and two areas of critical environmental concern would be priorities for acquisition (Alternative B only).		No lands would be identified as available for sale under FLPMA Section 203; hence there would be no beneficial or adverse impacts. In-holdings within the WSAs, twelve suitable wild and scenic river corridors and 16 areas of critical environmental concern would be priorities for acquisition, the most among the alternatives.	
	The potential for impacts to rights-of-way under Alternative N would be greater than Alternative A, but less than Alternatives B, C, and D, due to management of avoidance/exclusion areas for: • WSAs • ACECs	The potential for impacts to rights-of-way due to management of avoidance/exclusion areas would be the least under this alternative and would include: • WSAs • Areas closed to oil and gas leasing	The potential for impacts to rights-of-way under Alternative B would be greater than Alternatives N and A, but less than Alternatives C and D, due to management of avoidance/exclusion areas for: • WSAs • ACECs	The potential for impacts to rights-of-way under Alternative C would be greater than Alternatives N, A, and B, but less than Alternative D, due to management of avoidance/exclusion areas for: • WSAs • ACECs	The potential for impacts to rights-of-way due to management of avoidance/exclusion areas would be the greatest under this alternative and would include: • WSAs • ACECs • Suitable wild and

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
	• Eligible wild and scenic river corridors • Areas closed to oil and gas leasing • Areas open to oil and gas leasing with no surface occupancy stipulations		• Suitable wild and scenic river corridors • Areas closed to oil and gas leasing • Areas open to oil and gas leasing with no surface occupancy stipulations	• Suitable wild and scenic river corridors • Areas closed to oil and gas leasing • Areas open to oil and gas leasing with no surface occupancy stipulations	scenic river corridors • Non-WSA lands with wilderness characteristics • Areas closed to oil and gas leasing • Areas open to oil and gas leasing with no surface occupancy stipulations
Leasable Minerals	Seventy-eight percent of the RFO would be open to oil and gas leasing, providing slightly less opportunity than Alternatives A and B and more opportunity than Alternatives C or D.	Seventy-nine percent of the RFO would be open to oil and gas leasing, providing the greatest opportunity for oil and gas exploration and development among the alternatives.	Seventy-nine percent of the RFO would be open to oil and gas leasing (similar to Alternative A). However, more acres would be under controlled surface use and timing stipulations. Fewer acres would be open under standard stipulations.	Seventy-two percent of the RFO would be open to oil and gas leasing, providing less opportunity than Alternatives N, A, and B and more opportunity than Alternative D.	Forty-five percent of the RFO would be open to oil and gas leasing, providing the least opportunity for oil and gas leasing among the alternatives.
Locatable Minerals	Under all alternatives, 154,700 acres (7% of the RFO) currently withdrawn from mineral entry would remain withdrawn, precluding opportunities for mining on those lands.				
	Under Alternative N, 14,780 acres are proposed for withdrawal from mineral entry. Mining opportunities would be less than Alternative A, but greater than Alternatives B, C or D.	Under Alternative A, no additional lands would be proposed for withdrawal from mineral entry, providing the greatest opportunities for mining.	Under Alternative B, 21,500 acres are proposed for withdrawal from mineral entry. Mining opportunities would be less than Alternatives N or A but greater than Alternatives C or D.	Under Alternative C, 176,400 acres are proposed for withdrawal from mineral entry. Mining opportunities would be less than Alternatives N, A or B but greater than Alternative D.	Under Alternative D, 749,200 acres are proposed for withdrawal from mineral entry. Mining opportunities would be the least among the alternatives.
Salable Minerals	Seventy-eight percent of the RFO would be open to mineral material disposal, providing slightly less opportunity than Alternatives A and B and more opportunity than Alternatives C or D.	Seventy-nine percent of the RFO would be open to mineral material disposal, providing the greatest opportunity for the disposal of mineral materials among the alternatives.	Seventy-nine percent of the RFO would be open to mineral material disposal, virtually identical to Alternative A.	Seventy-two percent of the RFO would be open to mineral material disposal, providing less opportunity than Alternatives N, A, and B and more opportunity than Alternative D.	Forty-five percent of the RFO would be open to mineral material disposal, providing the least opportunity for disposal of mineral materials among the alternatives.

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Wilderness Study Areas	Under all alternatives, wilderness study area management is guided primarily by BLM Handbook H-8550-1, Interim Management Policy for Lands under Wilderness Review. The IMP directs that WSAs are managed so as not to impair their suitability for preservation as wilderness. Additionally, BLM policy requires that WSAs be closed to oil and gas leasing and designated as VRM Class I. Collectively, this management direction protects the wilderness characteristics of the WSAs.				
	Forty-two miles of routes within 10 of the 11 WSAs would continue to be designated for use by motor vehicles, which would temporarily impact solitude and opportunities for primitive recreation in areas adjacent to the open routes. The rugged terrain of these areas has presented a barrier to vehicle intrusions in the past and would likely continue to do so in the future, although advancing vehicle technology could allow vehicles to enter and impact areas they have not been able to access in the past. • The continued use of these routes is conditioned on non-impairment of wilderness suitability.	All WSAs would be designated as limited to OHV use and 52 miles of routes would be designated as open to motorized vehicles, the most of any alternative. The potential impacts to naturalness and solitude from vehicle intrusions would be the greatest among the alternatives. • The continued use of these routes is conditioned on non-impairment of wilderness suitability.	Area designations under Alternative B would be the same as Alternative N. An additional three miles of routes would be designated as open to motor vehicle use (45 miles total), resulting in more potential impacts to wilderness characteristics than Alternatives N, C and D but less than Alternative A. • The continued use of these routes is conditioned on non-impairment of wilderness suitability.	All WSAs would be closed to motorized use, which would preclude impacts to wilderness characteristics from motorized vehicles.	
Wild and Scenic Rivers	Under all alternatives, all or parts of seven eligible rivers totaling 98 river miles are within WSAs, including most of the Dirty Devil River and its side drainages. This represents 73% of the eligible river miles. The outstandingly remarkable values of these river segments would be protected by WSA management which would preclude oil and gas leasing, designate them as VRM I (under Alternatives A, B, C and D), and otherwise protect the values as prescribed by the IMP.				
	There would be no impacts to outstandingly remarkable values since no suitability	There could be potential impacts to the outstandingly remarkable values of	There would be no impacts to outstandingly remarkable values within the Fremont Gorge and	Under Alternatives C and D, all eligible river segments (135 miles) would be recommended as suitable, precluding impacts to outstandingly remarkable values.	

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
	determination would be made and all eligible river segments would be protected.	eligible segments outside WSAs since no eligible river segments would be recommended as suitable.	Dirty Devil eligible river segments (59 miles), which would be recommended as suitable, or to eligible segments inside WSAs. There could be potential impacts to the 13 miles of eligible rivers outside WSAs from various surface disturbing activities that would be allowed.		
ACECs	Continue designation and management of the four existing ACECs: • North Caineville Mesa • South Caineville Mesa • Gilbert Badlands • Beaver Wash Canyon Decisions under Alternative N could pose a threat of irreparable harm to relevant and important values in the following potential ACECs: • Badlands (that portion outside the existing South Caineville and Gilbert Badlands ACECs) • Bull Creek • Dirty Devil/North Wash (that portion outside the existing Beaver Wash Canyon ACEC). • Fremont Gorge/ Cockscomb	No ACECs would be designated under Alternative A, with no special management prescriptions for the relevant and important values. Other decisions within this alternative could pose a threat of irreparable harm to relevant and important values.	Decisions under Alternative B could pose a threat of irreparable harm to relevant and important values in the following potential ACECs: • Badlands (that portion outside the existing North Caineville Mesa, South Caineville Mesa and Gilbert Badlands ACECs) • Bull Creek • Dirty Devil/North Wash • Fremont Gorge/ Cockscomb • Henry Mountains • Horseshoe Canyon • Kingston Canyon • Little Rockies • Lower Muddy Creek • Parker Mountain • Quitchupah • Rainbow Hills • Sevier Canyon	All potential ACECs would be designated under Alternatives C and D. Consequently, decisions under Alternatives C and D would pose no threat of irreparable harm to any relevant and important values in any of the potential ACECs.	

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
ACECs	• Henry Mountains • Horseshoe Canyon • Kingston Canyon • Little Rockies • Lower Muddy Creek • Old Woman Front • Parker Mountain • Quitchupah • Rainbow Hills • Sevier Canyon • Thousand Lake Bench • Special Status Species		• Thousand Lake Bench • Special Status Species		
Socioeconomic Environment	Management decisions under Alternative N would continue to support jobs and associated income in the local economy.	Employment and income could increase over Alternative N due to this alternative's emphasis on motorized access, commodity production, and resource extraction.	Employment and income would be similar to, but slightly less than Alternative N.	Employment and income associated with motorized access, commodity development and resource extraction could decrease compared with Alternative N due to increased restrictions on use of the public lands and harvesting of natural resources. However, businesses that rely on more primitive land uses would benefit.	This alternative places the most restrictions on development and extractive uses of the RFO. This could reduce opportunities to maintain certain aspects of local culture and reduce opportunities for community development. Employment and income associated with motorized access, commodity development and resource extraction could decrease compared with the other alternatives due to increased restrictions on use of the public lands and harvesting of natural resources. However, businesses that rely on more primitive land uses would benefit the most from this alternative.

Resource	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Socioeconomic Environment	Livestock grazing would continue to generate some economic benefits from livestock operations (depending on available AUMs), and social values of ranching would continue.				
Environmental Justice	There are no environmental justice populations in the socioeconomic study area, and actions required to identify and mitigate impacts to such populations are not required.				
Health and Safety	• None of the land allocations or prescriptions proposed in Chapter 2 would impact BLM's ability to deal with hazardous and solid wastes within the RFO. • None of the management actions proposed in Chapter 2 would increase public exposure to the risks associated with abandoned mines within the RFO.				

CHAPTER 3 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter describes the existing conditions for Bureau of Land Management (BLM) resources, resource uses, special designations, and the socioeconomic environment within the Richfield Field Office (RFO) planning area. Management of resources and resource uses on public lands administered by the BLM is directed by a variety of laws, regulations, policies, and other requirements. The affected environment is used as the baseline of existing conditions against which the impacts of the different alternatives are analyzed and compared in Chapter 4.

3.2 OVERVIEW OF THE PLANNING AREA

The planning area encompasses 5.4 million acres in Sanpete, Sevier, Piute, and Wayne counties, and portions of Garfield County. There are also 21,500 acres of Kane County within the planning area. However, these acres lie entirely within Glen Canyon National Recreation Area (NRA) so no decisions within this RMP will affect those lands. Within this area BLM manages 2.1 million acres of public land surface and mineral estate, and an additional 95,000 acres of split estate lands (Federal minerals where the surface estate is in state or private ownership). The BLM also has administrative responsibility for 2,082,865 acres of mineral estate where the surface is managed by other Federal agencies (U.S. Forest Service and National Park Service [NPS]). Noted geographic features of the RFO include the Henry Mountains, Parker Mountain, Fremont River, Dirty Devil River, Gilbert Badlands, and Factory Butte. Acreage calculations used in this chapter and elsewhere in this document reflect current data in BLM's geographic information system (GIS) and may differ from acreages displayed in older documents, calculated by other methods. In this document, the term "planning area" applies to all lands within the five-county area, regardless of surface ownership. The term "Richfield Field Office" (RFO) applies only to the BLM-administered public lands and resources within the planning area. All acres in text and tables represent surface acres unless otherwise noted.

3.2.1 Physiography

The planning area is located primarily in south-central Utah and lies almost entirely within the Colorado Plateau and the Colorado Plateau-Basin and Range Transition physiographic provinces (Hunt 1974, Stokes 1986), except for a small portion of northern Sanpete County, which is within the Middle Rocky Mountains province.

As shown on Map 3 of the Mineral Potential Report (BLM 2005b), the eastern part of the planning area is in the Colorado Plateau province. This province is characterized by relatively flat-lying sedimentary strata uplifted to elevations between 5,000 and 10,000 feet above sea level, and that are predominantly Paleozoic to Mesozoic in age. In places, the strata are deeply incised as canyons; in others they are relatively broad bench lands. Strata in the eastern part of the planning area are intruded by igneous rocks that form the Henry Mountains.

The western part of the planning area is in the Colorado Plateau-Basin and Range Transition Zone. This province has similarities to the Colorado Plateau to the east and to the Basin and Range to the west. Similar to the Colorado Plateau, the sedimentary strata in the Transition Zone are relatively flat-lying. Similar to the Basin and Range, the physiography of the Transition Zone includes fault-bounded, north-trending ranges, which are separated by valleys. In addition, the Sevier and Sanpete Valleys and adjacent ranges are part of one of the world's classic fold-and- thrust belts (DeCelles and Coogan 2006). Many of

the ranges are capped by Tertiary volcanic rocks. One of the largest volcanic fields in the United States is the Marysvale Volcanic Field, which includes the Tushar Mountains and parts of adjacent plateaus.

The southern end of the Middle Rocky Mountains province extends into the northern highlands of Sanpete County along the drainage divide between the Spanish Fork and San Pitch rivers. Rocks in the area include Upper Cretaceous and Tertiary strata similar to those present in the Colorado Plateau to the east, along with Middle Tertiary volcanic deposits of the Moroni Formation.

3.2.2 Topography and Drainage

Overall, elevations across the planning area range from a high of 12,173 feet on Mount Delano, located on the crest of the Tushar Mountains in the Fishlake National Forest, to a low of around 3,700 feet on Lake Powell in Glen Canyon National Recreation Area. Mountain summits are typically 9,000 to 11,000 feet in elevation, with valley bottoms at 5,000 feet. The Green and Colorado Rivers drain the eastern portion of the planning area, whereas areas to the west have internal drainage to either the Sevier or Utah Lake basin. The Sevier River, which drains most of the western portion of the planning area, discharges to Sevier Lake.

3.3 PHYSICAL, BIOLOGICAL, AND CULTURAL RESOURCES

3.3.1 Air Quality

This section describes the climate and existing air quality in the region potentially affected by alternatives described in Chapter 2. Air pollutants addressed in this Environmental Impact Statement (EIS) include criteria pollutants, hazardous air pollutants and compounds that could cause visibility impairment or atmospheric deposition. Regional air quality is influenced by the interaction of several factors, including meteorology, climate, the magnitude and spatial distribution of local and regional air pollutant sources, and the chemical properties of emitted air pollutants. Elements of air quality addressed in this analysis include ambient air quality concentrations, visibility, and atmospheric deposition. Chapter 3 of the Management Situation Analysis (MSA) contains detailed information concerning air quality (BLM 2004a).

3.3.1.1 Climate

The climate of the planning area is variable and influenced by the complex topography of the region. Landforms that influence local weather include the Orange Cliffs and flat desert around Hanksville and the more complex mountainous areas of the Henry Mountains, Boulder Mountains, and the Southern High Plateaus.

Elevation within the RFO ranges from about 4,000 feet in the lower valleys to more than 11,500 at the top of Mount Ellen, in the Henry Mountains. The climate is a generally semiarid continental regime characterized by low relative humidity, abundant sunshine, and low to moderate precipitation. Below-normal precipitation and drought are common occurrences. The annual precipitation range is generally less than 5 inches in the lower elevation areas and up to 30 inches or more at the higher elevations. A uniform distribution of precipitation occurs from October through May, averaging a little more than an inch per month. June through September is slightly drier, with an average of about 0.8 inches per month. Moisture evaporation is high because of low humidity, high temperatures, and winds. Map 3-1 presents the average annual precipitation (AAP) for the RFO. Average maximum temperatures in the area range from 98°F in July to 37°F in January. Average minimum temperatures range from 7°F in January to 61°F

in July. The average frost-free period is 130 days at the lower elevations but drops to about 60 days at the higher elevations (Western Regional Climate Center).

Summers are characterized by hot weather in the lower valleys, where maximum temperatures of more than 100 degrees occur during most years at elevations of less than 5,500 feet. Winters are cold, and subzero minimum temperatures are recorded several times a year in most areas at lower elevations.

Snowfall usually is light, commonly less than 10 inches per year at the lower elevations, but occasional storms deposit as much as 2 feet of snow. Snowfall accumulates to an estimated 100 inches or more on the higher mountain slopes.

Strong temperature inversions persist in the lower valleys, and they frequently extend to about 1,000 feet above the valley floors. Above the top of the inversions, temperatures decrease about 3.5 degrees per 1,000-foot increase in elevation.

3.3.1.2 Ambient Air Quality Standards

The Clean Air Act (CAA) Amendment of August 7, 1977 (Section 160) identifies the following air quality areas:

- Class I—the most restrictive class applies to areas in which practically any change in air quality would be considered significant.
- Class II—applies to areas in which deterioration normally accompanying moderate, well-controlled growth would be considered insignificant.
- Class III—applies to areas in which deterioration to ambient standards is allowed.

Most of the RFO and all of the lands managed by the BLM are generally classified as a Class II air quality area (40 Code of Federal Regulations [CFR] Part 81.345). There are five Class I areas in close proximity or within the boundaries of the planning area: Capitol Reef National Park and a portion of Canyonlands National Park are within the planning area boundary; and Arches National Park, Bryce Canyon National Park, Zion National Park, and the remainder of Canyonlands National Park are located adjacent or near the planning area (Map 3-2). Protection of air quality in these Class I areas may require additional mitigation or protection measures to avoid potential impacts from BLM authorized activities.

Overall air quality in the RFO is good. Based on the region's remoteness, low population, limited industrial development and a lack of major urban communities, counties in the planning area are designated as "attainment" or "unclassifiable" with respect to National Ambient Air Quality Standards (NAAQS) for all criteria pollutants. As of May 2006, the air quality in the planning area has not been designated as "non-attainment" for any criteria pollutant. In addition, based on the 2006 Division of Air Quality Annual Report, the area is likely to be in attainment with respect to the new particulate matter (PM) 2.5 standards enacted in September of 2006, although the final determination has not yet been made (UDAQ 2007).

The air pollutant of most concern on public lands that could affect the Class I areas is particulate matter, which may originate from fire, fugitive dust, or vehicle use. Air resources are affected predominantly by existing concentrations of various pollutants and the climatic and meteorological conditions. Map 3-2 shows the Class I air quality areas within and adjacent to the planning area.

3.3.1.3 Existing Air Quality

The Utah Division of Air Quality (UDAQ) is responsible for monitoring air quality in Utah. Measurements are typically taken in urban areas where ambient pollution levels are expected to be the highest. As a result of the good air quality and the lack of potential factors that could influence a change in air quality levels, the State of Utah does no routine monitoring in the lands managed by the RFO. The National Park Service monitors its Class 1 areas for ambient air quality and air quality related values such as visibility. Based on existing data, air quality in the planning area is generally good to excellent due primarily to low population numbers and limited industrial development. The existing good air quality is typical of a largely undeveloped region in the Western United States. Regional concentrations of SO_2, PM_{10}, and nitrogen oxides (NOx) are generally well below the NAAQS. No major air pollution sources are found nor have polluted airsheds been identified within the planning area.

3.3.1.4 Sources of Air Pollution

Based on UDAQ annual reports and emission inventories from 1996 to the present the following conclusions regarding pollution sources within the RFO can be made:

- There are no major sources of air pollution in the planning area, especially when compared to more urban counties within the state.
- Sevier County has the greatest emissions from point sources within the RFO, although all counties have at least one point source identified.
- Based on emissions inventories, the primary air pollutant in the planning area is volatile organic compounds (VOC) followed by carbon monoxide (CO), PM_{10}, NOx, and SO_2.
- Area sources (emissions from agricultural activities, wildland and prescribed fire, small industry, etc.), biogenic emissions (these are emissions from decaying vegetation and soils), and on-road mobile sources are generally the greatest contributors to emissions in the RFO.

3.3.1.5 Prescribed Burning

The Environmental Protection Agency (EPA) notes in the Regional Haze Regulations (USEPA 1999) that fire emissions have a natural and a manmade component. The EPA also recognizes that all kinds of fire (wildfire, prescribed fire, etc.) contribute to regional haze, and a complex relationship exists between what is considered a natural source of fire versus a human-caused source of fire. For example, the increased use of prescribed fire in some ecosystems may lead to PM emissions levels lower than those that would be expected from wildfire. Given that the purpose of prescribed fire in many instances is to restore natural fire cycles to ecosystems, the EPA believes it would be appropriate to consider some portion of prescribed fire as “natural.” BLM currently cooperates with the UDAQ for smoke management and works to implement the Utah State Implementation Plan for Regional Haze (UDAQ 2004) and the smoke management plan (UDAQ 2003) in order to minimize man-made sources of emissions from prescribed fire activities.

3.3.1.6 Visibility

Visual resources are one of the most socially and economically important resources in the RFO. In August 1977, the Congress amended the CAA to establish as a national goal “the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution” (42 USC §7491(a)(1). The 1977 Amendments also included provisions requiring applicants for new major source permits to assess the potential for their projects to cause adverse impacts on the air quality-related values, including visibility, in nearby Class I

areas. In July 1999, the EPA published the Regional Haze Rule (40 CFR 51.300-51.309). This regulation established a program for the improvement and protection of visibility in the 156 protected Class I parks and wilderness areas, including the establishment of baseline and current visibility conditions and the tracking of changes in visibility conditions over time. Utah Air Conservation Rule R307-406 defines an adverse impact on visibility as "visibility impairment which interferes with the management, protection, preservation, or enjoyment of the visitors' visual experience of a mandatory Class I area." Any new major source or major modification must be reviewed for the impact of its emissions on visibility in any mandatory Class I area. UDAQ is currently updating the Regional Haze SIP approved by EPA and adopted by the State in 2003 and codified in state law in 2004 (R307-110-28). This includes the enhanced smoke management plan as well.

The Colorado Plateau in the Four Corners States of the Southwest is one of the most intensively monitored areas in the EPA/NPS' IMPROVE Network (Interagency Monitoring of Protected Visual Environments). Based on data from the IMPROVE Network, the Colorado Plateau portions of the RFO are one of the regions with the lowest amounts of haze. Atmospheric visibility is generally quite good. Visual-range estimated measurements made by the NPS and the BLM show a mean visual range of 125 to 175 miles. The mean annual visual range is about 150 miles; however, visual ranges can vary extremely from one-quarter to more than 300 miles during the year. The good visibility is the result of low regional sulfur dioxide and ambient suspended particulate concentrations (EPA and NPS 2007).

3.3.2 Soil Resources

Soil data and associated ecological site descriptions are used in evaluating the site's potential productivity and are critical to rangeland health evaluations as well as to determining impacts of various management activities. Soil erosion is one indicator of rangeland health. Soil surveys have been completed for about three-quarters of the planning area, although some surveys are over 20 years old. Published surveys include Fairfield-Nephi Area (1984), Millard County, East (2003), Sanpete Valley (1981), and the Henry Mountains Area (1990). The National Resources Conservation Service (NRCS) is currently revising the survey for Sevier County. Piute County and the western portion of Wayne County lack soil surveys and ecological site inventories.

3.3.2.1 Soil Resource Condition

Soil composition is one factor that determines vegetation growth and wildlife habitats. Soil types also influence water quality, salinity, and erosion throughout the planning area. BLM considers impacts of various management decisions on soils and related impacts to salinity control, water quality, and erosion. A comprehensive inventory of the condition of soil resources has not been conducted across the planning area, although rangeland health assessments and other site-specific project monitoring reports may contain some of this kind of information. This section provides an overview of the general soil resource concerns in the RFO.

Soil management problems may arise in the lands managed by the RFO depending on a combination of factors, including soil type, climate, geologic setting, vegetative cover, and how the resources are impacted by multiple uses (e.g., recreation, mineral development, grazing). Vegetation is sparse in some of the planning area because of high salinity, a short growing season, and distribution of effective moisture in some soils. Erosion and compaction are two important factors of concern in the planning area. Several areas in the planning area contain soils that are considered to be highly susceptible to wind and water erosion.

Vehicle traffic, herbivore trampling, foot traffic, or any activity that repeatedly causes an impact on the soil surface can cause a compaction layer (Chanasyk and Naeth 1995, Cole 1985, and Thurow *et al.*

1988). Compaction becomes a problem when it begins to limit plant growth, water infiltration, or nutrient cycling processes (Wallace 1987, Willat and Pullar 1983, Thurow *et al.* 1988, Hassink *et al.* 1993). Moist soil is more easily compacted than dry or saturated soil (Hillel 1998).

Soils developed on marine formations are high in gypsum and other salts. High concentrations of these salts at or near the soil surface limit the types and amounts of vegetation present. Badland and gypsum land, which are natural sources of large amounts of salt and sediment, often lack significant vegetation cover but frequently have a thin protective layer such as rock fragments, and/or soil crusts (physical and/or cryptobiotic) that provide some stability. Surface disturbance in these areas may result in an increased potential for erosion.

Biological soil crusts can be an important ecological component to the stability of certain soil and plant communities. There are areas in the eastern portion of the RFO on the Colorado Plateau that currently contain biological soil crusts as a component of the community. There are no inventories of the spatial extent or the condition of the soil crusts within the RFO. The standards and guidelines portion of the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration (43 CFR Subpart 4180) and Utah's Standards for Rangeland Health and Guidelines for Management (BLM 1997) compare current soil crust cover to that identified in the ecological site descriptions to determine if current management strategies are meeting standards.

Salt and sediment yield is of major concern in the Colorado River Basin, and erosion from public lands is an important source of sediment and associated salts in the area. Some of this yield is natural or results from relatively stable conditions in an arid or semiarid climate with periodic high-intensity storms and active erosion. The actual contribution of salt and sediment yield to the total Colorado River Basin from drainages in the planning area is unknown. The Colorado River Salinity Control Act guides actions in watersheds of the Colorado River Basin.

3.3.3 Water Resources

The United States is divided and sub-divided into successively smaller hydrologic units which are classified into four levels: regions, sub-regions, accounting units, and cataloging units. In general terms, a hydrologic unit can be defined as any geographic area where water within the area naturally drains to a specific outlet. The hydrologic units are arranged within each other, from the smallest (cataloging units) to the largest (regions).

The first level of classification divides the Nation into major geographic areas, or regions. These geographic areas contain either the drainage area of a major river, such as the Upper Colorado River region, or the combined drainage areas of a series of rivers, such as the Texas-Gulf region, which includes a number of rivers draining into the Gulf of Mexico. The second level of classification divides the regions into sub-regions. A sub-region includes the area drained by a river system, a reach of a river and its tributaries in that reach, a closed basin(s), or a group of streams forming a coastal drainage area. The third level of classification subdivides many of the sub-regions into accounting units, while the fourth level of classification is the cataloging unit, the smallest element in the hierarchy of hydrologic units. A cataloging unit, which is roughly equivalent to a local watershed, is a geographic area representing part or all of a surface drainage basin, a combination of basins, or a distinct hydrologic feature (USGS no date).

The planning area lies within portions of 11 separate watersheds located in the Upper Colorado Hydrologic Region and the Great Basin Hydrologic Region. The RFO is located within both the Colorado River Hydrologic Basin and the Great Basin Hydrologic Region. The Henry Mountains portion of the RFO is located in the Upper Colorado River Sub-basin of the Colorado River Basin, whereas most of the Mountain Valley portion of the RFO is located in the Sevier River Sub-basin of the Great Basin

Hydrologic Region. The northernmost portions of the RFO are contained in the Jordan River/Utah Lake Sub-basin of the Great Basin, and the easternmost extent of the Mountain Valley area is located in the Upper Colorado River Sub-basin. The RFO contains 120 perennial streams (see Table 3-1) and a larger number of intermittent streams.

Table 3-1. Perennial Stream Segments – Richfield Field Office

Antimony Creek	Ax Handle Canyon Creek	Beaver Creek
Benson Creek	Big Hollow Creek	Birch Creek
Box Creek	Brimhall Springs Creek	Brine Creek
Browns Creek	Bullberry Creek	Bull Creek
Bullfrog Creek	Bullfrog Creek North Fork	Burr Creek
Burro Creek	California Gulch Creek	Carcass Creek
Cass Creek	Cedar Creek	Coal Mine Wash
Coaly Wash Stream	Copper Creek	Copper Springs Creek
Cottonwood Creek	Cottonwood Wash	Cow Creek
Crescent Creek	Dark Canyon Creek	Daves Fork
Deep Creek	Deer Creek (Mitchel Creek)	Dirty Devil River
Divide Canyon Creek	Dry Canyon Creek	Dry Creek
Dugout Creek	Fish Creek	Fremont River
Government Creek	Granite Creek	Greenwich Creek
Halls Creek	Hansen Creek	Happy Canyon
Hells Kitchen Canyon Creek	Hogg Canyon Creek	Holt Draw
Hoodle Creek	Ivie Creek	Larrys Fork
Left Hand Fork Ax Handle Creek	Little Table Creek	Lost Creek
Maidenwater Creek	Manning Creek	Maple Canyon Creek
Maple Creek	Milk Creek	Mill Creek
Mt. Ellen North Fork Creek	Mt. Ellen South Fork	Mud Creek
Muddy Creek	Muley Creek	North Wash
North Wash South Fork	Oak Creek	Oak Spring Creek
Otter Creek	Pennell Creek	Peterson Creek
Petes Canyon Creek	Pine Creek	Pistol Creek North Fork
Pistol Creek South Fork	Pleasant Creek	Poison Creek
Poison Spring	Pole Canyon Creek	Praetor Canyon Creek
Quaking Aspen Creek	Quitchupah Creek	Quitchupah Creek North Fork
Raggy Canyon Creek	Reese Creek	Riley Canyon Creek
Road Creek	Robber's Roost Canyon	Saleratus Creek
Salt Wash	Sand Creek	Sandy Creek
San Pitch River	Sevier River	Sevier River East Fork
Skumtumpah Creek	Slate Creek	South Creek
South Willow Creek	Speck Creek	Spring Branch
Spring Creek North Fork	Starr Creek	Straight Creek
Sulphur Creek	Sulphur Creek Tr. Pleasant	Sweetwater Creek
Swett Creek	Swift Spring Creek	Tenmile Creek
Thompson Creek	Threemile Creek	Ticaboo Creek
Timber Canyon Creek	Trachyte Creek	Twin Corral Box Canyon
Water Creek	Water Hollow Creek	Wild Horse Creek
Willow Patch Creek	Willow Spring Creek (Forest Creek)	Yogo Creek

The majority of the streams in the RFO, whether perennial or intermittent, originate at higher elevations on National Forest or BLM lands and flow through private and BLM-administered lands. Many of these streams are characterized by steep streambed gradients and are subject to flooding during rapid snowmelt or high-intensity thunderstorms. As the perennial streams run through public lands, they provide water for livestock, wildlife, fisheries, and downstream irrigation.

Some intermittent and ephemeral streams in the area yield water during periods of spring snowmelt or intense thunderstorm activity. However, much of the water in most of these streams is used for irrigation and does not reach the major rivers.

The Sevier River and its tributaries are regulated by storage reservoirs. Because of this, the Utah State Engineer must approve changes to any water regime. A considerable amount of water from the snowmelt period is stored and then released from July to September. Lakes and reservoir storage facilities are an important part of the water resource scheme. Major reservoirs in the area include Otter Creek, Koosharem, Piute, Willow Creek, Gunnison, and Sevier Bridge Reservoirs.

Springs, seeps, and wells in the area provide high-quality water for domestic and livestock use.

3.3.3.1 Water Quality

Baseline surface water quality within the planning area is influenced by the geology and soil with which the water has been in contact. Water quality also varies depending on flow conditions. Human induced impacts in the planning area, such as changes in thermal and turbidity conditions in water bodies and impacts from increased salinity, heavy metals, and nutrients from irrigation or other discharges also affect baseline water quality. Surface water quality impacts within the planning area may be associated with agricultural runoff, road maintenance, removing riparian vegetation, channel modification, stream bank destabilization, atmospheric deposition, resource extraction, oil and gas activities, urban runoff and grazing activities.

Table 3-2 lists the impaired stream and river segments located within the RFO, listed on Utah's 2006 303(d) list of impaired waters (Appendix 4). Table 3-3 lists the lakes and reservoirs located within the planning area needing total maximum daily load (TMDL) analysis. TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. Water quality standards are set by the state. The State identifies the uses for each water body, for example, drinking water supply, contact recreation (swimming), and aquatic life support (fishing), and the scientific criteria to support that use. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and non-point sources. The calculation must include a margin of safety to ensure that the water body can be used for the purposes the state has designated. The calculation must also account for seasonal variation in water quality. The Clean Water Act, Section 303, establishes the water quality standards and TMDL programs.

Table 3-2. Utah's 2004 303(d) List of Impaired Stream and River Segments Requiring a TMDL Analysis

Water Body Name	Water Body Description	Causes
East Fork Sevier River	East Fork Sevier River and tributaries from confluence with Sevier River upstream to Antimony Creek confluence, excluding Otter Creek and tributaries	Temperature Total phosphorus
Lost Creek	Lost Creek and tributaries from confluence with Sevier river upstream about six miles	Total Dissolved Solids (TDS)
Sevier River	Sevier River from Clear Creek confluence to HUC unit boundary	Temperature
Peterson Creek	Peterson Creek and tributaries from confluence with Sevier River to USFS boundary	TDS
Lower Ivie Creek	Ivie Creek and tributaries from confluence with Muddy Creek to U-10 highway	TDS

Water Body Name	Water Body Description	Causes
San Pitch River	San Pitch River and tributaries from beneficial U132 to Pleasant Creek confluence excluding Cedar Creek, Oak Creek, Pleasant Creek, and Cottonwood Creek	Temperature

Table 3-3. Lakes and Reservoirs within Planning Area Identified as Needing TMDL Analysis

Water Body Name	Water Body ID	Pollutant
Piute Reservoir	UT-L-16030001-011	Total phosphorus
Nine Mile Reservoir	UT-L-16030004-001	Total phosphorus Dissolved oxygen
Otter Creek Reservoir	UT-L-16030002-004	Total phosphorus
Koosharem Reservoir	UT-L-16030002-011	Total phosphorus

Source: UDEQ 2006

As surface water quality decreases, the ability of aquatic animals and plants to maintain themselves diminishes. Stressors associated with increasing temperatures, lower dissolved oxygen levels, changing pH, and smothering from sediments adversely impact the aquatic ecosystem and diminish the ability of surface waters to sustain baseline conditions.

3.3.3.2 Drinking Water

Several municipal water sources and associated watersheds originate on public lands. BLM coordinates with local communities to protect and allow appropriate development of municipal water resources. Table 3-4 lists the culinary water sources located on public lands within the planning area.

Table 3-4. Culinary Water Sources on Public Lands

Name of Water User	Location and Source
William Murray	T. 27 S., R. 3 W., Section 7 - Spring
Town of Kingston	T. 30 S., R. 3 W., Section 24 - Spring
Utah Division of Water Resources (Town of Greenwich)	T. 27 S., R. 1 W., Section 35 - Spring
Town of Annabella	T. 24 S., R. 2 W., Section 19 - Spring
Utah Division of Water Resources (Town of Lyman)	T. 27 S., R. 3 E., Section 35 - Spring T. 28 S., R. 3 E., Sections 3 and 4 - Spring
Town of Bicknell	T. 28 S., R. 3 E., Section 25 – Spring T. 29 S., R. 3 E., Section 3 - Spring
Town of Loa	T. 28 S., R. 2 E., Section 3 – Spring and Well
Town of Sigurd	T. 23 S., R. 1 W., Section 6, 21, and 28 - Springs
Kings Meadow Ranches	T. 23 S., R. 1 W., Section 28 - Spring
City of Aurora	T. 22 S., R. 2 W., Sections 1 and 6 - Springs
Caineville Special Service District	T. 28 S., R. 8 E., Section 33 - Well
Town of Koosharem	T. 26 S., R. 1 E., Section 30 - Spring
Town of Hanksville	T. 29 S., R. 11 E., Section 1 - Well
Town of Antimony	T. 31 S., R. 2 W., Section 19 - Spring
Utah Dept. of Transportation U-24 Rest Stop	T. 26 S., R. 1 E., Section 29 - Spring

3.3.3.3 Groundwater

Groundwater recharge primarily originates as precipitation in the mountain areas surrounding the planning area where geologic formations outcrop or water resources were deposited during past geologic periods. Groundwater quality is highly variable and dependent on the formations where the aquifers are located. Groundwater contamination is a concern. Fresh water in the Navajo Formation is contaminated with high levels of TDS adjacent to Muddy Creek.

3.3.4 Vegetation

Vegetation communities provide the foundation for many resources and resource uses on public lands. Plant communities provide habitat for wildlife, forage for livestock, influence recreation use and are components of scenic quality. Healthy vegetation communities stabilize soils, increase infiltration of precipitation, slow runoff, reduce erosion, and enhance visual quality.

Patterns of vegetation structure and species composition are influenced by soil, climate, topography, and disturbance. Disturbances (such as fire) influence the structure and species composition of vegetation communities. Increases in the interval between fire disturbances in nearly all vegetation communities have resulted in increased vegetation density and change in vegetation structure and species composition.

The vegetation community and association descriptions that follow refer to the combination of plants forming natural vegetation in an area. These descriptions combine Utah Land Cover Geographical Analysis Program (GAP) data into three broad categories: desert shrub, sagebrush steppe, or forest and woodlands (USGS 2004). Each category contains one or more vegetation community or association, as illustrated on Map 3-3, Vegetation Cover Types. The vegetation associations are defined by the dominant plant species of either the tree or shrub vegetation layer (Jennings *et al.* 2004). The primary vegetation associations within the lands managed by the RFO are desert shrub, pinyon-juniper woodlands, sagebrush steppe, ponderosa pine, mixed-conifer, oak, mountain shrub, aspen, and non-vegetated. Table 3-5 lists the acreage and percentage of each vegetation association in the RFO.

Table 3-5. Vegetation Communities and Associations

Vegetation Community and Association	Richfield Field Office	
	Acres	Percent
Desert shrub	1,051,000	49%
Pinyon-juniper woodlands	552,000	26%
Sagebrush steppe	337,000	16%
Ponderosa pine	43,000	2%
Mixed-conifer	29,000	1%
Oak	20,000	1%
Mountain shrub	16,000	1%
Aspen	12,000	<1%
Nonvegetated	67,000	3%
Total	**2,127,000**	**100%**

Source: USGS 2004

3.3.4.1 Desert Shrub

Desert shrub includes the salt shrubs: shadscale, greasewood, blackbrush, and desert grassland vegetation cover types (see Table 3-6). Desert shrub vegetation comprises nearly half of the RFO (1,051,000 acres),

including much of the lower-elevation public land mostly east of Capitol Reef National Park. This is the largest vegetation community in the RFO. Located primarily on the valley floors, this vegetation community is most common on well-drained, sandy to rocky soils. However it can tolerate saline and alkaline soils. Plants within this community are adapted to a wide temperature range, and many are capable of photosynthesis at temperatures as low as 11°F (Simonin 2001). Precipitation in these areas ranges from 6 to 14 inches annually but is mostly from 8 to 12 inches per year. Table 3-6 lists species prevalent in this vegetation community.

Wildlife and livestock use of desert shrub vegetation varies depending on the species present. Fourwing saltbush is very palatable and provides high-quality forage for wildlife and livestock even during drought conditions (Kindschy 1996). Black greasewood is a valuable browse for livestock and wildlife, particularly during fall and winter; however, when consumed in large quantities, the soluble oxalates that black greasewood contains are poisonous to livestock (Anderson 2004). The forage value for blackbrush is principally as browse for bighorn sheep. Domestic sheep and goats, and to a lesser extent cattle, also browse blackbrush. During the winter in southwestern Utah, blackbrush provides fair forage for domestic sheep and cattle (Anderson 2001). Desert shrub areas provide browse and shelter for small mammals, and fourwing saltbush provides a source of water for black-tailed jackrabbits.

Table 3-6. Typical Desert Shrub Plant Species

Life form	Common Name	Scientific Name
Shrubs	Shadscale	*Artiplex confertifolia*
	Winterfat	*Krascheninnikovia lanata*
	Saltcedar	*Tamarix chinensis*
	Rabbitbrush Species	*Chrysothamnus spp.*
	Hopsage	*Grayia spinosa*
	Mormon Tea	*Ephedra spp.*
	Blackbrush	*Coleogyne ramosissima*
	Black Greasewood	*Sarcobatus vermiculatus*
	Fourwing Saltbush	*Artiplex canescens*
Grasses	Indian Ricegrass	*Achnatherum hymenoides*
	Galleta	*Hilaria jamesii*
	Alkali Sacaton	*Sporobolus airoides*
	Saltgrass	*Distichlis spicata*
	Purple Threeawn	*Aristida purpurea*
	Blue Grama	*Bouteloua gracilis*
	Sand Dropseed	*Sporobolus cryptandrus*
	Cheatgrass	*Bromus tectorum*
Forbs	Broom Groundsel	*Senecio spartioides*
	Hairy Daisy	*Erigeron incertus*
	Longleaf Phlox	*Phlox longifolia,*
	Scarlet Globemallow	*Sphaeralcea coccinea*
	Buckhorn Cholla	*Opuntia acanthocarpa*

Source: USFS 2004 and Welsh *et al.* 1993.

3.3.4.2 Sagebrush Steppe

Widely distributed in the Colorado River Basin and Great Basin, the sagebrush-steppe vegetation community is primarily found in the western portion of the RFO. Sixteen percent (337,000 acres) of the RFO is considered sagebrush steppe. Sagebrush steppe communities generally occur on the drier portions of pinyon-juniper woodlands and mesic portions of the desert shrub community. Precipitation in these areas averages 8–15 inches per year, and soils are dry, with a thin organic horizon. Forbs with shallow root systems are favored in wetter years, whereas deeply rooted shrubs have the competitive advantage during droughts and survive by tapping deeply infiltrated moisture (West 2000). Sagebrush species

include big sagebrush, Wyoming big sagebrush, and basin sagebrush. Table 3-7 lists species in the sagebrush steppe vegetation community. Sagebrush steppe communities in Utah have declined because of drought, changes in disturbance regimes, and the invasion of cheatgrass and other invasive plant species. A recent sagebrush die-off in Utah affected approximately 600,000 acres of sagebrush habitat below 7,000 feet, primarily on public lands. The die-off is thought to be caused by stress on the plants due to an extended drought. In addition, most of the sagebrush in the RFO are mature plants, with little new growth being found.

About 100 bird species and 70 mammal species are found in sagebrush steppe communities. These species can be grouped into sagebrush obligates (e.g., sage grouse, sage thrasher, sage sparrow, Brewer's sparrow, pygmy rabbit, sagebrush vole, sagebrush lizard, and pronghorn); shrubland species (e.g., green-tailed towhee, black-throated sparrow, and lark sparrow); and shrubland-grassland species (e.g., Swainson's hawk, ferruginous hawk, prairie falcon, sharp-tailed grouse, and loggerhead shrike).

Table 3-7. Typical Sagebrush Steppe Plant Species

Life form	Common Name	Scientific Name
Shrubs	Rabbitbrush species	*Chrysothamnus spp.*
	Broom Snakeweed	*Gutierrezia sarothrae*
	Shadscale	*Artiplex confertifolia*
	Antelope Bitterbrush	*Purshia tridentata*
	Fringed Sagebrush	*Artemisia frigida*
	Wyoming Sagebrush	*Artemisia tridentata wyomingensis*
	Basin Big Sagebrush	*Artemisia tridentata vaseyana*
	Fourwing Saltbush	*Artiplex canescens*
Grass	Indian Ricegrass	*Achnatherum hymenoides*
	Bluebunch Wheatgrass	*Pseudoroegneria spicata*
	Crested Wheatgrass (non-native)	*Agropyron cristatum)*
	Desert Needlegrass	*Achnatherum speciosum*
	Basin Wildrye	*Leymus cinereus*
	Poa species	*Poa spp.*
	Salina Wildrye	*Leymus salinus*
	Slender Wheatgrass	*Elymus trachycaulus*
	Cheatgrass	*Bromus tectorum*
Forbs	Yarrow	*Achillea millefolium*
	Arrowleaf Balsamroot	*Balsamorhiza sagittata*
	Scarlet Globemallow	*Sphaeralcea coccinea*
	Desert Phlox	*Phlox tenuifolia*
	Pricklypear Cactus	*Opuntia spp.*
	Fleabane species	*Erigeron spp.*
Mosses and Lichens	Awnless Spikemoss	*Selaginella mutica*

Source: USFS 2004 and Welsh *et al.* 1993.

3.3.4.3 Forests and Woodlands

Forest and woodland vegetation is generally restricted to areas where soil moisture is adequate to establish seedlings or where there has been a change in the disturbance regime. Adequate soil moisture is usually found at higher elevations and in riparian areas. Areas above 7,000 feet are usually dominated by forest species. Lower elevations with adequate soil moisture are dominated by pinyon-juniper woodlands. Typical forest and woodland types found within the RFO are ponderosa pine (*Pinus ponderosa*), aspen (*Populus spp.*), mixed-conifer, and pinyon-juniper woodlands. Forested areas above 10,000 feet elevation are usually a mix of several conifer species. At the lower elevations, forest types vary from pure juniper to a mix of woodland species and ponderosa pine. Table 3-8 lists species commonly found in forest and woodland areas.

Table 3-8. Typical Forest and Woodland Species

Life form	Common Name	Scientific Name
Trees	Utah Juniper	*Juniperus osteosperma*
	Rocky Mountain Juniper	*Juniperus scopulorum*
	Pinyon Pine	*Pinus edulis*
	Singleleaf Pinyon	*Pinus monophylla*
	Ponderosa Pine	*Pinus ponderosa*
	Bristlecone Pine	*Pinus longaeva*
	Engelmann Spruce	*Picea engelmannii*
	Subalpine Fir	*Abies lasiocarpa*
	White Fir	*Abies concolor*
	Douglas Fir	*Psuedotsuga menziesii*
	Aspen	*Populus tremuloides*
	Curleaf Mountain-Mahogany	*Cercocarpus ledifolius*
Shrubs	Greenleaf Manzanita	*Arctostaphylos patula*
	Black Sagebrush	*Artemisia nova*
	Gambel Oak	*Quercus gambelii*
	Mountain Snowberry	*Symphoricarpus oreophilus*
	Serviceberry species	*Amelanchier spp.*
	Chokecherry	*Prunus virginiana*
	Oregon Grape	*Berberis repens*
	Wood's Rose	*Rosa woodsii*
	Myrtle Pachistima	*Pachistima myrsinites*
	Redberry Elder	*Sambucus racemosa*
	Gooseberry species	*Ribes spp.*
	Mountain Muhly	*Muhlenbergia montana*
Grasses	Idaho Fescue	*Festuca idahoensis*
	Sheep Fescue	*Festuca ovina*
	Mutton Grass	*Poa fendleriana*
	Blue Grama	*Bouteloua gracilis*
Forbs	Littleleaf Pussytoes	*Antennaria parviflora*
	Heartleaf Arnica	*Arnica cordifolia*
	Indian Paintbrush species	*Castilleja spp.*
	Lupine species	*Lupinus spp.*

Source: USFS 2004 and Welsh *et al.* 1993.

3.3.4.3.1 Pinyon-juniper

Pinyon-juniper woodlands occupy the driest woodland sites in Utah and provide important resources for people, wildlife, and plants. Pinyon-juniper woodland communities cover 552,000 acres, about one-quarter of the RFO. Pinyon-juniper stands grow on foothills, low mountains, mesas, and plateaus ranging from 3,000 to 8,000 feet in elevation, depending on precipitation and soil conditions. The upper limits of the pinyon-juniper woodland community in Utah are 6,500 feet on north-facing slopes and 8,400 feet on south-facing slopes. Plant species present in these areas vary widely (Evans 1988). Typically, juniper dominates at lower elevations and pinyon dominates at higher elevations (Anderson 2002, Zlatnik 1999). Pinyon-juniper woodlands provide little forage for livestock and big game.

Pinyon-juniper woodlands are increasing in the western United States as they replace other vegetation communities. Juniper is expanding into open meadows, grasslands, sagebrush steppe communities, quaking aspen groves, riparian communities, and forest lands. Increases in canopy cover results in significant amounts of bare ground, litter, and desert pavement at the soil surface (USGS 2004). On lower edges of the woodland zone, Utah juniper is frequently the only tree species. Utah juniper is more adapted to dry conditions than pinyon, with junipers often serving as nurse trees for pinyons in well developed forests. The undergrowth is variable and dependent upon canopy closure, soil texture,

elevation and aspect (Welsh et. al. 1993). In healthy pinyon and juniper communities height ranges from 15 to 30 feet. Health and relative density of pinyon and juniper vary widely within the RFO; however, canopy densities over 50% occur over large areas. Pinyon pine and Utah juniper vigorously compete with other plants for available soil water. They crowd out grasses and shrubs that usually are present as understory vegetation. The lack of protective vegetative cover in pinyon and juniper stands leaves the soil surface particularly susceptible to erosion.

The replacement of shrub steppe communities with juniper woodland is attributed to the reduced role of fire caused by the reduction of the fine fuels through livestock grazing (Miller and Rose 1995). This expansion of pinyon-juniper woodlands has been facilitated by a combination of climatic changes, fire suppression, and the removal of understory vegetation.

3.3.4.3.2 Ponderosa Pine

Ponderosa pine forest types within the RFO (Map 3-3) are found primarily in the Henry Mountains and bordering U.S. Forest Service (USFS) lands in the western portion of the RFO. Ponderosa pine can be either a climax or a seral species. It is a climax species at the lower limits of the coniferous forests and a seral species in higher-elevation mixed-conifer forests. Ponderosa pine is considered shade-intolerant and tends to grow in even-aged stands; however, in the drier limits of its range, such as the Henry Mountains, uneven-aged stands appear common. In reality, these apparently uneven-aged ponderosa pine stands are a mosaic of small even-aged groups. Ponderosa pines lose vigor in dense stands (Burns and Honkala 1990).

Fires have had a profound effect on the distribution of ponderosa pine. Although the seedlings are readily killed by fire, larger trees possess thick bark that offers effective protection from fire damage. Competing tree species, such as Douglas fir, are considerably less fire tolerant, especially in the sapling and pole size classes. Because of successful fire control during the past 50 years, many of these stands have developed under stories of Douglas fir and true firs. Type conversion has been accelerated by harvest of the ponderosa pine, leaving residual stands composed of true fir, Douglas fir, or lodgepole pine (Burns and Honkala 1990).

3.3.4.3.3 Quaking Aspen

Quaking aspen is found on relatively moist sites between 7,500 and 10,500 feet in mountainous areas within the planning area. They also occur at lower elevations in riparian communities and at other sites with deep soil and adequate soil moisture. In very high exposed places, aspen becomes stunted, with the stem bent or almost prostrate from snow and wind. At its lower limit, it is a scrubby tree growing along creeks (Burns and Honkala 1990). Aspen trees grow together in clones or in groups of stems that share the same root system and genetic makeup. Quaking aspen seedlings at one year of age are capable of reproducing by root sprouts (suckers), and mature stands reproduce vigorously by this means. Root collar sprouts and stump sprouts are produced only occasionally by mature trees, but saplings commonly produce them (Burns and Honkala 1990). Aspen clones may regenerate readily after clearcutting or burning by producing numerous root sprouts. Root damage during logging can reduce sprouting. Clearcutting a mixed aspen-conifer stand may lead to replacement with pure aspen stands, depending on location. This forest type is very important for landscape diversity, aesthetics, and wildlife habitat.

The fast-growing quaking aspen tree is short–lived, and pure stands are gradually replaced by slower-growing species. Areas once dominated by aspen in the state of Utah show a 60% decrease since the late 1800s (Shepperd *et al.* 2001). The diversity and abundance of understory plants in an aspen stand can be 10 times that found in coniferous forest types. In addition, aspen forests yield more water than conifer types in similar environments.

3.3.4.3.4 Mixed Conifer

Mixed-conifer forest types within the planning area occur at the highest elevations, usually above 10,000 feet. The mixed-conifer forest type is generally found at higher elevations and includes Douglas fir, white fir, subalpine fir and Englemann spruce. Mixed-conifer forests can be very complex in structure and age distribution. Their species are shade-tolerant and generally not considered resistant to fire. Fires are infrequent but important in dry years, and windthrow is an important disturbance factor.

3.3.4.4 Riparian Resources

The BLM's 1987 policy statement on riparian area management defines a riparian area as "an area of land that is directly influenced by permanent water. It has visible vegetation or physical characteristics reflective of permanent water influence. Lake shores and stream banks are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil." A riparian area identified as lentic is usually considered to be a meadow/spring riparian area while a riparian area identified as lotic would have running water such as a creek or river.

Riparian areas cover less than 1% of the planning area. The most extensive areas of riparian vegetation on public land are those found along the Dirty Devil River and the Fremont River east of Capitol Reef National Park. The ecological significance of riparian areas far exceeds their limited physical area. They are located along streams and rivers or lands with a water table that is capable of influencing soils and vegetation. They are major contributors to ecosystem productivity and structural and biological diversity, and they provide important habitat for fish, birds, and other wildlife species. Riparian areas affect the quantity and quality of water onsite and downstream, and help store floodwaters, recharge groundwater, reduce the risk of flash floods, and filter sediments.

It is the objective of the Utah BLM Riparian Policy to improve or maintain riparian areas in proper functioning condition (PFC). Regardless of the type of riparian or wetland ecosystem, functioning condition is assessed for each stream or varying segments. Functioning condition is rated by category to reflect ecosystem health as affected by management practices. Riparian areas are classified as in PFC when there is adequate vegetation and landform structure present to dissipate stream energy from high flows. This results in a reduction in erosion, improvement in water quality, filtration of sediment, capturing of bedload, and an aid in floodplain development. Properly functioning riparian areas also result in an improvement in flood water retention and ground water recharge, the development of root masses that stabilize stream banks against cutting action, the development of diverse ponding and channel characteristics necessary for fish production and other uses, and support greater biodiversity.

"Functioning at Risk" riparian areas are in functional condition, but at least one soil, water, or vegetation attribute makes them susceptible to degradation following high flow events. Management practices that can make them "At Risk" include livestock grazing, the presence of roads, off-highway vehicle (OHV) activities, and commercial recreation and development.

"Non-Functioning" riparian areas are clearly not providing adequate vegetation, landform, or large wood debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc.

BLM has inventoried riparian areas throughout the RFO. About 400 miles of lotic riparian habitat and 1,180 acres of lentic riparian habitat have been inventoried on public lands in the RFO. Estimates of functional conditions of these riparian areas are displayed in Table 3-9. It should be noted that this does not represent a comprehensive total of all riparian habitats within the RFO, because not all have been

surveyed. Utah's Standards for Rangeland Health (BLM 1997) establish proper functioning condition as the minimum standard for BLM management of riparian areas.

Table 3-9. Riparian Conditions Inventory

		Proper Functioning Condition	Functioning at Risk	Non-functioning	Total
Lotic Riparian	miles	262 mi	90 mi	47 mi	399 mi
	% surveyed	66%	22%	12%	100%
Lentic Riparian	Acres	1053 ac	103 ac	23 ac	1,179 ac
	% surveyed	89%	9%	2%	100%

*Source: Riparian Inventories, Richfield Field Office, 2003

Riparian areas are dynamic and, compared to upland habitats, extremely responsive to changes. Variations in seasonal water flows influence the productivity and density of riparian vegetation and channel development. Flooding is an essential part of system development and stability. Minor changes are normal and are part of the resilience of the riparian ecosystem. A system's ability to withstand major disturbances is dependent on the integrity and balance of stream bank, hydrology, and vegetation components. Degraded conditions in any of those components can result in impacts that may be beyond the riparian area's capacity to withstand or repair following disturbance. The combined effects of small-scale, repeated degradation without recovery cause incremental declines in functional condition and increase vulnerability to further degradation. It is BLM policy to maintain, restore or improve riparian ecosystems to achieve a healthy and proper functioning condition that ensures biological diversity, productivity, and sustainability.

Riparian areas are dependent on a balanced combination of physical (stream bank, channel, soil characteristics), hydrologic (regular occurrence of surface water), and vegetation (hydrophytic communities) components. When any of these three components—soils, water, and vegetation—are adversely affected, the functional capacity of a riparian habitat may be degraded. Riparian-wetland areas are properly functioning when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows and flooding, thereby reducing erosion and improving water quality. Deep soil-binding root masses stabilize stream banks against erosion.

3.3.4.5 Invasive, Nonnative Species

The BLM defines a weed as "a plant that interferes with management objectives for a given area of land at a given point in time" (BLM 2007). Noxious weeds are designated by Federal or state law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or non-native, new or not common to the U.S. Noxious weeds are defined in Utah's *Standards* for Rangeland Health *and Guidelines* for Livestock Grazing (BLM 1997) as non-native plants that are especially undesirable because they have no forage value and are sometimes toxic, or are capable of invading plant communities and displacing native species. The BLM recognizes noxious weed invasions as one of the greatest threats to the health of rangelands nationwide.

Invasive species include plants able to establish on a site where they were not present in the original plant composition. Invasive species aggressively out-compete native species within a community and often alter the physical and biotic components enough to affect the entire ecological community. Invasive species are of particular concern following a disturbance. They are often exotic species that do not have naturally-occurring, local predators.

The Utah Noxious Weed Act defines a noxious weed as any plant that is determined by the Commissioner of Agriculture to be especially injurious to public health, crops, livestock, land, or other property. Nineteen species have been designated as state noxious weeds, and 15 have been additionally classified as new and invading weeds that have the potential to become noxious weeds. The state noxious weed list is presented in Table 3-10.

Table 3-10. Utah Noxious Weeds

Common Name	Scientific Name
Bermudagrass	*Cynodon dactylon*
Bindweed (Wild Morning Glory) *	*Convolvulus arvensis*
Canada Thistle *	*Cirsium arvense*
Diffuse Knapweed *	*Centaurea diffusa*
Dyers Woad	*Isatis tinctoria*
Perennial Sorghum species including Johnsongrass (Perennial sorghum) *	*Sorghum almum* *Sorghum halepense*
Leafy Spurge	*Euphorbia esula*
Medusahead	*Taeniatherum caput-medusae*
Musk Thistle *	*Carduus nutans*
Perennial Peppergrass *	*Lepidium latifolium*
Purple Loosestrife	*Lythrum salicaria*
Quackgrass *	*Agropyron repens*
Russian Knapweed *	*Centaurea repens*
Scotch Thistle *	*Onopordum acanthium*
Spotted Knapweed	*Centaurea maculosa*
Squarrose Knapweed *	*Centaurea squarrosa*
Whitetop *	*Cardaria draba*
Yellow Star Thistle	*Centaurea solstitialis*

Note: Species marked with an asterisk (*) occur within the RFO. The remaining species have been identifed on adjacent private, State, or USFS lands.
Source: Utah Department of Agriculture and Food 2003b.

In addition to the list generated by the State of Utah, each county weed control board has the authority to develop its own list. Table 3-11 lists weeds designated as noxious in any of the five counties within the planning area.

Table 3-11. County Noxious Weeds 2003

Common Name	Scientific Name	County Listed
Black Henbane	*Hyoscyamus niger*	Sanpete
Houndstongue	*Cynoglossum officinale*	Sanpete
Velvet Leaf	*Abutilon theophrasti*	Sanpete
Russian Olive	*Elaeagnus angustifolia*	Sevier, Wayne

Source: Utah Department of Agriculture and Food 2003b.

Utah BLM has designated several other invasive plants as new and invading weeds. These plants, although not listed by the state or any of the five counties, are identified based on their potential to invade and possibly alter plant communities in the RFO. Table 3-12 identifies these species.

Table 3-12. Utah BLM New and Invading Weeds

Common Name	Scientific Name
Black Henbane	*Hyoscyamus niger*
Camel Thorn	*Alhagi camelorum*
Dalmatian Toadflax	*Linaria dalmatica*
Goatsrue	*Galega officinalis*
Jointed Goatgrass	*Aegilops cylindrica*
Poison Hemlock	*Conium maculatum*
Purple Starthistle	*Centaurea calcitrapa*
Silverleaf Nightshade	*Solanum elaeagnifolium*
St. John's Wort	*Hypericum perforatum*
Velvetleaf	*Abutilon theophrasti*
Water Hemlock	*Cicuta douglasii (C. maculata)*
Wild Proso Millet	*Panicum miliaceum*
Yellow Nutsedge	*Cyperus esculentus*
Yellow Toadflax	*Linaria vulgaris*

Source: BLM 2004b.

Finally, the RFO has identified four invasive species in addition to the state, county, and Utah BLM plants. These additional species, which are known to cause problems within the local plant communities in the RFO, are:

- Puncture vine, which is also known as Goat's head (*Tribulus terristris*)
- Salt cedar, which is commonly referred to as tamarisk (*Tamarix chinensis* or *T. ramosissima*)
- Small flowered tamarisk (*Tamarix parviflora*)
- Buffalobur (Solanum rostratum).

Russian knapweed (*Centarea repens*), salt-cedar (*Tamarix chinensis*), and Russian olive (*Elaeagnus angustifolia*) are all problematic species occurring in riparian areas of the RFO. Salt-cedar channelizes rivers with its deep roots and chokes out other vegetation.

Changes to the above lists occur as new plant species become problems. It should be noted that a species' absence from the lists does not mean that the species is not considered in management decisions. For example, although large areas of uplands and rangelands are being converted to invasive annual species including cheatgrass (*Bromus tectorum*) and Russian thistle (*Salsola tragus*), neither species is included in any of the above lists. Once cheatgrass has established on a site and gone through a couple of cycles of seed production and dispersal, the seed bank can contain two or three times as many viable cheatgrass seeds as there are established plants in the community (Zouhar 2003). Cheatgrass invasion may be accelerated by disturbance, but disturbance is not required for its establishment. Cheatgrass can also thrive in areas that have little or no history of cultivation or grazing by domestic livestock. It may establish in these relatively undisturbed areas when seed disperses from nearby patches and establishes on sites of small natural disturbances, such as where rodents or predators dig in the soil (Zouhar 2003). It has changed plant species composition in all three vegetation communities.

3.3.5 Cultural Resources

Overviews of known cultural resources in the RFO show a wide range of and potential for cultural resources. Cultural resource inventories have been conducted in the lands managed by the RFO for more

than 30 years at varying levels using a variety of methods. Most of the inventories were conducted in accordance with Section 106 of the National Historic Preservation Act (NHPA) as part of impact mitigation from surface disturbing activities, although academic institutions have performed some research excavations. Inventories have identified several thousand cultural properties throughout the RFO, representing a wide variety of site types and chronological periods. Overall, less than 5% of the RFO has been inventoried.

Compared with other areas in the Southwest, site densities in inventoried areas are low throughout the RFO. Site densities increase near Capitol Reef National Park and in some of the canyons in eastern Wayne and Garfield counties. Site densities are much lower in Sevier County, with the lowest densities being found in Sanpete and Piute counties. Known cultural resources include various site types, ranging from about 10,000 years ago through the present. The site types are listed and described below.

3.3.5.1 Site Types

Cultural resources in the RFO have been classified according to one or more site types. Site types are groupings of sites with similar physical or cultural characteristics. Complete information may not be readily available during original recordation to determine the functional or cultural site type. Consequently some sites may be recategorized after further research. Sites fitting into more than one category are usually more complex and have more information potential than do single-category sites. At the broadest level, cultural resources sites are categorized as either prehistoric or historic types.

3.3.5.1.1 Prehistoric Site Types

Prehistoric sites can be associated with one or more of four broad thematic periods: Paleo-Indian, Archaic, Formative (Fremont or Anasazi), and Protohistoric. There are sites within the RFO from each period, with an especially large representation of Formative sites. Some of the site types in the RFO include the following:

- **Rock Art.** Rock art can be of two types, petroglyphs and pictographs. Petroglyphs are designs pecked or incised into the surface of the rock; pictographs are painted on the rock surface with various shades of pigment. At some sites, designs have been pecked into the surface and then painted. Rock art has not been attributed to specific human groups with any degree of assurance, but it is believed that rock art within the RFO represents groups living from before 9000 B.C. to the present.
- **Rockshelter.** A rockshelter consists of a rock outcrop or large boulder that provides shelter from wind, sun, rain, and other elements. Rockshelters were used both prehistorically and historically.
- **Lithic Scatter.** A lithic scatter is any group of stone artifacts or artifact fragments. Lithic scatters are usually composed of flaked stone tools or debitage. Ground stone tools and tool fragments also fit into this category. This type ranges from sites with only a single tool present to sites with thousands of artifacts, diverse in type and function.
- **Ceramic Scatter.** A ceramic scatter is any group of ceramic artifacts or artifact fragments and can result from either prehistoric or historic activity. Most prehistoric ceramics represent the Fremont Indian culture or tradeware from the Anasazi culture to the south, but a small amount of Numic (e.g., Ute or Paiute) pottery has been recorded.
- **Cairn.** A cairn is an intentionally created pile of stones. Most cairns in the RFO are from the historic period (e.g., sheepherders' monuments, mining claim markers, etc.). However, some may be prehistoric.
- **Hearth.** A hearth is the remains of a feature where humans purposely used fire. This includes clay- or rock-lined fire pits, ash pits, ash stains, and fire-cracked rock concentrations or scatters.

- **Rock Alignment.** A rock alignment is any human arrangement of rock not usually recognized as part of a structure.
- **Cist.** Cists are small structures usually built for storage. They are slab lined or coursed masonry, generally about one meter in diameter. They are usually semi-subterranean but can occur on the surface, freestanding or attached to a cliff face or ledge.
- **Burial.** Burial sites are those that contain human physical remains below the surface or exposed, whether marked or not.
- **Structural.** These sites are constructed from a wide range of material types and include various features within the structure. They consist of structures of brush and trees, mud and sticks, coursed masonry, and slab-lined, boulder-lined, or unlined pits occurring in open or naturally protected areas.
- **Midden.** Middens are concentrations of all or several of the following: ash, charcoal, bone, sherds, lithic fragments, human excrement, and general garbage.

3.3.5.1.2 Historic Site Types

Historic sites are cultural resources with a period of significance between 1700 A.D. to the present. Because features such as ditches, fences, and houses cannot be understood or interpreted outside the functional complex of which they are a part, historic resources are grouped into several themes. Some of these themes are organized chronologically, although most are functionally organized.

- **Anglo Exploration:** The pre-settlement category includes historic features from the period before the settlement of the five counties in the planning area. Limited features of this period have been identified. There are several records of individuals and groups passing through this area along what became known as the Old Spanish Trail. Remains of their activities may possibly be found. The Old Spanish Trail was designated a National Historic Trail in late 2002.
- **Ranching:** The ranching category includes features resulting from the raising of domestic livestock, such as fences, water developments, cabins, corrals, camps, and sheepherders' monuments. There is a long history of ranching in the RFO, and the features remaining from these developments are useful historic resources.
- **Farming:** The farming category includes features resulting from raising crops; digging or drilling wells; building barns, sheds, and cisterns; using farm implements; and constructing canals, ditches, and residences.
- **Mining:** The mining category includes features resulting from exploration and extraction of mineral resources, such as shafts and adits, drill sites, prospect holes, tailing dumps and waste rock piles, ore bins, loading chutes, kilns, tramways, residences, and other buildings.
- **Transportation:** The transportation category includes features resulting from attempts to transport people or goods across the RFO, such as abandoned rail lines, railroad grades, construction camps, bridges, roads, trails, and possible remains of river navigation.
- **Government Management:** The governmental management category includes features resulting from government attempts to manage the land and its resources. Many of these features are the result of Civilian Conservation Corps (CCC) activities through the 1930s. They include dams, fences, land treatments or manipulations, spring developments, roads, and bridges.

3.3.5.2 National Register of Historic Places

Three sites within the lands managed by the RFO have been formally listed on the National Register of Historic Places (NRHP). They are:

- **Cowboy Caves.** This site consists of two adjacent caves: Cowboy Cave and Walters Cave. Together they make up one of the richest archaic sites on the Colorado Plateau and outline almost 5,000 years of intermittent human habitation in the area.
- **Bull Creek Archaeological District.** This area of roughly 1,900 acres contains 104 identified significant archaeological sites, including habitations, storage structures, camps, and quarries. These sites represent a 400-year occupation (A.D. 800–A.D. 1200) of the area by peoples from the Formative period.
- **Starr Ranch.** The stone cabin here is a remnant of a 1890s stock-raising boom, when large cattle herds were introduced in the Henry Mountains. Starr Ranch is situated on the south slopes of Mt. Hillers, and its stone buildings are still standing.

Many other sites throughout the RFO meet the eligibility criteria for National Register listing. Current laws protect sites that are listed on the National Register and those that are eligible for such a listing.

3.3.5.3 Cultural History Overview

Cultural resources in the RFO are categorized into two major time periods separated by the presence of European influence in the region. Prehistoric sites can be associated with one or more of four broad cultural periods that are distinguished based on differences in material culture traits or artifacts and subsistence patterns. Prehistoric sites can be associated with one or more of four broad thematic periods: Paleo-Indian (before 5500 B.C.), Archaic (5500 B.C. to 700 A.D.), Formative (700 A.D. to 1300 A.D.), and Protohistoric (1300 A.D. to ca. 1776 A.D.).

3.3.5.3.1 Paleo-Indian (Before 5500 B.C.)

There is no firm date for the earliest human use of the lands managed by the RFO; however there is evidence of human use about 12,000 years ago. Chronologically, Paleo-Indians were contemporaries with extinct megafauna, and evidence outside the planning area shows the early human dependency on these animals (Spangler 2001). No sites that can definitely be assigned to this period have been found in the planning area, although many Paleo-Indian projectile points have been found throughout the Henry Mountains. Based on the period artifacts found throughout the area, it is safe to assume that Paleo-Indians did make use of the Henry Mountains; therefore, a potential for future discovery remains. Because of the rare nature of these resources, any discovery of Paleo-Indian sites would be significant.

3.3.5.3.2 Archaic (5500 B.C. to A.D. 700)

The Archaic tradition may be defined as a generalized hunter-gatherer adaptive strategy, with peoples employing “common adaptive strategies to exploit a variety of desert environments” (Spangler 2001). The warmer, dryer environment following the Paleo-Indian period resulted in a change from the big-game subsistence pattern of the Paleo-Indian to a small game hunting, seed, and nut-gathering subsistence pattern. It is thought that Archaic peoples “followed an annual round in response to changing resource availability, living in small, kin-related groups throughout most of the year” (Tipps 1988). These highly adaptive groups could easily move from where resources were depleted to where resources were abundant, roving from location to location, with their diet focusing on a new staple food source at each different location. Toward the end of the Archaic period, the hunter-gatherer tradition was gradually incorporated into supplemental agricultural subsistence. Evidence of agriculture exists in southern and southeastern Utah, dated to early Anasazi cultures around 1000 B.C. (Craig Harmon, BLM Richfield FO, Personal communication 2003). Archaic sites are common in the RFO. A few places in the area that were inhospitable to later Formative occupation seemed to favor earlier Archaic use.

Because of the small nature of the Archaic sociopolitical groups, the few seasonal cave and overhang dwellings thus far discovered are estimated to represent only a portion of the sites used. Potential for further Archaic site discoveries remains throughout the RFO.

3.3.5.3.3 Formative (A.D. 700 to A.D. 1300)

The Formative Period saw the continued growth of the Anasazi or ancestral Puebloan cultures in addition to the Fremont culture. Evidence of the Anasazi is limited to areas east of Capitol Reef National Park, and it does not extend much farther north than the Henry Mountains area. Archaeological evidence of the Fremont people is generally found north of the Puebloan areas throughout much of central and eastern Utah (Craig Harmon, BLM Richfield FO, Personal communication 2003). Archaeological evidence from north of the Henry Mountains area contains evidence of the Fremont and Puebloan cultures.

Formative cultures led a more sedentary life than did their Archaic predecessors. Consequently, Formative cultures resulted in more permanent settlements. The Formative Fremont are "archaeologically characterized by the use of ceramics and the bow and arrow, habitation of deep pithouses in small riverine settlements, and a metate with a shelf, termed the Utah metate" (Miller 2002). Much of the rock art in the RFO is attributed to Formative cultures, although rock art from Archaic and Numic cultures also has been noted. Most sites in the RFO identified as belonging to a specific cultural group are either wholly from or contain components of Formative cultures.

3.3.5.3.4 Protohistoric (A.D. 1300 to ca. 1776)

Following the seemingly abrupt decline and disappearance of the Fremont culture around A.D. 1300, archaeological evidence suggests that Numic-speaking tribes (Paiute, Shoshone, Goshute) and the Navajo entered the area (Craig Harmon, BLM Richfield FO, Personal communication 2003). According to the idea of Numic Expansion, suggested earlier in the 20th century, these cultures relied on late Archaic hunting and gathering traditions rather than the agriculturally augmented Formative subsistence patterns. However, most records and diaries kept by the early settlers in Utah contain several references to the many small farming communities that they encountered in the mid-19th century along the Virgin and Santa Clara Rivers in southwestern Utah. This seems to indicate the opposite of what the Numic Expansion idea suggests. More research remains to be conducted regarding this question.

Sites from this period are beginning to be located in the planning area. They have probably been observed many times before but were ascribed to and recorded as Fremont.

3.3.5.3.5 Historic (After ca. 1776)

The first documented Europeans in Utah arrived in 1776–1777, led by the Spanish Catholic Fathers Dominguez and Escalante. Trappers, explorers, and emigrants passing through to the Pacific coast followed them. Between the early 1830s and the late 1840s, users of what is now known as the Old Spanish Trail navigated numerous routes, many of which cross portions of the RFO (NPS 2001). European settlement of the planning area ranged from 1848 in Sanpete County to the 1880s in Wayne County (Powell 1994) and was predominantly accomplished by Mormon pioneers. These early communities focused on farming and ranching for subsistence.

A gold and silver boom in the Tushar Mountains in the 1890s and early 20th century spawned several small towns in Piute County. When the mines were no longer productive, the population boom reversed itself. Later, lead, zinc, alunite, and uranium were mined (Powell 1994). Over the years, ranching has continued as a use of public lands. Although most historic period cultural resources in the five-county

area are not located on public land, there are exceptions, such as the Wolverton Historic Mill and Starr Ranch.

3.3.5.4 Cultural Relationships

Several tribes maintain active interests in use and management of the lands managed by the RFO. Continuing consultation efforts with these groups have identified a few areas of tribal religious significance and/or traditional use within the RFO. Tribes have also expressed concerns over the preservation and protection of specific archaeological sites and impacts to prehistoric sites from disturbance.

3.3.5.5 Cultural Resource Condition and Trend

The condition and trend of cultural resources in the RFO vary considerably as a result of the diversity of terrain, geomorphology, access and visibility, and past and current land use patterns. Because recorded sites are manifested by discovery of exposed artifacts, features, and/or structures, they are easily disturbed by natural elements such as wind and water erosion, natural deterioration and decay, as well as animal and human intrusion and development and maintenance activities. Based on limited site monitoring, the trend of site conditions in the RFO is considered to be downward. Indications of active vandalism or collecting (unauthorized digging and "pothunting") have been observed in limited instances. Archaeological and historic sites are known to be deteriorating from a variety of causes. Many sites are deteriorating from natural causes and many others from the illegal activities of artifact collectors. Inadvertent damage from construction projects also impacts resources. Collectively, these agents have adversely affected and continue to adversely affect many known cultural resources.

3.3.5.6 Consultation

Section 106 of the National Historic Preservation Act of 1966 requires the BLM and other Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by ACHP. The BLM first determines whether it has an undertaking which is defined in the regulations as a type of activity that could affect historic properties. Historic properties are properties that are included in the National Register of Historic Places or that meet the criteria for the National Register. If so, BLM must consult with the State Historic Preservation Office. If BLM determines that it has no undertaking, or that its undertaking is a type of activity that has no potential to affect historic properties, the agency has no further Section 106 obligations.

In most of Utah, the BLM operates under the State Protocol Agreement with the Utah State Historic Preservation Officer that defines the manner in which the BLM will meet its responsibilities under the NHPA as well as the National Programmatic Agreement among the BLM, the ACHP, and the National Conference of State Historic Preservation Officers. The Agreement established certain review thresholds under which the BLM will request the review of the Utah State Preservation Officer (SHPO) and the ACHP in certain situations. These include:

- Non-routine interstate and/or interagency projects or programs;
- Undertakings that directly and adversely affect National Historic Landmarks or National Register eligible properties of national significance;
- Highly controversial undertakings, when Council review is requested by the BLM, SHPO, an Indian Tribe, a local government, or an applicant for a BLM authorization;

- Undertakings affecting National Register eligible or listed properties;
- Land exchanges, land sales, Recreation and Public Purposes Act (R&PP) leases, and transfers;
- When BLM professional staff lack the appropriate regional experience or professional expertise, and until performance is mutually acceptable to the BLM Deputy Preservation Officer and SHPO;
- When BLM's professional cultural resources staff wishes to bring a particular project to the attention of the SHPO.

The Protocol Agreement allows the BLM to streamline the review process significantly on projects that result in no effect to historic properties. The following steps would be followed in determining that there would be "no potential to affect": (1) identify the area of potential effect (APE); (2) conduct a Class I (literature) search and/or review other relevant records for historic properties/eligible historic properties within the APE; (3) notify the tribes or other entities that would have consulting party status of the proposed action and provide them with the opportunity to identify traditional cultural and religious properties and/or other historic and potentially eligible properties; (4) communicate/consult with tribes and other entities that would have consulting party status through letter and phone calls which, if properly documented, should demonstrate a "good faith" effort on the BLMs part; and (5) carefully and thoroughly document the BLMs findings and communications/consultation. The BLM will not request the review of the SHPO in the following situations:

- No Potential to Affect determinations by qualified BLM staff.
- No Historic Properties Affected; no sites present, determined by qualified BLM staff.
- No Historic Properties Affected; no eligible sites present, determined by qualified BLM staff.
- No Historic Properties Affected; eligible sites present, but not affected as defined by 36CFR800.4.

3.3.5.7 Native American Religious Concerns

The area encompassed by the planning area boundary has seen considerable prehistoric and historic American Indian use. Several Federally-recognized American Indian tribes identified to date either have a history of traditional use in or ancestral ties to this area (although there may be other tribes interested in the area). These tribes are:

- Paiute Indian Tribe of Utah (headquartered in Cedar City, Utah)
- Uintah and Ouray Ute (headquartered in Ft. Duchesne, Utah)
- Hopi Tribe (headquartered in Kykotsmovi, Arizona)
- Navajo Nation (headquartered in Window Rock, Arizona)
- Southern Ute Tribe (headquartered in Ignacio, Colorado)
- Ute Mountain Ute Tribe (headquartered in Towaoc, Colorado)
- Kaibab Paiute Tribe (headquartered in Pipe Springs, Arizona)
- San Juan Southern Paiute Tribe (headquartered in Tuba City, Arizona)
- Moapa Paiute Band (headquartered in Moapa, Nevada)
- White Mesa Ute Band (headquartered in White Mesa, Utah)

In addition to these tribes, the BLM also includes the Navajo Utah Commission in Montezuma Creek, Utah, and the Utah Division of Indian Affairs in Salt Lake City, Utah, in discussions related to BLM actions (including land use planning).

The BLM is the present custodian of the public land in the planning area, but this was not always the case. Innumerable American Indian groups were present in this area for thousands of years prior to Euro-American contact and occupation that began a few hundred years ago. Spiritual, emotional, and physical ties between these American Indians and their traditional homelands have existed for a long time and will no doubt continue to exist.

There are many places on Federal lands where Indians practice their religions. Many of the lawful activities that are permitted or authorized on Federal lands can compromise the integrity of sacred places and the privacy of religious practices. With this in mind, Executive Order 13007 on Indian Sacred Sites was signed "to protect and preserve Indian religious practices." The order obligates Federal land managers to work with Indian tribes to help protect their basic rights and the practice of their religions. When planning and implementing land uses, BLM generally has the ability to accommodate tribal access to sacred sites and to prevent physical damage or intrusions that might impede their use—if the existence of the sites is known.

3.3.5.8 Tribal Interest

The Paiutes claim both traditional use of and ancestral ties to the area managed by the RFO. Their interest includes specific claims relating to important and sacred areas as well as to certain other site locations. Some of these claims have recently been documented and supported in an ethnographic study conducted by Dr. Richard Stoffle of the University of Arizona (September 2004).

The Hopi claim ancestral ties to the prehistoric groups represented here and feel that they can trace Hopi clan migrations through symbols present in area rock art. The Utes have ancestral ties to central Utah. Both the Uintah and Ouray Ute and the Hopi Tribe have been willing to enter into consultation with BLM and comment on proposals in the RFO that have the potential to affect tribal interests.

The Navajo interest in this area is confined to that part of the planning area east of Capitol Reef National Park and stems from the 1850s when Kit Carson and the U.S. Army attempted to round up the Navajos and move them from their ancestral homeland into New Mexico. During this "Long Walk" or "Big Roundup" time, many Navajo people escaped north into the Henry Mountains and remained there for some time. As a result, the Navajo Nation claims this area as a traditional cultural property, although no formal nomination as such has been made to date. The Navajo interest also extends to the Dirty Devil River corridor and the Horseshoe Canyon drainage.

Meetings to discuss the RMP have been held with all the tribes mentioned above. A more detailed discussion of consultation with American Indian tribes can be found in Chapter 5 of this Draft Resource Management Plan/Draft Environmental Impact Statement (DRMP/DEIS).

3.3.6 Paleontological Resources

Paleontological resources are integrally associated with the rock formations in which they are located. The geographic extent of the lands managed by the RFO contains approximately 40 sedimentary geologic formations at the surface, most containing paleontological resources.

Sedimentary formations are formed through depositional processes that lead to characteristic traits and varying potential for certain types of fossils. If extensive excavation of a certain formation in one geographic area results in substantial fossil resources, a potential exists that similar fossils will be found elsewhere in the formation, although such consistency is not a guarantee. A comprehensive paleontological resource inventory has not been completed within the RFO; however, a review of paleontological research on formations contained within the RFO has identified the types of fossil

resources known to be present. Table 3-13 identifies the geologic formations within the RFO, their predominant depositional environments, and the types of fossils present. The geologic map of the planning area (Map 6 of the Mineral Potential Report [BLM 2005b]) displays these formations in relation to the planning area boundaries.

Table 3-13. Geologic Formations Present in the Planning Area

Formation Age	Formation Name	West[1]	East[1]	Depositional Environment	Fossils Present
Quaternary	Surficial Alluvium and Colluvium	X	X	Several	Vertebrate
	Surficial Older Alluvium and Colluvium	X	X	Several	Vertebrate
Tertiary	Sevier River Formation	X		Fluvial, Lacustrine	Vertebrate; Invertebrate
	Volcanic Rocks, Undivided	X		Volcanic with some Fluvial	Invertebrate
	Dipping Vat Formation (not noted on map)	X		Fluvial	Plant
	Grey Gulch Formation (also Bald Knoll and Aurora)	X		Lacustrine	Invertebrate; Plant
	Claron Formation (not noted on map)	X		Fluvial/Lacustrine	Invertebrate; Plant
	Green River Formation	X		Freshwater Lacustrine and Fluvial	Vertebrate; Invertebrate; Plant
	Colton Formation (not noted on map)	X		Primarily Alluvial with Marginal Lacustrine and Deltaic Facies	Vertebrate; Invertebrate
	Flagstaff Formation	X		Lacustrine/Marine	Vertebrate; Invertebrate; Plant; Trace
Cretaceous-Tertiary	North Horn Formation	X		Lacustrine/Fluvial	Vertebrate; Invertebrate; Plant; Trace
Cretaceous	Price River Formation (Mesa Verde Group)	X		Fluvial and Floodplain	Plant
	Blackhawk Formation (Mesa Verde Group)	X		Deltaic and Interdeltaic	Trace vertebrate; Plant
	Star Point Sandstone (Mesa Verde Group)	X		Beach Sand and Intermediate Marine Shale	Plant; Trace
	Indianola Group (Sixmile Canyon Fm; Funk Valley Fm; Allen Valley Shale; Sanpete Fm)	X		Fluvial	Invertebrate
	Straight Cliffs Formation	X		Coastal Plain Interfingering with Marine	Vertebrate; Trace vertebrate; Invertebrate; Plant
	Mancos Shale (including Tununk and Wahweap Members)	X	X	Marine	Vertebrate; Trace vertebrate; Invertebrate; Trace invertebrate; Plant
	Dakota Sandstone	X	X	Beach to Marginal Marine (Deltaic)	Vertebrate; Invertebrate; Plant; Trace
	Cedar Mountain Formation		X	Fluvial	Vertebrate; Trace vertebrate; Plant
Jurassic	Morrison Formation (Brushy Basin and Salt Wash Members)	X	X	Fluvial	Vertebrate; Trace vertebrate; Invertebrate; Plant

Formation Age	Formation Name	West[1]	East[1]	Depositional Environment	Fossils Present
	Summerville Formation		X	Tidal Flat	Trace vertebrate
	Curtis Formation (not noted on map)		X	Marine	Invertebrate
	Twist Gulch Formation (not noted on map)	X		Marginal Fluvial, Nearshore	Invertebrate
	Entrada Sandstone		X	Nearshore Eolian	Trace vertebrate; Plant
	Carmel Formation		X	Shallow Marine	Trace vertebrate; Invertebrate, Plant
	Arapien Shale	X		Supratidal, Marginal Nearshore Fluvial	Invertebrate; Plant
Triassic-Jurassic	Navajo Sandstone	X	X	Eolian	Trace vertebrate; Plant
Triassic	Kayenta Formation	X	X	Fluvial	Trace vertebrate; Plant
	Wingate SS (not noted on map)	X	X	Eolian	Trace vertebrate
	Chinle Formation	X	X	Fluvial	Vertebrate; Trace vertebrate; Invertebrate; Plant (wood)
	Moenkopi Formation	X	X	Marine/Tidal Flat	Vertebrate; Trace vertebrate; Invertebrate; Trace invertebrate; Plant
Permian	Kaibab Limestone/Toroweap Formation	X	X	Marine	Invertebrate
	Cutler Group		X	Eolian, Fluvial, and Shallow Marine	Vertebrate; Invertebrate; Plant; Trace vertebrate; Trace Plant
Pennsylvanian	Hermosa Group		X	Marine	Invertebrate

Note 1: East and West refers to the eastern and western portions of the planning area, with Capitol Reef National Park acting as the dividing line between the two sides.

Sources: Condon 1997; Doelling 2004; Graffam and Bourdon 1999; M. Hayden, Utah Geological Survey, Personal communication, 2004; Hintze *et al.* 2003; Rowley *et al.* 2002; Rowley, *et. al.* 2004; Steven *et al.* 1990; Stokes 1986.

More than half of the sedimentary formations (23 of 40) in the planning area are known to contain vertebrate or trace vertebrate fossils. However, some formations have a higher potential than others to contain significant numbers of vertebrate fossils. The Morrison and Cedar Mountain formations are noted for vertebrate fossils. Several complete fossil skeletons have been scientifically excavated from several specific localities in the planning area.

In addition to the potential for containing paleontological resources, paleontological localities identify areas where the presence of fossils is known. Roughly 587 paleontological localities are in the five counties that make up the planning area. The BLM is responsible for managing about one-third of these localities.

3.3.7 Visual Resources

The planning area contains a broad range of visual settings, ranging from mountain landscapes and steep canyons, to agricultural settings, to desert. The purpose of visual resource management (VRM) is to manage the quality of the visual environment and reduce the visual impact of development activities while maintaining the viability of all resource programs. VRM involves applying methods for evaluating landscapes and determining appropriate techniques and strategies for maintaining visual quality and reducing adverse impacts.

3.3.7.1 Visual Resource Inventory

Prior to completion of the current land use plans, visual resource inventories were conducted for most of the area now encompassed by the RFO. In those inventories, each acre of land was evaluated and assigned a scenic quality rating: A, B or C, with "A" representing the most scenic lands and "C" the least scenic. Criteria for determining the ratings are included in BLM Manual H-8410-1, *Visual Resource Inventory*. The BLM relied on these existing scenic quality evaluations for the purposes of this RMP revision. Excluded in the earlier inventories was a small portion of public land in Garfield County between the Dixie National Forest and the Wayne County border. In July 2003, the BLM inventoried this area for this RMP revision.

3.3.7.2 Visual Resource Management

Implementing the BLM's VRM methodology begins with the inventory process. Landscapes are evaluated based on scenic quality, visual sensitivity, and distance zones (the distance from the existing network of travel routes). VRM class recommendations are based on the inventory process, and final class determinations are established by the RMP. The VRM Class objectives are:

Class I – Preserve the existing character of the landscape. Management activity should be very limited. Change to scenery: very low and must not attract attention.

Class II – Retain the existing character of the landscape. Management activities may be seen. Change to scenery should be low and not attract the attention of the casual observer.

Class III – Partially retain the existing character of the landscape. Management activities may be seen and may attract the attention of the casual observer, but should not dominate the view.

Class IV – Allow major modifications of the existing character of the landscape. Management activities may dominate the view and be the major focus of viewer attention.

Current VRM classes for the RFO are shown below in Table 3-14 and on Map 2-1.

Table 3-14. Visual Resource Management Classes

VRM Class	Acres (BLM-Administered Surface)
Class I	0
Class II	529,500
Class III	569,000
Class IV	1,029,500

Source: BLM Land Use Plans

It should be noted that although current land use plans for the RFO did not inventory or classify any lands as VRM Class I, the BLM's visual resource management direction for lands within wilderness study areas is guided by IM-2000-96. This memorandum requires that all WSAs be managed according to VRM Class I management objectives until such time as the Congress decides to designate the area as wilderness or release it for other uses. The RFO contains 11 WSAs (446,900 acres) that are managed as VRM Class I.

The RFO contains many areas that possess a high degree of scenic quality and a high level of visual sensitivity. In general, high scenic quality within the RFO occurs in locations where the area has varied topography, unique geology and striking vistas. Areas with high visual sensitivity are the result of a high degree of visitor interest in and public concern for a particular area's visual resources, an area's high degree of public visibility, the level of use of an area by the public, and the type of visitor use that an area receives. These visual resources are appreciated by the local population as well as by visiting public.

Visitors are attracted to the area because of its scenic qualities. The main locations within the RFO that possess outstanding scenic quality and/or high visual sensitivity include, but are not limited to:

- Class A scenery (VRM Class II);
- Eleven WSAs (VRM Class I);
- Scenery in the foreground, middle distance, and background zones of major paved recreation highways (U-12, U-24, U-95, U-276);
- Scenery in the foreground and middle distance zones of unpaved roads designated as Scenic Byways (Fishlake Scenic Byway and Bull Creek Pass Backcountry Byway);
- Scenery in the foreground and middle distance zones of unpaved roads designated as Utah Scenic Byways (Kimberly/Big John Road, Cove Mountain Road, Cathedral Valley Road; Thousand Lake Mountains Road, Gooseberry/Fremont Road, Notom Road, and Posey Lake Road);
- Areas located along the public land/urban interface such as the Red Gates in Wayne County and the low hills surrounding the communities of Glenwood and Annabella in Sevier County.

3.3.8 Special Status Species

Special status species are plants, fish, and animals that require particular management attention as a result of population or habitat concerns (Appendix 9). There are five categories—

- Federally-Listed Threatened and Endangered Species and Designated Critical Habitats
- Federally-Proposed Species and Proposed Critical Habitats
- Federal Candidate Species
- BLM Sensitive Species
- State Listed Species

Federally-listed species can have habitat designated as critical to species viability. Only the Mexican spotted owl has designated critical habitat within the planning area (Map 3-4). For those species that are listed and do not have critical habitat designated, BLM cooperates with the U.S. Fish and Wildlife Service (USFWS) to determine and manage habitats of importance. BLM is working with local working groups in developing management plans for several special status species.

USFWS has responsibility under a number of Federal laws, treaties, Executive Orders (EOs), and memoranda of agreement (MOA) for the conservation and management of many fish, wildlife, and plant species and habitat. USFWS provides recommendations for protective measures for threatened and endangered species in accordance with the Endangered Species Act (ESA), as amended. Protective measures for migratory birds are provided in accordance with the Migratory Bird Treaty Act of 1918 (MBTA) and Bald Eagle Protection Act of 1940. Wetlands are afforded protection under EOs 11990 (wetland protection) and 11988 (floodplain management) and Section 404 of the Clean Water Act. Other fish and wildlife resources are considered under the Fish and Wildlife Coordination Act.

BLM has entered into an MOA with USFWS and the United States Department of Agriculture (USDA) Forest Service to improve the efficiency and effectiveness of plan-level Section 7 consultation processes under the ESA. Through this MOA, BLM agrees to promote the conservation of candidate, proposed, and listed species and to informally and formally consult on listed and proposed species and designated and proposed critical habitat during planning to protect and improve the condition of species and their habitats to a point where their special status recognition is no longer necessary.

3.3.8.1 Species Listed Under the Endangered Species Act

Table 3-15 identifies the Federally-listed species in the planning area.

Table 3-15. Federally-listed Species

Common Name	Scientific Name	Status
Birds		
Bald Eagle	*Haliaeetus leucocephalus*	Threatened
California Condor	*Gymnogyps californianus*	Experimental
Mexican Spotted Owl	*Strix occidentalis*	Threatened
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Endangered
Mammals		
Utah Prairie Dog	*Cynomys parvidens*	Threatened
Fish		
Bonytail Chub	*Gila elegans*	Endangered
Colorado Pikeminnow	*Ptychocheilus lucius*	Endangered
Humpback Chub	*Gila cypha*	Endangered
Razorback Sucker	*Xyrauchen texanus*	Endangered
Plants		
Wright Fishhook Cactus	*Sclerocatus wrightiae*	Endangered
Barneby Reed-Mustard	*Schoencrambe barnebyi*	Endangered
San Rafael Pediocactus	*Pediocatus despainii*	Endangered
Winkler Pincushion-Cactus	*Pediocactus winkleri*	Threatened
Last Chance Townsendia	*Townsendia aprica*	Threatened
Ute Ladies'-tresses	*Spiranthes diluvialis*	Threatened
Maguire Daisy	*Erigeron maguirei*	Threatened

Source: USFWS 2004.

3.3.8.1.1 Bald Eagle

The bald eagle, the national symbol of the United States, was first protected under the Bald Eagle Protection Act of 1940, then later listed as an endangered species in most of the lower 48 states in 1966 and again in 1973. Since the banning of DDT in 1972, the bald eagle has made a remarkable recovery throughout the United States. Its status was changed to threatened in 1995 and the bald eagle was proposed for delisting in 1999. Within Utah, the bald eagle is found throughout the state (more often seen in winter than summer). Habitat consists of communal winter roosting habitat and foraging habitat that is located within the RFO. Feeding areas, diurnal perches, and night roosts are fundamental elements of bald eagle winter range. In Utah, eagles nest in mature cottonwoods. Nesting has been documented in Wayne County (Utah Division of Wildlife Resources [UDWR] 2003). Wintering habitat exists within Sanpete, Sevier, Piute and Wayne Counties. Fish and waterfowl are the primary sources of food for bald eagles, but they will also feed on rabbits, carrion, and small rodents.

3.3.8.1.2 California Condor

The California condor was listed as endangered on March 11, 1967, and noted to occur only in California. USFWS has reintroduced California condors into northern Arizona and southern Utah and designated these birds as nonessential experimental populations under the ESA. The purpose of the reintroduction was to achieve a primary recovery goal: the establishment of a second noncaptive population, spatially disjunct from the noncaptive population in southern California.

California condors are among the largest flying birds in the world. Adults weigh as much as 22 pounds. Condors are opportunistic scavengers, feeding only on carcasses. Since European settlement of California, condor populations have steadily declined. Poisoning, shooting, egg and specimen collecting, collisions with artificial structures, and loss of habitat contributed to the decline of the species. By 1987, the last wild condor was captured and taken to the San Diego Wild Animal Park. Beginning with the first successful breeding of California condors in 1988, the population (in 1996) was 121 individuals, including 104 in the captive flock and 17 in the wild. The condor experimental reintroduction places two requirements on Federal agencies: (1) that they use their authority to conserve the condors, and (2) that they informally confer with USFWS on actions likely to jeopardize the condor (50 CFR Part 17).

Birds from northern Arizona frequently forage and roost in Utah and are likely to nest in southern Utah (UDWR 2005c). To date there are no known California condors nesting or roosting sites within the RFO. Threats to the condors include inadequate protection of suitable nesting sites, as well as foraging areas near nesting sites (UDWR 2005c).

3.3.8.1.3 Mexican Spotted Owl

The Mexican spotted owl was listed as a threatened species on March 16, 1993. The range of the Mexican spotted owl extends from the southern Rocky Mountains in Colorado and the Colorado Plateau in central and southern Utah, southward through Arizona and New Mexico. Mexican spotted owls primarily forage at night. Their diet consists of a variety of mammals, birds, reptiles, and insects, with mammals constituting the bulk of the diet throughout the owl's range. Wood rats, voles, and gophers are the primary mammal food base. Steep slopes and canyons with rocky cliffs characterize much of the owl's habitat in the planning area.

A recovery plan was completed for the Mexican spotted owl in 1995. Mexican spotted owls in the RFO are located within the Colorado Plateau Recovery Unit. Threats to Mexican spotted owls include habitat loss associated with human disturbance and past and current timber harvest activity.

Designated critical habitat was established for the Mexican spotted owl in 2001 and revised in 2004. This designated habitat contains important nesting and foraging habitat for the owl. The critical habitat designation clarified that areas within critical habitat boundaries are considered critical habitat only when they contain or have the potential to contain habitat characteristics essential to the conservation of the species. For canyon habitats, the primary constituent elements include one of more of the following attributes: (1) cooler and often more humid conditions than the surrounding area; (2) clumps or stringers of trees and/or canyon walls containing crevices, ledges, or caves; (3) a high percentage of ground litter and woody debris; and (4) riparian or woody vegetation. The primary constituent elements related to forest structure include the following: (1) a range of tree species; (2) a shade canopy created by the tree branches, covering 40% or more of the ground; and (3) large, dead trees with a trunk diameter of at least 12 inches (measured at 4.5 feet above ground surface).

3.3.8.1.4 Southwestern Willow Flycatcher

The southwestern willow flycatcher was listed as an endangered species on February 27, 1995. It breeds primarily in the southwestern United States and winters in Central America and southern Mexico. Within Utah, the southwestern willow flycatcher is found in the southern and eastern parts of the state, along riparian zones of the Colorado Plateau. Current population status and trends for the southwestern willow flycatcher are unknown in Utah, and critical habitat has not been designated in Utah. Habitat for this species exists in Wayne County (UDWR 2005a, NatureServe 2004), and there has been a sighting of the species in the Fremont Valley gateway area (Suzanne Grayson, BLM Richfield FO, Personal communication 2004). The southwestern willow flycatcher is rare in southern Utah during the summer and is found most frequently in riparian habitats, especially in areas of dense willows associated with rivers and wetlands. The major factor in the decline of the flycatcher is the alteration/loss of the riparian habitat necessary for the species (UDWR 2005a).

3.3.8.1.5 Utah Prairie Dog

The Utah prairie dog was listed as an endangered species on June 4, 1973. On May 29, 1984, the prairie dog was downlisted to threatened. Historically, the Utah prairie dog was found in southwestern and central Utah. The habitat of a prairie dog consists of continuous grassland and other vegetation on flat plains. The prairie dog is found at elevations from 5,400 feet in Iron County to 9,500 feet in Wayne County, and lives both above ground and underground. The most obvious feature of a prairie dog colony is the abundance of mounds and holes. Utah prairie dog habitat is commonly divided into three recovery areas: the West Desert, the Paunsaugunt Plateau, and the Awapa Plateau. Portions of the Awapa Plateau and Paunsaugunt recovery areas are located in the RFO.

Major threats to the Utah prairie dog include habitat loss (through development and drought), poisoning, and the plague. Prairie dogs are susceptible to several diseases. These factors lead to rapid decline and even disappearance of entire colonies.

A recovery plan was completed for the Utah prairie dog in 1991. A Utah Prairie Dog Interim Conservation Strategy was completed in 1997 (IM-UT 2002-040). A current management practice for the prairie dog is a translocation program. Translocation of prairie dogs is authorized by USFWS under authority of the ESA, as amended. It is anticipated that translocations will be a major part of the management of the Utah prairie dog in the future. No critical habitat has been designated for the Utah prairie dog.

3.3.8.1.6 Colorado River Fish

Four species of fish endemic to the Colorado River Basin are listed as endangered under the Endangered Species Act. None of these species or their designated critical habitat occurs within the public lands administered by the RFO. However, because these species and their designated critical habitat are located downstream from the RFO and because some streams that traverse the RFO are tributaries to the Colorado River Basin, they are briefly discussed here.

3.3.8.1.6.1 Bonytail Chub

The bonytail chub was listed by USFWS as an endangered species in 1980. The bonytail is found in larger channels of the Colorado River system. They are endemic to the large rivers (Colorado, Green, and San Juan) of the Colorado River Basin. In April 1994, USFWS designated 1,980 miles of critical habitat for all four Colorado River fish in portions of Colorado, Utah, New Mexico, Arizona, Nevada, and California (50 CFR Part 17). UDWR has documented populations of bonytail chub within eastern Emery, Wayne, and Garfield counties (UDWR 2005a). Bonytail prefer eddies, pools, and backwaters near swift

current in large rivers. Because the historic and occupied range of the bonytail is restricted to the mainstem of the Green River, it does not substantially extend into any tributaries, such as the Dirty Devil River, originating from the planning area (USFWS 1990a).

The historical distribution of bonytail is poorly documented, but the optimum habitat of bonytail chubs, based on former collections, appears to be the open river areas of relatively uniform depth and current velocity. Adults are found mainly in pools and eddies with silt, sand, or boulder substrates. Young occur in still water or shallow pools with silt or gravel (Bosworth 2003).

Threats of extinctions are due to habitat loss (including alterations to natural flows and changes to temperature and sediment regimes), proliferation of non-native introduced fish, and other artificial disturbances (USFWS 1994b). Goals for management and conservation of bonytail are described in *Bonytail* (*Gila elegans*) *Recovery Goals*: *Amendment and Supplement to the Bonytail Chub Recovery Plan* (USFWS 2002a), and incorporated in Appendix 14 of this DRMP/DEIS.

3.3.8.1.6.2 Colorado Pikeminnow

The Colorado pikeminnow (formerly known as the Colorado squawfish) is a large minnow native to the Colorado River system of the western United States and Mexico. USFWS designated this species as endangered in 1967, and the species is also included in the UDWR Sensitive Species List (2003). The species is distributed within Wayne and Garfield Counties in large mainstem rivers (Green River and Colorado River) and in the lower reaches of major tributaries. In the Green River drainage, the mainstem is occupied from the confluence with the Colorado River upstream through Dinosaur National Monument. Because the historic and occupied range of the pikeminnow is restricted to the mainstem of the Green River, it does not substantially extend into any tributaries, such as the Dirty Devil River, originating from the planning area (USFWS 1991).

Changes in sediment deposition patterns, flow, and temperature caused by dams have resulted in loss and alteration of aquatic habitats and have favored nonnative competitors and predators (Bosworth 2003). Threats of extinctions are due to habitat loss (including alterations to natural flows and changes to temperature and sediment regimes), proliferation of non-native introduced fish, and other artificial disturbances (USFWS 1994b). Recovery goals have been produced to guide management and conservation efforts and are described in *Colorado Pikeminnow* (*Ptychocheilus lucius*) *recovery goals: amendment and supplement to the Colorado Squawfish Recovery Plan* (USFWS 2002b), and are incorporated as conservation measures in Appendix 14 of this DRMP/DEIS.

3.3.8.1.6.3 Humpback Chub

The Humpback chub is a rare minnow native to the upper Colorado River system. Because of the severe declines in humpback chub numbers and distribution, the species was listed as endangered in 1967 and is also included in the UDWR Sensitive Species List (2003). USFWS designated critical habitat in April 1994, as described under *bonytail chub*, above.

Humpback chub originally thrived in the fast, deep whitewater areas of the Colorado River and its major tributaries, but flow alterations, which have changed the turbidity, volume, current speed, and temperature of the water in those rivers, have had significant adverse impacts on the species. Now humpback chub in Utah are confined to a few whitewater areas in the Colorado, Green, and White Rivers (Bosworth 2003). Because the historic and occupied range of the humpback chub is restricted to the mainstem of the Green River, it does not substantially extend into any tributaries, such as the Dirty Devil River, originating from the planning area (USFWS 1990b).

Threats of extinctions are due to habitat loss (including alterations to natural flows and changes to temperature and sediment regimes), proliferation of non-native introduced fish, and other artificial disturbances (USFWS 1994b). Recovery goals to guide management and conservation of the species are documented in *Humpback chub recovery goals: amendment and supplement to the Humpback Chub Recovery Plan* (USFWS 2002c), and incorporated as conservation measures in Appendix 14.

3.3.8.1.6.4 Razorback Sucker

The razorback sucker was listed as endangered in 1991 and is also included in the UDWR Sensitive Species List (UDWR 2003). The species is believed to have historically occupied much of the Green, Colorado, and San Juan rivers, as well as the lower portions of large tributaries such as the White and Duchesne rivers. Razorback sucker occur in water of desert and submontane elevations. Habitat used may vary seasonally and includes pools, slow runs, backwaters, and flooded off-channel habitats (Bosworth 2003). Current distribution patterns are difficult to interpret, primarily because the species is rarely encountered. USFWS designated critical habitat in April 1994, as described under *bonytail chub*. A subpopulation of approximately 100 adults was found in the 1990s occupying the middle Green River, and UDWR has noted population distribution within Wayne County (Bosworth 2003, UDWR 2005a). Because the historic and occupied range of the razorback sucker is restricted to the mainstem of the Green River, it does not substantially extend into any tributaries, such as the Dirty Devil River, originating from the planning area (USFWS 1998).

The razorback sucker mainly eats algae, zooplankton, and other aquatic invertebrates. Successful reproduction has not been documented in the last 25 years. Spawning occurs during a 6-week period in April and May when water temperatures reach 53°F–64°F.

Threats of extinctions are due to habitat loss (including alterations to natural flows and changes to temperature and sediment regimes), proliferation of non-native introduced fish, and other artificial disturbances (USFWS 1994b). The USFWS has developed recovery goals to guide management and conservation efforts (USFWS 2002d).

3.3.8.1.7 Wright Fishhook Cactus

Wright fishhook cactus is a Federally-listed endangered plant that occurs in Emery, Sevier, and Wayne counties. The species is found in soils that range from clays to sandy silts to fine sands, typically in areas with well-developed biological soil crusts (Clark and Clark 1999). Wright fishhook cactus grows in salt desert shrub and widely scattered pinyon-juniper woodlands at elevations ranging from 4,280 to 6,440 feet (Utah Native Plant Society 2004). The species and its habitat are vulnerable to disturbance from domestic livestock grazing, mineral resource development, and OHV use (USFWS 1979).

3.3.8.1.8 Barneby Reed-Mustard

Barneby reed-mustard is a Federally-listed endangered plant found only in Emery and Wayne counties. The species grows on red clay soils rich in selenium and gypsum, overlain with sandstone talus derived from the Moenkopi and Chinle geologic formations (USFWS 1994a). Barneby reed-mustard grows in sparsely vegetated sites in mixed desert shrub and pinyon-juniper woodlands, at elevations ranging from 4,788 to 6,510 feet (Clark and Clark 1999). Potential threats to the population of Barneby reed-mustard include mining, trampling by hikers, and road or recreation development (USFWS 1994a).

3.3.8.1.9 San Rafael Pediocactus

San Rafael pediocactus is a Federally-listed endangered plant that grows in Emery and Wayne counties. It is found in fine-textured soils rich in calcium derived from the Carmel Formation and the Sinbad

Member of the Moenkopi formation. The species grows on benches, hilltops, and gentle slopes in pinyon-juniper woodlands and mixed desert shrub-grassland communities, at elevations ranging from 4,756 to 6,822 feet (Utah Native Plant Society 2004; USFWS 1995c). The habitat of San Rafael pediocactus is vulnerable to surface disturbance from OHV use, trampling by humans and livestock, and mineral resource exploration and development (Clark and Clark 1999).

3.3.8.1.10 Winkler Pincushion Cactus

Winkler pincushion-cactus is a Federally-listed threatened plant that occurs in Emery and Wayne counties. The species is a small, nearly round cactus with solitary or clumped stems. The crown of the stem is at or very near ground level (Utah Rare Plant Society 2004). Winkler pincushion-cactus is found in fine-textured soils derived from the Dakota Formation and the Brushy Basin Member of the Morrison Formation (Utah Native Plant Society 2004). It occurs on benches, hilltops, and gentle slopes on barren, open sites in salt desert shrub communities, at elevations ranging from 4,888 to 6,592 feet (USFWS 1995c). The habitat of the species is vulnerable to surface disturbance from OHV use, trampling by humans and livestock, and mineral resource exploration and development (Clark and Clark 1999).

3.3.8.1.11 Last Chance Townsendia

Last Chance townsendia is a Federally-listed threatened plant that occurs in Emery, Sevier, and Wayne counties. The species is found in clay, clay-silt, or gravelly clay soils derived from the Mancos Formation. These soils are often densely covered with biological soil crusts. Last Chance townsendia grows in salt desert shrub and pinyon-juniper woodlands at elevations ranging from 5,531 to 8,396 feet (USFWS 1985). Threats to Last Chance townsendia populations include poor rangeland conditions, trampling by OHV recreation use, and mining (USFWS 1993a).

3.3.8.1.12 Ute Ladies'-Tresses

Ute ladies'-tresses was first listed as threatened on January 17, 1992. It is currently designated as threatened in the entire range. The species is known to occur in Colorado, Idaho, Montana, Nebraska, Utah, Washington, and Wyoming (USFWS 1992). Ute ladies'-tresses is found in moist to very wet meadows, along streams, in abandoned stream meanders, and near springs, seeps, and lake shores. It grows in sandy or loamy soils that are typically mixed with gravels. In Utah the species ranges in elevation from 4,301 to 7,001 feet. Populations have been documented in wetlands near Utah Lake in northern Utah (two populations) and in low-elevation riparian areas in the Colorado River drainage in eastern Utah (six populations) (USFWS 1992). The species occurs in Garfield and Wayne counties within the planning area.

A member of the orchid family, Ute ladies'-tresses is a perennial herb with a flowering stem (8-20 inches tall) that rises from a basal rosette of grass-like leaves. The flowers are ivory-colored, arranged in a spike at the top of the stem, and bloom mainly from late July through August. Recovery objectives for the species are documented in the Ute ladies'-tresses recovery plan (USFWS 1995b).

Threats to the species include loss of habitat from fragmentation of land from conversion to suburban and urban areas and management of water and stream systems for municipal, agriculture, and recreation uses (USFWS 1995b).

3.3.8.1.13 Maguire Daisy

Maguire daisy is a Federally-listed threatened plant that occurs in Emery, Garfield, and Wayne counties. The species grows on the sand and rubble weathered from Wingate, Chinle and Navajo Sandstone and,

rarely, the Kayenta Formation (Utah Native Plant Society 2004 and Clark and Clark 1999). It is found in slickrock-crevices, on ledges, and in the bottoms of washes, at elevations ranging from 5,248 to 8,200 feet (Clark and Clark 1999). In 1996, Maguire daisy was downlisted from endangered to threatened based on the discovery of 12 additional populations. Threats to existing Maguire daisy populations are primarily from OHV use and livestock trampling (USFWS 1995d).

3.3.8.2 BLM Sensitive Species

Table 3-16 identifies those non-listed special status plant and animal species that are known or thought to occur on public lands administered by the RFO (IM-UT 2003-027). The Utah BLM Sensitive Species list changes periodically and is updated accordingly with species being added to or deleted from the list. Changes to the Utah BLM Sensitive Species list would be incorporated into the RFO RMP as they occur.

Table 3-16. Non-Listed Special Status Species

Common Name	Scientific Name	Utah DWR Status and Utah BLM Sensitive Species Status
Mollusks		
California Floater	*Anodonta californiensis*	Sensitive
Amphibians		
Boreal Toad	*Bufo boreas*	Sensitive
Columbia Spotted Frog	*Rana luteiventris*	Conservation species
Birds		
Ferruginous Hawk	*Buteo regalis*	Sensitive
Greater Sage Grouse	*Centrocercus urophasianus*	Sensitive
Long-Billed Curlew	*Numenius americanus*	Sensitive
Western Yellow-Billed Cuckoo	*Coccyzus americanus*	Candidate
Burrowing Owl	*Speotyto cunicularia*	Sensitive
Short-Eared Owl	*Asio flammeus*	Sensitive
Black Swift	*Cypseloides niger*	Sensitive
Lewis' Woodpecker	*Melanerpes lewis*	Sensitive
Three-Toed Woodpecker	*Picoides tridactylus*	Sensitive
Northern Goshawk	*Accipiter gentilis*	Conservation species
Grasshopper Sparrow	*Ammodramus savannarum*	Species of special concern
Mammals		
Fringed Myotis	*Myotis thysanodes*	Species of special concern
Western Red Bat	*Lasiurus blossevillii*	Sensitive
Spotted Bat	*Euderma maculatum*	Sensitive
Townsend's Big-Eared Bat	*Corynorhinus townsendii*	Sensitive
Allen's Big-Eared Bat	*Idionycteris phyllotis*	Sensitive
Big Free-Tailed Bat	*Nyctinomops macrotis*	Sensitive
Pygmy Rabbit	*Brachylagus idahoensis*	Sensitive
Fish		
Bonneville Cutthroat Trout	*Oncorhynchus clarki utah*	Conservation species
Colorado River Cutthroat Trout	*Oncorhynchus clarki pleuriticus*	Conservation species
Leatherside Chub	*Gila copei*	Sensitive
Roundtail Chub	*Gila robusta*	Conservation Species
Bluehead Sucker	*Catostomus discobolus*	Conservation Species
Flannelmouth Sucker	*Catostomus latipinnis*	Conservation Species

Common Name	Scientific Name	Utah DWR Status and Utah BLM Sensitive Species Status
Plants		
Rabbit Valley Gilia, also known as Alice's Wonder Flower	*Gilia caespitosa or Alicellia caespitosa*	Candidate
Utah Phacelia	*Phacelia utahensis*	Sensitive
Basalt Milkvetch	*Astragalus subcinereus var. basalticus*	Sensitive
Pinnate Spring Parsley	*Cymopterus beckii*	Sensitive
Hole-in-the-Rock Prairie-Clover	*Dalea flavescens var. epica*	Sensitive
Cronquist Wild Buckwheat	*Eriogonum corymbosum var. cronquistii*	Sensitive
Smith Wild Buckwheat	*Eriogonum corymbosum var. smithii*	Sensitive
Utah Spurge	*Euphorbia nephradenia*	Sensitive
Cataract Gilia	*Gilia latifolia var imperialis*	Sensitive
Mussentuchit Gilia	*Gilia tenuis* *Also known as Alicillia tenuis*	Sensitive
Alcove Bog-Orchid	*Habenaria zothecina*	Sensitive
Greenwood's Goldenbush	*Haplopappus lignumviridis*	Sensitive
Claron Pepperplant	*Lepidium montanum var. claronense*	Sensitive
Jane's Globemallow	*Sphaeralcea janeae*	Sensitive
Psoralea Globemallow	*Sphaeralcea psoraloides*	Sensitive
Alpine Greenthread	*Thelesperma subnudum var. alpinum also known as Thelesperma windhamii*	Sensitive
Sigurd Townsendia	*Townsendia jonesii var. lutea*	Sensitive

Unless otherwise noted, the information presented below for non-listed special status plant and animal species comes from the Utah Division of Wildlife Resources web site (www.wildlife.utah.gov). Additional information on these species can be obtained at this site.

3.3.8.2.1 Mollusks

3.3.8.2.1.1 California floater *(Anadonta californiensis)*

The California floater has not been positively identified as occurring with the RFO; however, potential habitat does occur for this species in certain aquatic areas. At least two extant occurrences are known in Utah. These occurrences are in Utah and Millard Counties. Known habitat ranges from muddy bottoms with depths of 6 to 10 inches among watercress to creeks five to fifteen feet wide, up to 18 inches deep, with a bottom of gravel and sand in flowing areas and mud in pools. It is thought that populations of this species may be declining due to pesticides in agricultural run-off, habitat degradation by cattle, and water diversion.

3.3.8.2.2 Amphibians

3.3.8.2.2.1 Boreal toad *(Bufo boreas)*

Often known as the Western toad, this species is widely scattered throughout the northwestern United States and Canada. It is found throughout much of Utah in a variety of habitats, including slow moving streams, wetlands, desert springs, ponds, lakes, meadows, and woodlands. Many of these habitats are located on lands administered by the RFO.

3.3.8.2.2.2 Columbia spotted frog *(Rana luteiventris)*

This species is on the UDWR Sensitive Species List (UDWR 2003) as a Conservation Species, and a multi-agency conservation agreement was completed in 1998. In Utah, isolated Columbia spotted frog populations exist in the West Desert and along the Wasatch Front. Within these regions, populations are tied to aquatic habitat and perennial sources of water (Bosworth 2003). UDWR has documented populations of Columbia spotted frog in Sanpete, Sevier, Piute, Wayne, and Garfield counties.

Adult frogs eat a wide variety of food items, ranging from insects to snails, whereas tadpoles eat algae, plants, and small aquatic organisms. Typically, breeding sites have little or no current and are surrounded by dense aquatic vegetation. The Columbia spotted frog breeds as early in the spring as winter thaw allows, with eggs hatching in 3-21 days depending on temperature. During cold winter months, spotted frogs burrow in the mud and become inactive.

Populations are vulnerable to the loss and degradation of aquatic habitat. Historically, wetland destruction associated with development as well as water withdrawal, pollution, livestock use, or competition from non-native species have contributed to the species' decline (UDWR 2005a, NatureServe 2004).

3.3.8.2.3 Birds

3.3.8.2.3.1 Ferruginous hawk *(Buteo regalis)*

This species is distributed throughout much of Utah, although it is rare and productivity may not be sufficient to maintain the State's populations. Use of nesting substrate varies throughout this species' range and includes trees, shrubs, cliffs, utility structures, and ground outcrops. Haystacks and abandoned buildings have also been used. Ferruginous hawk density varies regionally as well as temporally as prey densities vary. Their primary food source is small mammals such as rabbits and hares, prairie dogs, pocket gophers, etc. Ferruginous hawk habitat is found in much of the area administered by the RFO. Threats include human disturbance (recreation, mineral development, etc.) and loss of preferred pinyon-juniper woodland habitats. The species is prone to abandon nest sites with low levels of human disturbance.

3.3.8.2.3.2 Greater sage grouse *(Centrocercus urophasianus*)

This species inhabits sagebrush plains, foothills, and mountain valleys. Sagebrush is the predominant plant of quality habitat. The largest population of Greater sage grouse in Utah is found in Wayne County. The species is also distributed throughout Sanpete, Sevier, Piute, and Garfield counties in areas dominated by sagebrush. Understory of grasses and forbs, and associated wet meadow areas, are essential for optimum habitat. The Greater sage grouse is a granivore, herbivore, and insectivore and is associated with both tall and short sagebrush types. Sage grouse use the same breeding grounds, or "leks," over several consecutive breeding seasons. Greater sage grouse are ground nesters and are susceptible to predators and human disturbance including mineral exploration and development and OHV use. Additional threats to the species include habitat loss, invasive plants, and conversion of large areas from shrub steppe to non-native grasslands (UDWR 2005a, NatureServe 2004).

3.3.8.2.3.3 Long-billed Curlew *(Numenius americanus)*

In Utah, this species is a fairly common summer resident and migrant. The curlew lives and breeds in higher and drier meadowlands than many other shorebird species. Uncultivated rangelands and pastures located within the planning area support the majority of breeding populations. Food sources include crustaceans, mollusks, worms, toads, insects, and sometimes berries. According to the UDWR, long-billed curlews have four essential nesting habitat requirements, (1) short grass, less than 30 cm tall, (2) bare ground components, (3) shade, and (4) abundant vertebrate prey.

3.3.8.2.3.4 Western yellow-billed cuckoo *(Coccyzus americanus)*

This species is considered a riparian obligate and is usually found in large tracts of dense cottonwood/willow habitats (below 33 feet in height). Population status and trends within the planning area are unknown. However a pair of yellow-billed cuckoos was heard during breeding season before 1983. More recent breeding has been recorded outside the planning area. Yellow-billed cuckoo nesting behavior may be closely tied to food abundance. The species is one of the latest migrants to arrive and breed in Utah. The yellow-billed cuckoos arrive in late May or early June and breed in late June through July. Nesting habitat is classified as dense lowland riparian characterized by a dense subcanopy or shrub layer (regenerating canopy trees, willows, or other riparian shrubs) within 333 feet of water. Threats to the species include the alteration of riparian corridors from invasive species, livestock use, and development (UDWR 2005a, NatureServe 2004).

3.3.8.2.3.5 Burrowing owl *(Speotyto cunicularia)*

This species prefers open areas within deserts, grasslands, and sagebrush steppe communities. Both primary and secondary breeding habitat exists in Sanpete, Sevier, Piute, Wayne, and Garfield counties. Habitat consists of well-drained, level-to-gently-sloping areas characterized by sparse vegetation and bare ground, such as moderately or heavily grazed pasture. Burrowing owls breed in native prairie as well as in cultivated pasture, hay fields, fallow fields, road and railroad rights-of-way (ROWs), and in a number of urban habitats. They are obligate nesters that nest in ground burrows of prairie dogs or other burrowing mammals. Threats to the population include habitat loss, declining prairie dog populations, and pesticides (UDWR 2005a, NatureServe 2004).

3.3.8.2.3.6 Short-eared owl *(Asio flammeus)*

This is a medium sized owl that frequently flies during daylight, especially at dusk and dawn, as it forages for rodents. The short-eared owl is usually found in grasslands, shrublands, and other open habitats which are common in the RFO. It is nomadic, often choosing a new breeding site each year, depending on local rodent densities. The owls nest on the ground in a small depression that is usually lined with a small amount of grass and other plant material. There is some concern that short-eared owl populations are declining in Utah.

3.3.8.2.3.7 Black swift *(Cypseloides niger)*

The black swift occurs in mountainous regions of the western United States and Canada. Little is known of the historic range of this species. Currently, black swifts occur in three widely separated areas, one of which is central Colorado through central Utah. They are thought to be extremely rare in Utah with only two confirmed breeding locations. Black swifts are aerial insectivores and feed exclusively on flying insects. They nest is small colonies near and often behind waterfalls. Adults are long-lived. Nesting sites are typically surrounded by coniferous forests, often mixed conifer or spruce-fir forests. The preferred habitat for the black swift is limited in the RFO.

3.3.8.2.3.8 Lewis's woodpecker *(Melanerpes lewis)*

This species ranges from southern British Columbia to its wintering grounds in northwestern Mexico. In Utah, it is primarily found in the central part of the State. The Lewis's woodpecker is a cavity nester, excavating a hole in tall trees, often dead or blackened by fire. It will also nest in utility poles or stumps, but prefers ponderosa pine, cottonwood, or sycamore, all of which are found within the RFO. The diet of this woodpecker consists of insects, nuts, and berries depending on the time of the year. Areas with a good understory of grasses and shrubs to support insect prey populations are preferred.

3.3.8.2.3.9 American three-toed woodpecker *(Picoides dorsalis)*

This species of woodpecker extends from Canada through Utah and into New Mexico. It is found in Engelmann spruce, sub-alpine fir, Douglas fir, ponderosa pine, tamarack, aspen and lodgepole pine forests. This woodpecker tends to stay in its territory year-round though insect outbreaks, such as spruce bark beetle infestations may cause irregular movements. Habitat of the American three-toed woodpecker is found in the higher elevations of the RFO.

3.3.8.2.3.10 Northern goshawk *(Accipiter gentilis)*

The northern goshawk is found in much of the northern hemisphere. It is a permanent resident in Utah, but is not common in the State. The hawk prefers mature mountain forest and riparian zone habitats, both of which are found in the planning area. Nests are constructed in trees in mature forests. Often nests previously used by northern goshawks or other bird species are reused. This species cruises low through forested areas and also perches to hunt prey. Major prey includes rabbits, hares, squirrels, and birds.

3.3.8.2.3.11 Grasshopper sparrow *(Ammodramus savannarum)*

This species of sparrow is a grasslands bird; therefore potential habitat is limited in the RFO. In Utah, breeding populations have been found only in the northern parts of the State. Nests are built of grass on the ground at the base of grass clumps. As its name implies, this species' primary diet is grasshoppers.

3.3.8.2.4 Mammals

3.3.8.2.4.1 Fringed myotis *(Myotis thysanodes)*

This small bat is found in much of the western United States. It is widely distributed throughout Utah, but is not very common in the State. The fringed myotis commonly inhabits caves, mines, and buildings, most often in desert and woodland areas which are common in the RFO. Beetles are the major prey for this species.

3.3.8.2.4.2 Western red bat *(Lasiurus blossevilli)*

The Western red bat is found in the western United States. It is extremely rare in Utah being known from only a few locations in the State. As a result, it is included on the DWR Sensitive Species List. This species of bat is normally found near water, often in wooded areas. While some individuals hibernate during cold times, most will migrate south to warmer climates for the winter. The species is nocturnal. It feeds on insects, often foraging near riparian areas.

3.3.8.2.4.3 Spotted bat *(Euderma maculatum)*

This species occurs throughout much of the western United States. It is found state-wide in Utah, but has probably never been abundant in any particular location. The spotted bat may be found in a variety of habitats, ranging from deserts to forested mountains. It roosts and hibernates in caves and rock crevices. These types of habitats are scattered throughout the RFO. Spotted bats eat insects, primarily moths, which are captured in flight. Current data suggest that populations of this species may be declining in Utah. Consequently the spotted bat is now included on the DWR Sensitive Species List

3.3.8.2.4.4 Townsend's big-eared bat *(Corynorhinus stownsendii)*

This species occurs in western North America from southwestern Canada to Mexico. In Utah, it occurs state-wide at elevations below 9,000 feet. Townsend's big-eared bat can be found in many types of habitat, but is often found near forested areas. Caves, mines and buildings are used for day roosting and winter hibernation. The species is nocturnal and individuals typically do not leave their roosts until well

after sunset. This species is thought to be declining in population in Utah due to human disturbances of caves and the closures of abandoned mines.

3.3.8.2.4.5 Allen's big-eared bat *(Idionycteris phyllotis)*

Allen's big-eared bat is one of the most poorly known bat species in North America. It was not known from Utah until 1969. It is known to occur only in the southern portion of the State. Because of its rarity, this species is included on the DWR Utah Sensitive Species List. Preferred habitats include rocky and riparian areas in woodland and scrubland regions. Allen's big-eared bat is an insectivore, eating insects captured in flight or plucked from vegetation. It is nocturnal, roosting in caves or rock crevices during the day.

3.3.8.2.4.6 Big free-tailed bat *(Nyctinoomops macrotis)*

This species is found in the western United States. It is rare in Utah, occurring primarily in the southern half of the State. The big free-tailed bat prefers rocky and woodland habitats. Roosting occurs in caves, mines, old buildings, and rock crevices. It is typically active year-round, migrating to warmer areas in the south during the winter months. This species eats insects, primarily moths.

3.3.8.2.4.7 Pygmy rabbit *(Brachylagus idahoensis)*

This species can be found throughout Utah including within the RFO. The species prefers areas with tall dense sagebrush and loose soils. Pygmy rabbits occur in isolated patches because of their specific life history requirements. Their habitat consists of deep soils and tall, dense sagebrush and high shrub cover. Pygmy rabbits are active throughout the year and are most often above ground near dawn and dusk. Inactive periods are spent in underground burrows. Pygmy rabbits depend on sagebrush for their winter diets and during summer shift to more grasses and forbs. Declines in population are related to the degradation or loss of sagebrush steppe habitat.

3.3.8.2.5 Fish

3.3.8.2.5.1 Bonneville cutthroat trout *(Oncorhynchus clarki utah)*

The Bonneville cutthroat trout is a subspecies of the cutthroat trout native to the Bonneville Basin of Utah, Wyoming, Idaho, and Nevada. Pure Bonneville cutthroat trout are rare throughout their historic habitat but several populations in Utah do exist, including populations located within the RFO. Major threats to this species include habitat loss/alterations, predation by and competition with nonnative fishes, and hybridization with nonnative fishes, such as the rainbow trout. This species feeds primarily on insects, but large individuals also eat fishes. It can be found in a variety of habitats ranging from high-elevation mountain streams and lakes to low-elevation grassland streams. In all of these habitat types, the Bonneville cutthroat trout requires a functioning stream riparian zone which provides structure, cover, shade, and bank stability.

3.3.8.2.5.2 Colorado River cutthroat trout *(Oncorhynchus clarki pleuriticus)*

This species is a race, or subspecies, of the cutthroat trout that is native to the upper Colorado River drainage of Utah, Wyoming, Colorado, Arizona, and New Mexico. This subspecies is restricted to the upper Colorado River drainage and occurs in headwater streams and mountain lakes of the Uinta, La Sal, and Abajo mountains; the Tavaputs Plateau; and the Escalante and Fremont river drainages (Bosworth 2003). UDWR has documented cutthroat trout populations within Sevier, Wayne, and Garfield counties within the planning area (UDWR 2005a).

The Colorado River cutthroat trout primarily eats invertebrates, but adults also eat small fishes. Like other cutthroat trout, the subspecies spawns in streams over gravel substrate in the spring. The cool, clear

water of high-elevation streams and lakes is the preferred habitat for Colorado River cutthroat trout (Bosworth 2003).

Threats to the species include land and water use activities such as grazing, mining, and the construction of water impoundments, as well as the introduction of nonnative fish. In addition, fragmentation of metapopulations, which affects gene flow and seasonal movements, is thought to be an especially important factor in population declines (Bosworth 2003). UDWR is currently working to restore pure Colorado River cutthroat trout to historic areas in Utah. Since 1999, large numbers of Colorado River cutthroat trout have been raised in hatcheries and then released into lakes in the Uinta Mountains in the northeastern part of the state.

3.3.8.2.5.3 Leatherside chub *(Gilia copei)*

This species is a small minnow native to streams and rivers of the southwestern portion of the Bonneville Basin. The leatherside chub was once common throughout its native range but presently is listed as a State sensitive species due to substantial decreases in population levels. There are three general population areas in Utah, the largest of which includes portions of the RFO.

3.3.8.2.5.4 Roundtail chub *(Gilia robusta)*

This species is a fairly large minnow native to the Colorado River system of the western United States. It prefers large rivers and is most often found in murky pools near strong currents in the main-stem Colorado River and tributaries. Locally common in places, the roundtail chub has been reduced in numbers and distribution due to flow alteration and the introduction of exotic fishes. It eats terrestrial and aquatic insects, mollusks, and other invertebrates, fishes, and algae.

3.3.8.2.5.5 Bluehead sucker *(Catostomus discobolus)*

The bluehead sucker is native to parts of Utah, Idaho, Arizona, New Mexico, and Wyoming. Specifically, the species occurs in the upper Colorado River system, the Snake River system, and the Lake Bonneville Basin. In Utah, bluehead suckers have been reduced in numbers and distribution due to stream flow alteration, habitat loss/alteration, and the introduction of nonnative fishes. It is a benthic (bottom dwelling) species with a mouth modified to scrape algae from the surface of rocks. Fast flowing water in high gradient reaches of mountain rivers has been identified as important habitat for this species.

3.3.8.2.5.6 Flannelmouth sucker *(Catostomus latipinnis)*

This species is native to the Colorado River system of the western United States and northern Mexico. In Utah, the species occurs in the main-stem Colorado River and in many of the Colorado's large tributaries. Flannelmouth suckers are usually absent from impoundments. The species prefers large rivers where they are often found in deep pools of slow flowing, low gradient reaches. The sucker is a benthic (bottom dwelling) fish that primarily eats algae. Invertebrates and many types of plant matter are also consumed. In recent times, Utah flannelmouth sucker populations have been reduced in both numbers and distribution, primarily due to flow alteration, habitat loss/alteration, and the introduction of nonnative fishes.

3.3.8.2.6 Plants

3.3.8.2.6.1 Rabbit Valley gilia *(Gilia caespitosa or Alicellia caespitosa)*

Rabbit Valley gilia (also known as Alice's wonder flower) is a Federal candidate for listing under the ESA and occurs in Wayne County. Rabbit Valley gilia is primarily associated with Navajo Sandstone and to a lesser extent the Kayenta and Wingate formations. Growing in sand-filled crevices, sand pockets, and on detrital slopes, it is found in open pinyon-juniper woodlands, often mixed with mountain

brush, sagebrush, or ponderosa pine, at elevations ranging from 5,198 to 8,997 feet (Clark and Clark 1999). Rabbit Valley gilia is known from 15 populations scattered over a distance of about 19 miles near the Fremont River from the northern portion of the Waterpocket Fold westward to Rabbit Valley in Wayne County, an area locally known as Wayne Wonderland. Threats to the population include plant collection and trampling associated with recreation and livestock grazing (NatureServe 2004).

3.3.8.2.6.2 Utah phacelia *(Phacelia utahensis)*

This is a central Utah endemic species that occurs in portions of Sanpete and Sevier Counties. It is found on often-precipitous, barren slopes of the Arapien Shale Formation. The plant grows in desert shrub and pinyon-juniper woodland communities. Alder-leaf mountain mahogany, shadscale, and Utah greasebush communities are also known to contain populations. The plant is located at elevations between 5,500 and 6,200 feet in elevation. Evidence of gypsum mining has been observed over much of the habitat, and the plants were never observed occupying disturbed locations. Livestock grazing and off-highway vehicle use are present but due to the often steep habitat, are not a concern at all locations. The recent discovery of oil in the Sevier Valley may add another potential impact to this plant's habitat (Utah Native Plant Society 2007, UDWR 2005d).

3.3.8.2.6.3 Basalt (or Silver) milkvetch *(Astragalus subcinereus var. basalticus)*

The basalt milkvetch is found in eastern Sevier and western Garfield and Emery Counties in Utah. It prefers pinyon-juniper woodland and ponderosa pine communities on igneous gravels between 4,500 and 8,000 feet in elevation (Utah Native Plant Society 2007).

3.3.8.2.6.4 Pinnate spring parsley *(Cymopterus beckii)*

This species is found in pinyon-juniper woodland, mountain brush, ponderosa pine/Manzanita, conifer/oak, and Douglas fir communities in sandy or stony soils. It is often found in rock crevices and near cliff bases on north and east exposures between 5,600 and 7,500 feet in elevation. It is endemic to San Juan and Wayne Counties in Utah and Navajo Tribal Lands in Arizona (Utah Native Plant Society 2007).

3.3.8.2.6.5 Hole-in-the-Rock prairie-clover *(Dalea flavescens var. epica)*

This species is endemic to Utah in Carbon, Emery, Garfield, Kane, San Juan, and Wayne Counties. It grows on sandstone bedrock and sandy areas in blackbrush and mixed desert shrub communities between 4,700 and 5,000 feet in elevation (Utah Native Plant Society 2007).

3.3.8.2.6.6 Cronquist wild buckwheat *(Eriogonium corymbosum var. cronquistii)*

Cronquist wild buckwheat is endemic to the Henry Mountains in Garfield and Wayne Counties in Utah. It is found almost entirely on public lands administered by the BLM RFO. The species prefers pinyon, *Holodiscus*, rabbitbrush, mountain brush, and rock-spirea communities. It occurs on steep talus slopes between 8,800 and 8,900 feet in elevation (Utah Native Plant Society 2007).

3.3.8.2.6.7 Smith (or Flat Tops) wild buckwheat *(Eriogonum corymbosum var. smithii)*

This species is located in the San Rafael Desert portion of Emery and Wayne Counties in Utah. It is a Colorado Plateau endemic. The plant is a perennial shrub with bright yellow flowers and shiny green leaves. It is found in purple sage, matchweed, Ephedra-Indian rice grass, desert shrub, and rabbitbrush communities on the Entrada Formation and on stabilized sand dunes between 4,500 and 5,600 feet in elevation. Livestock currently graze in the habitat of this species but do not appear to be a threat to the plant. The potential also exists for oil and gas related activity to occur within the habitat of this species (Utah Native Plant Society 2007; UDWR 2007).

3.3.8.2.6.8 Utah spurge *(Euphorbia nephradenia)*

Endemic to the Colorado Plateau, the Utah spurge is found in Emery, Garfield, Kane, and Wayne Counties. It is found in mat saltbush, blackbrush, Ephedra, mixed sandy desert shrub, and grassland communities on dark clay hills, blow sand and stabilized dunes mainly on Tropic Shale and Entrada formations between 3,800 and 4,800 feet in elevation (Utah Native Plant Society 2007).

3.3.8.2.6.9 Cataract gilia *(Gilia latifolia var. imperialis)*

Cataract gilia is endemic to Emery, Garfield, Grand, Kane, San Juan, and Wayne Counties, Utah. It is found in shadscale and other mixed desert shrub communities, especially in wash bottoms and at the bases of ledges between 3,800 and 5,200 feet in elevation (Utah Native Plant Society 2007).

3.3.8.2.6.10 Mussentuchit Gilia *(Gilia tenuis)*

This species is known from seven locations in Emery and Sevier counties (NatureServe 2004 and Utah Native Plant Society 2004). The species is restricted to a discontinuous stretch of habitat of sandstone outcrops and sandy slopes in association with mountain brush, pinyon-juniper woodlands, and cushion plants (NatureServe 2004). Often Mussentuchit gilia is located on material derived from the Curtis Formation and the Dakota and Navajo sandstones, between 5,198 to 7,117 feet in elevation (Welsh *et al*. 1993 and Utah Native Plant Society 2004). The number of individuals is not recorded for the population located within the planning area, and no threats have been identified to either the populations or habitat (UNHP 2004, NatureServe 2004).

3.3.8.2.6.11 Alcove bog-orchid *(Habenaria zothecina)*

Alcove bog-orchid is located in Emery, Garfield, Grand, San Juan, and Uintah Counties in Utah and in Arizona and Colorado. It is found in seeps, hanging gardens, and moist stream banks in mixed desert shrub, pinyon-juniper woodland, and oak brush communities between 4,000 and 6,200 feet in elevation (Utah Native Plant Society 2007).

3.3.8.2.6.12 Greenwood's goldenbush *(Haplopappus lignumviridis)*

The habitat of this very rare species is restricted to riparian areas with willows, nettles and *Conyza* in Sevier County, Utah. It is found at about 6,200 feet in elevation (Utah Native Plant Society 2007).

3.3.8.2.6.13 Claron pepperplant *(Lepidium montanum var. carotenes)*

The Claron pepperplant is endemic to the Paunsaugunt and Table Cliff Plateau in Garfield, Kane, and Piute Counties in Utah. It is restricted to sagebrush, pinyon-juniper woodland communities, and ponderosa pine/bristlecone pine communities on the Claron member of the Wasatch Limestone Formation and other fine textured substrates between 6,400 and 8,000 feet in elevation (Utah Native Plant Society 2007).

3.3.8.2.6.14 Jane's globemallow *(Sphaeralcea janeae)*

This rare species is endemic to Wayne and San Juan Counties in Utah. It prefers warm and salt desert shrub communities on the White Rim and Organ Rock members of the Cutler Formation between 4,000 and 4,600 feet in elevation (Utah Native Plant Society 2007).

3.3.8.2.6.15 Psoralea globemallow *(Sphaeralcea psoraloides)*

This species is a Colorado Plateau endemic found on the southeastern footslopes of the San Rafael Swell in Wayne and Emery Counties, Utah. It is typically found in *Zuckia-Ephedra*, shadscale, *Eriogonum*, *Lepidium*, and pinyon-juniper woodland communities. Soil types on which the psoralea globemallow is found include saline and gypsiferous Mancos Shale, Buckhorn Conglomerate, Curtis sandstone, Entrada

siltstone, Carmel, and Kaibab Limestone between 4,000 and 6,300 feet in elevation. Researchers visiting populations of this species have noted off-highway vehicle use, grazing, recreation, exotic weed encroachment, mining and urbanization occurring within the habitat. However, the species appears to be stable at this time (Utah Native Plant Society 2007, UDWR 2005d).

3.3.8.2.6.16 Alpine greenthread *(Thelesperma subnudum var. alpinum also known as Thelesperma windhamii)*

The alpine greenthread is a rare species endemic to portions of Wayne County, Utah. It occurs in pinyon-juniper communities, mountain brush, and western bristlecone pine communities. The plant grows in sandy soil pockets, cracks of slickrock, and on ledges and clay flats on Carmel Limestone and Navajo Sandstone between 6,000 and 8,000 feet in elevation. The known populations of this species are fairly isolated (Utah Native Plant Society 2007; UDWR 2005d).

3.3.8.2.6.17 Sigurd townsendia *(Townsendia jonesii var. lutea)*

This very rare species is found in Juab, Piute, Sanpete, and Sevier Counties in Utah. Its habitat is salt desert, mixed desert shrub, and juniper-sagebrush communities on Arapien shale and clays in volcanic rubble at 3,500 to 6,300 feet elevation (Utah Native Plant Society 2007).

3.3.9 Fish and Wildlife

The BLM manages public lands to provide habitat for fish and wildlife. The diverse ecosystems and mosaic landscapes of the lands managed by the RFO provide habitat for more than 600 species of fish and wildlife. Fish and wildlife habitat are managed according to principles outlined by *Utah Fish and Wildlife 2000* (BLM 1993b). The BLM implements this general guidance through specific management actions associated with species located in the public lands managed by the RFO.

The BLM manages wildlife habitat, and the UDWR manages wildlife populations. To the extent practicable, the BLM collaborates with UDWR to achieve the habitat management goals and objectives of the various UDWR Wildlife Management Unit Plans, as well as species-specific management plans, by providing appropriate quantities and quality of habitats on public lands, consistent with the principles of multiple-use management. These habitats reflect the influence of various past and ongoing human activities and disturbances, resulting in significant increases in some species populations, declines in others, and the modification of large blocks of habitat. The habitats and the wildlife species that rely on them rarely exist solely on BLM lands and often extend across administrative boundaries to other Federal, state, and private lands.

Fish and wildlife species can be broadly defined into two management categories that reflect preferences in public interest. Some species, commonly called game species, are economically important for hunting, fishing, and wildlife viewing opportunities. Others that do not have direct economic importance for hunting and fishing are referred to as non-game species. Both categories have economic importance that varies locally and nationally. Species not specifically discussed in this plan are also important and contribute to the diversity and health of plant and animal communities on public land. Many species fill ecological roles that are important but not fully understood.

3.3.9.1 Fish and Fisheries Habitat

Fisheries habitat includes perennial and intermittent streams and flat water (e.g., lakes and reservoirs) that support fish through at least a portion of the year. The condition of fisheries habitat is related to riparian habitat and stream channel characteristics. Riparian vegetation moderates water temperatures and provides bank structures that reduce erosion and provide overhead vegetation cover for fish. Intact

riparian communities also serve to slow overland flow, capture sediments, and provide a filter that enhances water quality. Water quality, especially concerning such factors as sediment, temperature, and dissolved oxygen, also greatly affects fisheries habitat.

Streams and lakes in the RFO provide habitat for at least 30 species of warm- and cool- to cold-water fish species, with 18 of these considered to be game fish (Sigler and Sigler 1996). Past stocking efforts have established many non-native fish species in streams, lakes, and reservoirs. Aquatic invertebrates and amphibians are integral components of all fish communities.

The factors limiting or affecting fish habitat in the RFO include excess siltation, stream dewatering, riparian areas in less than proper functioning condition, livestock impacts, and past mining practices. Factors limiting or affecting native fish production include competition and predation from non-native species, stream dewatering, hybridization, fish loss through irrigation diversions, excess siltation, and isolation of populations.

3.3.9.2 Wildlife and Wildlife Habitat

Wildlife habitat can be segregated into seven types: desert shrub, sagebrush steppe, pinyon-juniper woodland, forested, riparian/wetland, aspen, and non-vegetated (cliff talus). These habitat types are used as a basis for describing existing conditions, focusing on a broader scale approach as opposed to single-species management.

Livestock grazing, fire suppression, development patterns, natural conditions, and introduced plant species have influenced the condition of the habitats. Focusing management on habitat condition and composition has a more widespread effect on wildlife species than when focused on an individual species. Disturbances enhance habitat for some species but limit opportunities for others. Generally, disturbances promote use by mobile species or species that tolerate a broad range of habitat conditions. The availability of habitat may vary during the year as a result of elevation, aspect, and proximity of disturbance. Habitat use is also limited by wildlife species' different levels of social tolerance and by learned or inherent behavior. These factors may limit movement of wildlife species into new habitats, even if the habitat appears suitable for the species' needs.

Wildlife habitat needs vary significantly by species. It is generally true that healthy and sustainable wildlife populations can be supported where there is a diverse mix of vegetation communities to supply structure, forage, cover, and other specific habitat requirements.

3.3.9.2.1 Desert Shrub

Desert shrub includes numerous upland vegetation communities with a shrubland component and a variable understory of grass and forbs. Desert shrub contains a large number of reptile species. A variety of other wildlife occupies salt desert habitats. Herbaceous plants are vital to the majority of all wildlife species through providing food, cover, and structure. Shrub cover helps wildlife survive the rigors of summer heat and winter cold. It supplies browse, seeds, and cover for birds and small and large mammals. Intermingled areas of desert grasslands add diversity to vegetation and habitat structure in desert shrub communities.

3.3.9.2.2 Sagebrush Steppe

Sagebrush habitat is prevalent in the western and central portions of the RFO. At mid to lower elevations, Wyoming big sagebrush is the dominant vegetation type, providing important winter habitat for highly mobile wildlife species (e.g., mule deer, pronghorn antelope, and greater sage grouse) and localized

yearlong habitat for sagebrush-obligate species (e.g., pygmy rabbit). Sagebrush also provides crucial breeding, nesting, and brood-rearing habitat for these species. Intermingled occurrences of grasslands and several low sages add to the diversity of vegetation and habitat structure. Sagebrush-obligate species are restricted to sagebrush habitats during the breeding season or year round, and near-obligate species occur in both sagebrush and grassland habitats. As a result of the regional losses of sagebrush communities and the number of sagebrush-obligate wildlife, maintenance and improvement of existing sagebrush habitat is crucial for community structure and diversity and for providing critical habitat for obligate species.

3.3.9.2.3 Pinyon-Juniper Woodlands

Pinyon-juniper woodlands are widely dispersed and have expanded into sagebrush and other vegetation communities. Pinyon-juniper woodlands provide some wildlife habitat. Although understory vegetation is reduced beneath pinyon-juniper stands, pinyon-juniper woodlands provide greater structural diversity than desert shrub or sagebrush steppe shrubland habitats.

3.3.9.2.4 Forested Areas

Coniferous habitats are a small but important habitat component within the RFO and are primarily located along national forest boundaries and in the Henry Mountains. Forested habitats, which contain security areas (e.g., hiding cover) for big game species, can provide important linkage corridors for wildlife movement between other seasonal habitats.

3.3.9.2.5 Riparian Ecosystems

Riparian habitats are crucial components in the landscape. They serve as important use areas for wildlife in providing various life cycle requirements such as foraging, nesting, roosting, and hiding cover, as well as travel corridors for numerous highly mobile species. Usually a high degree of plant diversity occurs along riparian corridors, exhibiting variable density and composition, allowing both openness and ground cover. Invasive species, such as tamarisk, are affecting the health of riparian systems, shifting the systems to a vegetation monoculture.

3.3.9.2.6 Aspen

Aspen stands provide habitat for many wildlife species. Many predaceous birds are adapted to aspen forest and the adjacent open brush, meadows, and grasslands. Aspen ecosystems provide cover, calving, and fawning habitat for big game, and nesting habitat for migratory birds.

3.3.9.2.7 Non-Vegetated (Cliff Talus)

Talus slopes are accumulations of angular rock debris at the bases of cliffs or steep slopes. Talus provides wildlife species basking sites and crevices for hiding. Slopes with large boulders provide caves that may be large enough for a species such as bobcat to occupy. Cliffs are faces of vertical exposed rock that sometimes have a talus slope at their base. Several raptor species and non-perching birds, such as black swifts, use cliff and talus areas for nesting and brood-rearing habitat. Prairie falcons generally nest on rock outcrops and cliffs that range from 30 to 400 feet high. Canyon and rock wrens nest in the fractured talus slope below cliff faces, particularly in areas that are interspersed with open, patchy forests of ponderosa pine, Douglas fir, and sagebrush steppe communities.

3.3.9.3 Wildlife Species of Interest

Wildlife species of interest include big game animals, raptors, upland game birds, and other species. Big game populations are managed cooperatively by the BLM and UDWR based on habitat condition, long-term vegetative trends, annual monitoring of wildlife utilization levels, and the desired age class of animals produced in each Wildlife Management Unit. Wildlife Management Unit boundaries are established by UDWR to encompass the seasonal habitat requirements of large, free-roaming wildlife species, and they are frequently bounded by such physical features as ridgetops or drainages, or artificial features such as major roads or highways. Boundaries of Wildlife Management Units rarely match the administrative boundary of the RFO.

Seasonal habitats are mapped in the GIS and represent an outside perimeter within which a particular seasonal use could be expected to occur by a particular species. However the mapping is not precise because distribution varies annually as a result of weather, forage availability, and population size and distribution. Areas are included that do not provide for a particular use as a result of topography, different vegetation, or disturbances that are too small to map on a broad scale (e.g., north slopes on winter ranges, forested patches in sagebrush). The RFO includes all or portions of the following UDWR Wildlife Management Units—

- Beaver
- Central Mountains, Manti South
- Fillmore
- Henry Mountains
- Monroe
- Mount Dutton
- Plateau Boulder
- Plateau Fishlake
- Plateau Thousand Lake
- San Rafael

3.3.9.3.1 Game Wildlife Species

Crucial and high-value habitats for big game species are included within the RFO (Maps 3-5, 3-6 and 3-7). Crucial-value habitat is any range or habitat component that directly limits a community from reproducing or maintaining a certain population level over the long-term. Moderate-value and low-value habitat is abundant in the planning area, and includes any particular habitat that is common or of intermediate importance. Wildlife may be displaced due to development activities in these habitats.

3.3.9.3.2 Bison

The Henry Mountains contain the only free-roaming and huntable herd of American bison on public land in the 48 contiguous United States. The herd was transplanted to the San Rafael Desert in the 1940s and migrated into the Henry Mountains in the 1960s (Map 3-5). Bison are grazers, feeding mainly on grasses and other vegetation. Although bison typically give birth in spring, young may be born as late as midsummer. An annual hunt is held to maintain a harvest population of about 275 animals. Conflicts with livestock and bison grazing occur on allotments where both are present. Drought increases the potential for conflict between livestock and bison.

3.3.9.3.3 Bighorn Sheep

Desert bighorn sheep are found in the Dirty Devil portion of the San Rafael Wildlife Management Unit. Desert bighorn sheep, which are considered to be yearlong residents of their range, do not have seasonal ranges like mule deer and elk (Map 3-5). Bighorn sheep prefer very open vegetation types, such as low shrub, grassland, and other treeless types typically associated with steep talus and rubble slopes. Bighorn diets comprise a variety of shrubs, forbs, and grasses. Bighorn sheep lambing occurs on steep talus slopes, typically within one to two miles of reliable water sources.

Bighorn sheep are extremely vulnerable to a variety of viral and bacterial diseases carried by livestock, principally by domestic sheep. In some cases reported in the literature, exposures to some of these diseases have resulted in the decimation of entire bighorn populations. The diseases are transmitted in numerous ways, including nose-to-nose contact and wet soils associated with areas of concentrated use, such as stock watering ponds. The BLM has adopted guidelines for domestic sheep grazing in or near bighorn sheep habitat to prevent the spread of disease.

Management of bighorn sheep is guided by three herd management plans and guidelines: The Utah BLM Statewide Desert Bighorn Sheep Management Plan (BLM 1986), Revised Guidelines for Domestic Sheep and Goat Management in Native Wild Sheep Habitats (BLM 1998a), and the Utah Bighorn Sheep Statewide Management Plan (UDWR 1999). Additional guidance is found in the Henry Mountains Desert Bighorn Sheep Habitat Management Plan (BLM 1990a).

3.3.9.3.4 Pronghorn

Five Wildlife Management Units contain pronghorn habitat within the planning area (San Rafael, Henry Mountains, Plateau, Monroe, and a portion of Mt. Dutton). Pronghorn prefer very open vegetative habitat types, such as salt desert shrub, grassland, and other treeless types. Typically, pronghorn avoid slopes greater than 20%. Pronghorn fawning occurs throughout the range of the species (Map 3-5). Pronghorn diets comprise a variety of forbs, shrubs, and grasses. Forbs are of particular importance during spring and summer, and shrubs are more important during the winter.

3.3.9.3.5 Mule Deer

Six mule deer Wildlife Management Units occur in the planning area. Mule deer are migratory, moving seasonally between summer and winter ranges (Map 3-6). Mule deer usually summer at high elevations and winter at low elevations. Their diets consist largely of sagebrush, primarily Wyoming sagebrush. Shrubs such as true mountain mahogany, fourwing saltbush, and antelope bitterbrush are important winter forage species. Mule deer fawn during the spring on their migration back to their summer range.

Mule deer have a high degree of fidelity to specific winter ranges, where high population densities concentrate on relatively small areas. Because of the relatively small winter range area, high population densities, and the natural stress of winter survival, mule deer are vulnerable to stress caused by human activity in winter range areas, such as antler hunting and other recreational activities. Mule deer are displaced an average of 600 feet from areas of human activity.

3.3.9.3.6 Elk

The planning area includes portions of four elk Wildlife Management Units: Plateau, Monroe, Beaver, and Mt. Dutton (Map 3-7). Elk are migratory, moving seasonally between summer and winter ranges. They summer at higher elevation ranges in aspen and forested habitats, where their diet consists primarily of grasses and forbs. Elk calve during late spring and early summer in aspen-mountain browse,

intermixed vegetation types. Elk winter at mid-to-lower elevation ranges, occupying the sagebrush and woodland habitat types and congregating in herds of 50 to 200 or more. Human activity in elk winter range adds additional stress to the natural stress of winter survival.

3.3.9.3.7 Black Bear

Black bear is currently the only bear species inhabiting Utah. Black bears are native to Utah and are fairly common. In the planning area, black bears are present in Wayne and Garfield counties, where they can be found primarily in large forested areas.

3.3.9.3.8 Cougar

Cougar, or mountain lions, are found statewide in Utah, occupying habitat types ranging from rugged desert areas to above timberline. The species is fairly common throughout Utah, but individuals are rarely seen because of their secretive nature. Seasonally, their movements follow their main prey: mule deer. Cougar will also feed on rabbits, elk, or other animals, but about 80% of their diet consists of deer. Cougars are active year-round, during day and night, although most activity occurs at dawn and dusk. They are hunted on a limited and closely monitored basis in Utah.

3.3.9.3.9 Furbearers

Several furbearer species are found in the planning area. Furbearers, as defined by UDWR, include bobcats, raccoons, badgers, weasels, red fox, and beavers. Red fox are found throughout the planning area, and numbers are relatively high. Bobcats are fairly common in Utah; however, because of their secretive nature they are rarely seen.

3.3.9.3.10 Upland Game Birds

The lands managed by the RFO provide important migration, nesting, and winter habitats for upland game birds. Upland species include greater sage grouse, blue grouse, pheasants, and quail. (Greater sage grouse are discussed in more detail in Section 3.3.8, Special Status Species.) Upland species feed frequently on upland grasses and forbs in grassy fields and meadows, where such vegetation is succulent and sufficiently open to enable rapid flight and avoidance of harboring predators. Such habitats support upland game birds year-round.

3.3.9.3.11 Other Non-game Species

Information on small mammals, bats, reptiles, and amphibians is lacking. Databases maintained by the Utah Natural Heritage Program document general occurrences and potential for many of these groups of wildlife, but site-specific inventories have not been conducted for most of the RFO. However, as inventories are conducted, new occurrences and range extensions are being discovered, which emphasizes the need for more comprehensive work.

3.3.9.4 Migratory Birds

Migratory birds have been protected by treaty (with Great Britain) since 1916 and by law under the Migratory Bird Treaty Act since 1918. In Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds signed by President Clinton in 2001, Federal agencies were directed to "design migratory bird habitat and population conservation principles, measures, and practices into agency plans and planning processes…" Bird Habitat Conservation Areas (BHCAs) were identified in an effort to focus cooperative migratory bird habitat enhancement or restoration efforts in these important areas. The

BHCAs are not special designations and do not require additional regulation. In the "Coordinated Implementation Plan for Bird Conservation in Utah," (IWJV 2005) three BHCAs were identified on lands managed by the RFO:

- **BHCA 30:** Sevier Bridge/Chicken Creek Reservoirs, open water with large marsh areas
- **BHCA 43:** Parker Mountain, sagebrush-steppe habitat
- **BHCA 51:** Henry Mountains (north of Mount Ellen), mountain riparian habitat

Neotropical migratory birds are found in all habitats within the planning area (Parrish *et al.* 2002). Neotropical migrants are defined as land birds that fall into four categories of species breeding in North America (north of Mexico) and then migrating to and from the tropics (Martin and Finch 1995). These birds include a diverse array of species, such as hummingbirds, finches, flycatchers, warblers, thrushes, and orioles. Most of these birds are summer residents that use habitats ranging from lower elevation wetlands to high-elevation forests for breeding and raising young. Some species, such as the American robin and mallard, are migratory, but small populations may be present yearlong depending on seasonal conditions. Winter residents, such as rough-legged hawk, snow buntings, and rosy-crowned gray finches, arrive from arctic breeding grounds or high-elevation, alpine areas to use winter habitats in lower elevation foothills and major river valleys, seasonally replacing summer residents.

3.3.9.5 Raptors

Raptor management on public lands in Utah is guided by the use of best management practices (BMPs) (Appendix 10), which are BLM-specific recommendations for implementation of the USFWS, Utah Field Office's *Guidelines for Raptor Protection from Human and Land Use Disturbances*. The guidelines were originally developed by USFWS in 1999 and were updated during 2002 to reflect changes brought about by court decisions, policy changes, and new Executive Orders. The guidelines were provided in an attempt to ensure project compatibility with the biological requirements of raptors and to encourage an ecosystem approach to raptor management.

Raptors have very specific requirements for nesting territories, including vegetation structure and diversity. Requirements for physiographic features (e.g., elevation, slope), as well as prey availability, vary by species. Raptors typically reuse the same nesting territory for years, and alterations to these areas could reduce the viability of raptor populations. Threats to raptors include loss of habitat, reduction in food supply, and disturbance during nesting. Habitat loss from changing land use to industrial, agricultural, or recreational could reduce available food supply or alter nesting territories. Each raptor nest, its offspring, and supporting habitat are considered important to the long-term viability of raptor populations. Changes in vegetation structure and diversity could reduce the areas meeting nest site requirements.

Generally courtship, nest construction, incubation, and early brooding are considered higher-risk periods during which adults are easily prone to temporarily or permanently abandon nests in response to disturbance. This may result in abandonment of eggs or young. Loss or alteration of habitat for any raptor species can also result in a loss of or change in the raptor prey base or historical nesting territories (USFWS 2002e).

3.3.10 Wild Horses and Burros

The goal of the Wild and Free-Roaming Horse and Burro Act is to manage wild horses and burros, "in the area where presently [1971] found as an integral part of the natural system of the public lands." The Act and subsequent regulations direct that wild horses and burros be managed to ensure a thriving natural

ecological balance with the minimum feasible management required to maintain the populations. The management of wild horse and burro populations to maintain a sufficient size to be genetically viable is important aspect of this goal. Some management decisions could impact the viability of wild horse or burro populations. Populations that would require long-term intensive management would not comply with the minimum feasible management regulations and would therefore be noted as an impact. Following passage of the Wild, Free-Roaming Horse and Burro Act of 1971, BLM identified two wild horse and burro management areas in the planning area: the Robbers Roost Herd Management Area (HMA) for wild horses and the Canyonlands HMA for wild burros.

3.3.10.1 Robbers Roost Herd Management Area

The Robbers Roost HMA straddles the Wayne-Emery county line. Vegetation in the area is largely desert grassland, with desert shrub interspersed throughout. As is common throughout the area, the lack of water limits the habitat available for horses. With an appropriate management level of 15 to 25 horses, maintaining a viable population requires management intervention. In 2003 it was estimated that there were about 17 horses in the HMA.

A 1975 agreement between the Moab and Richfield district managers directed the Moab District to administer the Robbers Roost HMA. This agreement was updated in 1995, again directing that the Moab District, now part of the Price Field Office, manage the wild horses within the HMA. Thus, the management of and planning for the Robbers Roost HMA is the responsibility of the Price Field Office and is consequently not addressed in this DRMP/DEIS.

3.3.10.2 Canyonlands Herd Management Area

The Canyonlands HMA is more than 89,000 acres, including several State of Utah parcels. It is located in eastern Wayne County, adjacent to Glen Canyon National Recreation Area on the east and the Horseshoe Canyon unit of Canyonlands National Park on the west. The HMA overlaps portions of the French Spring/Happy Canyon Wilderness Study Area (WSA), Horseshoe Canyon South WSA, Horseshoe Canyon North WSA, and Dirty Devil WSA. Vegetation in the area is a mix of desert grasses and desert shrub, although areas with deeper soils support sagebrush and juniper.

Existing planning allocates forage for less than 20 burros. However, a recent grazing use adjustment on a portion of a grazing permit and preference has resulted in additional forage for burros and has eliminated most competition with livestock for habitat resources such as forage and water on the HMA. Current herd management includes regular inventories to monitor burro numbers. The most recent inventory of the Canyonlands HMA identified nearly 60 burros. The isolated and remote location of this burro HMA makes extensive management intervention and monitoring difficult.

The burros of the Canyonlands HMA are unique in that pinto coloration, usually rare in wild burros, predominates. The remote nature of the Canyonlands HMA, coupled with the rough terrain, limit opportunities for the public to view these unique animals.

3.3.11 Fire and Fuels Management

Fire is a natural phenomenon. Vegetation communities in the planning area have adapted to the presence or absence of wildland fire over several thousand years. Geographic, topographic, elevational, and climatic variances throughout the planning area have provided an array of conditions in which fire has historically (from 200 to 400 years ago) affected vegetation differently. Consequently forests, woodlands, and rangelands throughout the planning area have adapted to fire. In addition to natural fire regimes, many vegetation communities were affected by American Indian use of fire to manipulate the

environment (Williams 2003). Therefore, the role of anthropogenic (human caused) fires cannot be separated from the role of natural fires for the last 10,000-plus years.

Research has shown that many of the forest, woodland, and rangeland ecosystems in the planning area are not functioning properly. Vegetation communities are considered as functioning properly when they can withstand and/or recover from fire naturally. Appendix 6 contains detailed information concerning the fire ecology of each major vegetation cover type potentially affected by the decisions made in this environmental impact statement. The historic fire-return intervals are identified, as are the responses to fire disturbance of each cover type. Appendix 6 also contains information about the general condition cover type and departure from historic conditions.

3.3.11.1 Wildland Fire Occurrence

Studies of fire-scarred trees in the Henry Mountains and national forest lands within the planning area indicate that before European settlement, fires burned the areas in a relatively consistent pattern. Tree rings from ponderosa pines in a predominantly Douglas-fir stand indicated that the area burned an average of every 19 years (Bartos and Campbell 1998). Note that this does not indicate that the entire planning area burned this regularly. However, areas of similar vegetation types would have been adapted to similar fire intervals.

Yearly fire occurrence data for the RFO is available from 1979 to 2003. (Note: Earlier data is for the old Richfield District, which encompassed what is now both the Richfield and Fillmore Field Offices.) Figure 3-1 lists the yearly number of fires and acres burned over this time. As displayed in Figure 3-2, most fires (81%) in the RFO occur from June through August. Figure 3-3 displays the size distribution of the 300 fires since 1979. Figure 3-4 illustrates the distribution of the 300 fires by cause. Seventy-six percent of the fires in the RFO were ignited by lightning.

Figure 3-1. Richfield Planning Area Fires and Acreages (1979–2003)

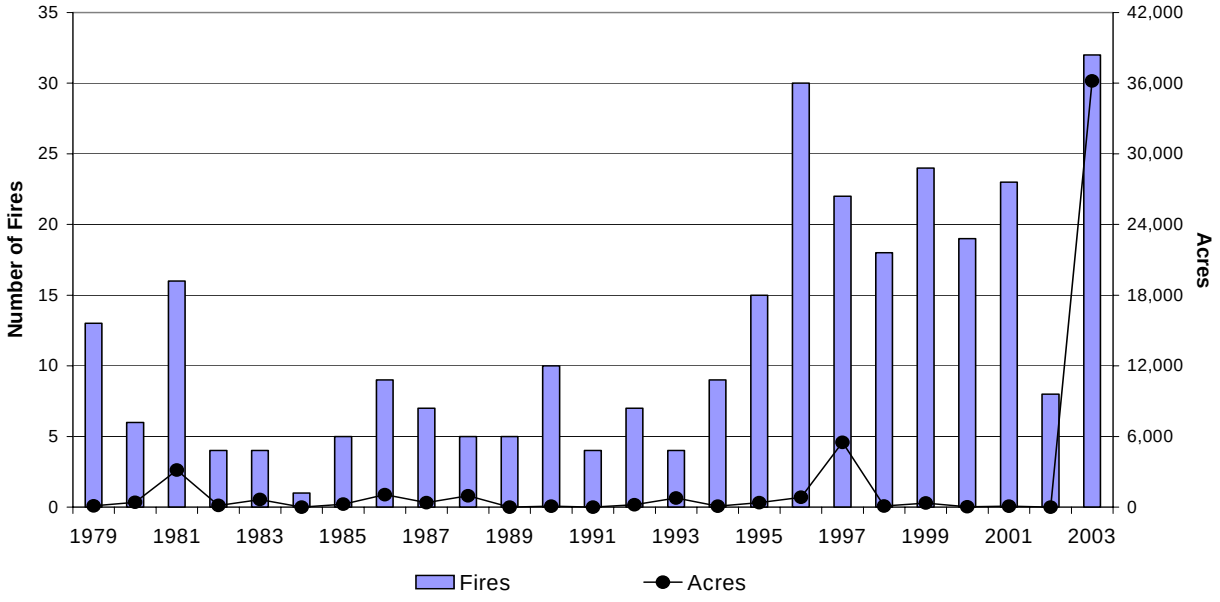


Figure 3-2. Richfield Field Office Fire Occurrence by Month (1979–2003)

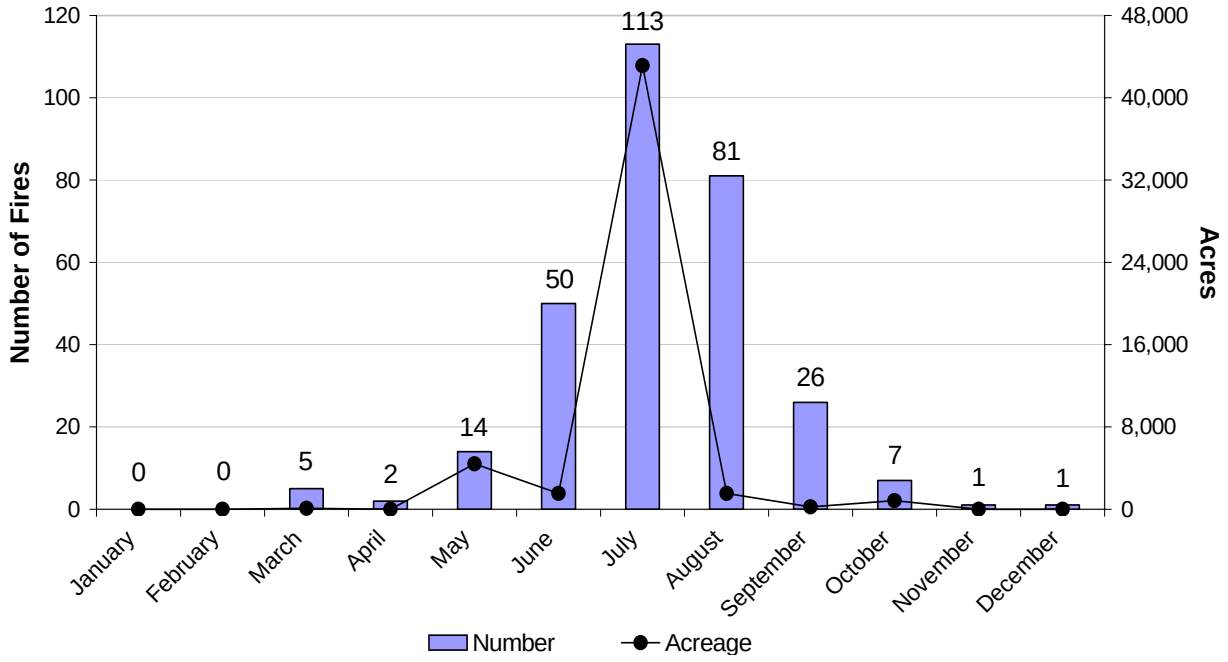


Figure 3-3. Richfield Field Office Fires by Size (1979–2003)

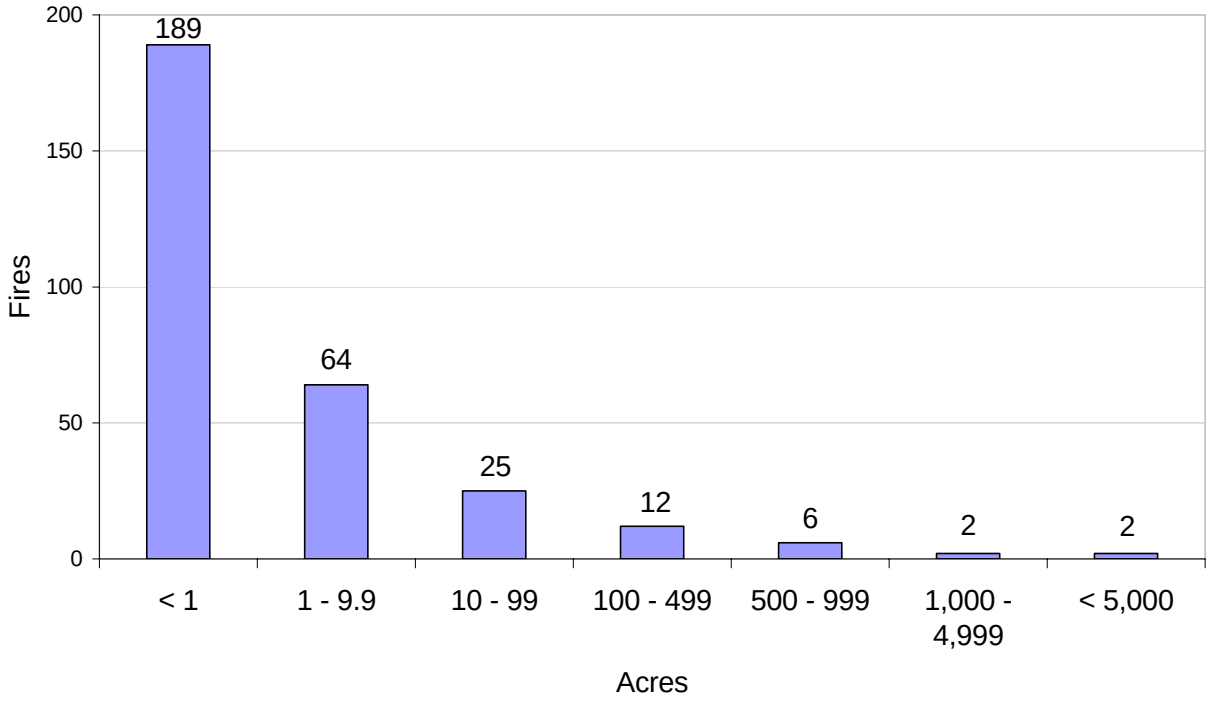
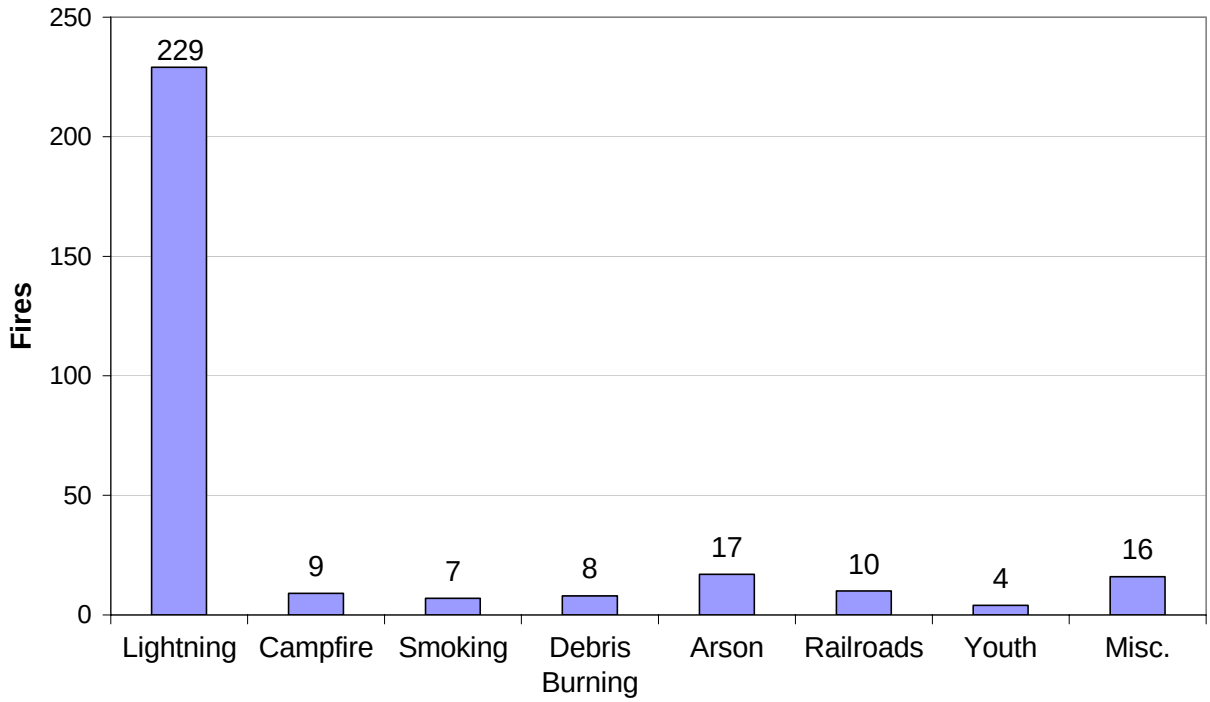


Figure 3-4. Richfield Field Office Fire Causes (1979–2003)



3.3.11.2 Hazardous Fuels Reductions

Many areas in the lands managed by the RFO have changed from historic disturbance regimes. Aspen forest types, which reproduce through suckering rootstock, need disturbance or dieback to stimulate regeneration (O'Brien and Waters 1998). In the absence of disturbance, areas once dominated by aspen have been converted to conifers or sagebrush (Bartos and Campbell 1998). Areas with small amounts of aspen in a stand may indicate that the area was once dominated by aspen (Bartos and Campbell 1998). "An approximately 60% decline in aspen dominated landscapes has occurred on National Forest System lands across Utah" (Bartos and Campbell 1998, pp.23). Aspen in the planning area, either adjacent to USFS land or in the Henry Mountains, is intermingled with and adjacent to stands of mixed conifer stands. Conditions noted throughout Utah are not expected to be different from those in the planning area.

The exclusion of frequent, low-intensity fires in Ponderosa pine stands has resulted in a buildup of understory fuels in these stands. This change threatens the pine stands, which are resistant to low-intensity fire but susceptible to larger crown fires. Understory fuels act as ladders, allowing fire to jump to the trees' crown, replacing ponderosa pine stands.

Using Forest Inventory and Analysis data collected on public lands administered by the RFO, the Rocky Mountain Research Station identified that more than 67% of plots had a stand age less than 150 years. These stands form a closed-canopy "belt" between lower valley shrub lands and higher mountain forests. Reduction of fine fuels and decreases in fire return intervals has resulted in pinyon-juniper encroachment, leading to large acreages of closed canopy pinyon-juniper in formerly treeless areas (USFS 2000). As a result, structural stages are strongly weighted to stands much denser than typical conditions.

Stands are considered as functioning properly when they can withstand and/or recover from disturbance. Many vegetation communities, specifically those described above, are not considered in PFC. For further discussion on fire ecology of the various vegetation types, refer to Appendix 6. Table 3-17 identifies existing vegetation acreages and their estimated departure from historic (200–400 years before the present) acreages. It is estimated that American Indian-initiated wildland fires comprised approximately 40% of historic wildland fires (Williams 2003). Therefore, allowing wildland fires at natural levels would not include human intervention at historic levels.

The increasing size, intensity, and severity of wildland fires pose greater threats to human life and property. More people are recreating on and adjacent to public lands and building homes in wildland areas, increasing their exposure to naturally ignited wildland fires and increasing the risk of human-caused wildland fire ignitions. Additionally, the threat to other resource values from uncharacteristically intense and severe wildland fires has increased, resulting from uncharacteristic changes in vegetation, fuel loadings, and fire behavior. Consequently, fire suppression costs have also increased.

Table 3-17. Vegetation Departure from Historic Acreages

Class Name	Historic Acreages	Percentage of Total	Existing Acreages	Percentage of Total
Other Non-Vegetation	67,858	3.2%	67,858	3.2%
Mixed Conifer[3]	17,022	0.8%	29,317	1.4%
Aspen	20,251[1]	1.0%	5,786	0.3%
Ponderosa Pine	44,463	2.1%	42,785	2.0%
Oak	26,330	1.2%	19,629	0.9%
Mountain Shrub	24,781	1.2%	16,378	0.8%
Pinyon-Juniper	216,036[2]	10.2%	551,674	25.9%
Sagebrush Steppe	660,468	31.0%	343,781	16.2%
Desert Grassland	324,652	15.3%	324,652	15.3%
Desert Brush	726,085	34.1%	726,085	34.1%
Total	**2,127,946**		**2,127,945**	

Notes—

1) Desired aspen figure created by dividing existing acreage by 0.4, basing this figure on Campbell and Bartos (1998) conclusion that aspen is Utah has undergone a 60% reduction in coverage.

2) Using Forest Inventory and Analysis data collected and determined from public lands within the planning area, approximately 67.6% of the pinyon-juniper woodland type in the RFO is 150 years old or younger. It is assumed that 90% of that 67.6% is not in PFC and requires treatment within the next 100 years. The trees older than 150 years, and 10% of those younger than 150 years, are assumed to be stable stands that are not adapted to the 10–30 year fire interval (e.g., those located on dry, rocky ridges, very xeric soils)

3) The highest elevations of the spruce/fir type have very long fire return intervals, and these ecosystems have not been adversely affected by fire exclusion.

Sources: Fishlake National Forest Prescribed Natural Fire Plan (1998); USFS, 2000; USFS, 2004

3.3.11.3 Fuels Treatments

Over the last 20 years, development in the wildland-urban interface (WUI) has compounded the problem of fuels accumulation through the construction of homes and businesses. The resulting risk of exposure to high-intensity fires that could threaten safety and property has increased. Declining vegetation conditions and increased construction have required a more active hazardous fuel treatment program to reduce the number and severity of wildland fires.

Before implementation of the 1995 Federal Wildland Fire Management Policy, fewer than 1,000 acres of vegetation per year were treated in the RFO. This acreage included prescribed fire and other means of treating fuels. Since 1995, hazardous fuel reduction efforts within the RFO have treated roughly 4,000 acres per year. The focus of most of these treatments has been on reducing hazardous fuels in WUI areas, although treatments were also implemented to improve ecosystem health, improve rangeland production, and enhance wildlife habitat.

3.3.11.4 Fire Regimes and Condition Classes

Fire regimes address the nature of disturbance by fire by describing its historic intensity, frequency, and effect on vegetation. Knowledge of fire regimes is a critical component in managing landscapes and analyzing changes in fire frequencies and intensities. Table 3-18 lists the natural fire regimes by which vegetation is classified in the RFO. Categorization of vegetation types by fire regimes was based on information which is provided in Appendix 6.

Table 3-18. Fire Regime Classifications & RFO Estimated Acreage

Regime	Fire Frequency	Fire Intensity	Estimated Acres in RFO	Percent of Total
Fire Regime I	0–35 years	Low Severity	43,600	2.1%
Fire Regime II	0–35 years	Stand Replacing	903,000	44.0%
Fire Regime III	35–100 years	Mixed Severity	34,700	1.7%
Fire Regime IV	35–100 years	Stand Replacing	1,070,600	52.2%
Fire Regime V	More than 200 years	Stand Replacing or Mixed Severity	300	<0.1%

Source: USC 2003; USFS 2001; USGS 2004.

As they relate to fire, vegetation conditions are evaluated by the degree of departure from fire regimes that a specific vegetation community demonstrates. Departure from fire regimes is indicated by changes to key ecosystem components (e.g., species composition, structural stage, stand age, canopy closure, and fuel loadings). The degree of departure is ranked using three condition classes that categorize vegetation communities by evaluating the difference between their historic fire regime and related indicating characteristics, and their current condition and its indicating characteristics. Simply put, fire regime "condition classes are a qualitative measure describing the degree of departure from historical fire regimes" (Schmidt K.M. *et al.* 2002). Table 3-19 illustrates the estimated acreage of vegetation in the RFO in each condition class.

Table 3-19. Fire Regime Condition Class Description and RFO Estimated Acreage

Condition Class	Description	Estimated Acres in RFO	Percent of Total
1	Fire regimes are within a historical range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within a historical range.	2,300	<1%
2	Fire regimes have been moderately altered from their historical ranges. The risk of losing key ecosystem components from fire is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased), resulting in moderate changes to the size, intensity, or severity of fires or to landscape patterns. Vegetation attributes have been moderately altered from their historical range of attributes.	281,000	14%

Condition Class	Description	Estimated Acres in RFO	Percent of Total
3	Fire regimes have been significantly altered from their historical ranges. The risk of losing key ecosystem components from fire is high. Fire frequencies have departed from historical frequencies by multiple return intervals, resulting in dramatic changes to the size, frequency, intensity, or severity of fires or landscape patterns. Vegetation attributes have been significantly altered from their historical range of attributes.	1,768,900	86%

Sources: Schmidt K.M. *et al.* 2002; USC 2003; USGS 2004.

Areas in Condition Classes 2 and 3 are of most concern because they often need management intervention before allowing fire to return naturally. Acreage of vegetation in Condition Class 3 is high because much of the RFO has converted to pinyon-juniper and sagebrush vegetation types.

3.3.12 Non-WSA Lands with Wilderness Characteristics

Since Wilderness Study Areas (WSAs) were established in the 1980s, designation of wilderness in Utah has become a prominent state and national issue. For more than 20 years, the public has debated which lands have wilderness characteristics and should be considered by Congress for wilderness designation. As a result of the debate (and a significant passage of time since BLM's original inventories), in 1996 the Secretary of the Interior directed the BLM to take another look at some of the lands in question. In response to this direction, the BLM inventoried these lands and found approximately 2.6 million acres of public land statewide (outside of existing WSAs) to have wilderness characteristics (BLM 1999).

In September 2005, the BLM and the State of Utah, the Utah School and Institutional Trust Land Administration (SITLA), and the Utah Association of Counties (collectively "Utah") reached an agreement negotiated to settle a lawsuit originally brought in 1996 by the State of Utah, which challenged the BLM's authority to conduct new wilderness inventories. The settlement stipulated that the BLM's authority to designate new WSAs expired no later than October 21, 1993. Pursuant to the Federal Land Policy and Management Act of 1976 (FLPMA), 43 USC § 1712(c), the BLM, however, does have the authority to conduct inventories for characteristics associated with the concept of wilderness and to consider management of these values in its land use planning process. The BLM's Land Use Planning Handbook (H-1601-1) states that decisions on whether or not to protect wilderness characteristics are to be considered during planning. This section addresses lands outside existing WSAs that have been identified as having wilderness characteristics.

Non-WSA lands with wilderness characteristics are those that have the appearance of naturalness and outstanding opportunities for solitude or primitive and unconfined recreation, and comprise an area of 5,000 acres or more. In evaluating areas for wilderness characteristics, the RFO took into consideration the language of the 1964 Wilderness Act, and concluded that a size criterion is an important indicator of whether or not outstanding opportunities for solitude or primitive and unconfined recreation exist. Areas of less than 5,000 acres are generally not large enough to provide for these opportunities. Also, because the size criterion had been used for all previous wilderness inventories, applying it here allowed for consistency in both application and finding of wilderness characteristics. The size criterion of 5,000 acres was applied only to "stand-alone" units; that is, units not contiguous with other Federal lands previously determined to possess wilderness characteristics (e.g., WSAs and National Park Service and U.S. Forest Service lands that are administratively endorsed for wilderness). Units that are contiguous with Federal lands with wilderness characteristics were evaluated for naturalness alone. Opportunities for solitude and primitive recreation were assumed to be present in association with the larger contiguous area.

Detailed information about non-WSA lands with wilderness characteristics is part of the administrative record for this RMP/EIS. The following records are available for public review at the RFO: 1) 1999 Utah Wilderness Inventory; 2) 1999 Utah Wilderness Inventory Revision Document for the Richfield Field Office (December 2002); 3) 1999 Utah Wilderness Case Files for the RFO; 4) Reasonable Probability Determinations for the RFO, and 5) Documentation of Wilderness Characteristics Review for the RFO.

Non-WSA lands with wilderness characteristics that were inventoried by BLM in the 1999 Utah Wilderness Inventory included approximately 511,200 acres in 20 wilderness inventory areas (WIAs). Based on subsequent public comments and after conducting additional field checks, the BLM revised the inventory in December 2002. The revised inventory identified a total of 551,770 acres in 20 WIAs within the RFO possessing wilderness characteristics. The inventory and the inventory revision also identified areas in portions of WIAs that did not have wilderness characteristics.

In addition to the lands that were inventoried in the 1999 Utah Wilderness Inventory and its revision, additional lands in the RFO have been reviewed for wilderness characteristics by BLM. These lands are currently proposed for wilderness as part of S.1179, America's Red Rock Wilderness Act of 2007, and are neither WSAs nor WIAs. (Note: The Act has been introduced in Congressional Term 110 as S.1170). The wilderness characteristics review process involved use of a BLM interdisciplinary team that reviewed available information and followed-up with field trips, where necessary. The BLM interdisciplinary team evaluated information provided by the public about these areas, their on-the-ground knowledge of these areas, information in case files and field files, master title plats, aerial photos, GIS data layers, and field inspections, and determined that all or parts of these areas have wilderness characteristics. When completed, the interdisciplinary team reviewed about another 200,000 acres, of which 130,830 acres were found to have wilderness characteristics.

In summary, since the beginning of the 1999 Utah wilderness inventory process, the BLM evaluated 31 areas totaling 848,500 acres for their wilderness characteristics in the RFO. Of these, the BLM determined that 29 areas totaling 682,600 acres met the criteria for wilderness characteristics of size, naturalness, and outstanding opportunities for solitude or primitive recreation (See Table 3-20 and Map 3-9). These lands, non-WSA lands with wilderness characteristics, have been carried through this land use planning process to determine how their wilderness characteristics will be managed. Many of the inventoried lands were found to lack wilderness characteristics, and are also summarized in the table below. Wilderness characteristic areas generally fall into one (or two) of three broad categories:

- Areas contiguous to BLM WSAs;
- Areas adjacent to National Park Service lands administratively endorsed for wilderness designation; or
- Areas (generally over 5,000 acres) that stand alone as separate units.

Table 3-20. Non-WSA lands with Wilderness Characteristics Evaluation

#	Area Evaluated	County	Acres evaluated	Acres found to possess wilderness characteristics	Comments
1	Bull Mountain	Garfield	4,800	3,800	Contiguous to Bull Mountain WSA.
2	Bullfrog Creek	Garfield	42,600	33,700	
3	Cane Spring Desert	Garfield	18,300	0	
4	Dirty Devil/French Spring	Garfield Wayne	149,500	133,100	Contiguous to Dirty Devil and French Spring WSAs. Includes Dirty Devil eligible wild and scenic river segment.

#	Area Evaluated	County	Acres evaluated	Acres found to possess wilderness characteristics	Comments
5	Dogwater Creek	Garfield	3,500	3,500	Contiguous to Capitol Reef National Park (NP) lands that are administratively endorsed for wilderness designation.
6	Fiddler Butte	Garfield	22,000	19,700	Contiguous to Fiddler Butte WSA.
7	Flat Tops	Wayne	23,000	23,000	Adjacent to non-WSA lands with wilderness characteristics in the Price Field Office (Emery County)
8	Fremont Gorge	Wayne	20,100	16,000	Contiguous to Fremont Gorge WSA and Capitol Reef NP lands that are administratively endorsed for wilderness designation. Includes Fremont Gorge eligible wild and scenic river segment
9	Horseshoe Canyon South	Wayne	20,600	20,600	Contiguous to South Horseshoe Canyon WSA and Glen Canyon NRA lands that are administratively endorsed for wilderness designation
10	Jones Bench	Sevier	3,300	3,300	Contiguous to Capitol Reef NP lands that are administratively endorsed for wilderness designation
11	Kingston Ridge	Piute	10,200	10,200	
12	Labyrinth Canyon	Wayne	27,100	12,300	Adjoins North Horseshoe Canyon WSA and Glen Canyon NRA lands that are administratively endorsed for wilderness designation
13	Limestone Cliffs	Sevier	24,900	24,800	
14	Little Rockies	Garfield	23,300	23,200	Within Little Rockies National Natural Landmark, contiguous to Little Rockies WSA and Glen Canyon NRA lands that are administratively endorsed for wilderness designation.
15	Long Canyon	Garfield	16,600	16,600	Contiguous to Capitol Reef NP lands that are administratively endorsed for wilderness designation.
16	Mount Ellen—Blue Hills	Garfield Wayne	66,900	49,800	Contiguous to Mount Ellen/Blue Hills WSA
17	Mount Hillers	Garfield	2,300	1,800	Contiguous to Mount Hillers WSA.
18	Mount Pennell	Garfield	77,000	65,600	Contiguous to Mount Pennell WSA
19	Muddy Creek/Crack Canyon	Wayne	65,600	61,800	
20	Mussentuchit Badlands	Sevier	700	700	Adjacent to non-WSA lands with wilderness characteristics in the Price Field Office (Emery County)
21	Notom Bench	Wayne	8,700	8,000	Contiguous to Capitol Reef NP lands that are administratively endorsed for wilderness designation
22	Phonolite Hill	Piute	7,900	7,900	
23	Pole Canyon/Hunter Spring	Garfield	6,000	6,000	
24	Ragged Mountain	Garfield	30,100	25,900	

#	Area Evaluated	County	Acres evaluated	Acres found to possess wilderness characteristics	Comments
25	Red Desert	Wayne	40,900	40,700	Contiguous to Capitol Reef NP lands that are administratively endorsed for wilderness designation.
26	Robbers Roost Flats	Wayne	7,700	0	
27	Rock Canyon	Sevier	1,300	1,300	Adjacent to non-WSA lands with wilderness characteristics in the Price Field Office (Emery County)
28	Rocky Ford	Piute	6,700	6,700	
29	Sweetwater Reef	Wayne	6,200	6,200	Adjacent to non-WSA lands with wilderness characteristics in the Price Field Office (Emery County)
30	Wild Horse Mesa	Wayne	88,300	49,700	
31	Wildcat Knolls	Sevier	22,400	6,700	Adjacent to non-WSA lands with wilderness characteristics in the Price Field Office (Emery County)
	Total		**848,500**	**682,600**	

NPS = National Park Service, including Canyonlands and Capitol Reef National Parks and Glen Canyon National Recreation Area
WSA = Wilderness Study Area

3.4 RESOURCE USES

3.4.1 Forestry and Woodland Products

3.4.1.1 Forest and Woodland Types and Products

Forested and woodland areas within the RFO range from oak and pinyon-juniper stands to aspen, ponderosa pine, Douglas fir, white fir, Englemann spruce, and limber pine. Generally, lower elevations (6,000 feet to 8,400 feet) are dominated by woodland species, such as juniper. Middle elevations (7,000 feet to 7,500 feet) are a mix of pinyon-juniper, whereas in higher elevations (7,500 feet to 8,000 feet) pinyon and oak brush dominate with the occasional juniper. Pinyon-juniper stands compose the largest forest cover type within the RFO (see Section 3.3.4 - Vegetation).

As elevation increases, timber species dominate the cover type. Between 8,000 feet and 9,600 feet, ponderosa pine and aspen are the major species, whereas Douglas fir, white fir, subalpine fir, Engelmann spruce, aspen, and limber pine are found at elevations above 9,600 feet. Generally, timber species are located on north and northwest facing slopes or in canyon bottoms where there is enough soil moisture to sustain timber. The largest concentrations of timber cover types are found in the Henry Mountains and along the border between BLM and USFS-administered lands (Map 3-3).

Pinyon-juniper woodlands cover 552,000 acres, about one-quarter of the RFO. In contrast, true forests—including ponderosa pine, mixed-conifer, and aspen—represent only 5% of the RFO and are located primarily in the Henry Mountains. Forests and woodlands within the RFO are of limited commercial

value because of their low productivity and distance from markets. By and large, the aesthetic and ecological importance of forests far outweighs their limited economic value.

3.4.1.1.1 Pinyon-Juniper Woodlands

Pinyon-juniper woodlands are increasing in size and density over a large portion of the RFO. This increase is attributed to the absence of wildland fire for the last century and long-term pinyon-juniper management. Where pinyon-juniper canopy cover is dense with large trees, very few, if any, desirable forage species are present. Plant species diversity is decreasing because of the increasing tree canopy cover.

The boundaries of the pinyon-juniper woodlands are also increasing. Pinyon-juniper woodlands are invading sagebrush areas and are outcompeting desirable forage species. Shrubs and herbaceous plants reduce erosion better than pinyon-juniper trees. Increasing pinyon-juniper density adversely affects watershed health. Areas with steep slopes and erodible soils in pinyon-juniper tree cover are vulnerable to serious soil erosion. Pinyon-juniper woodlands do not burn in normal precipitation years but during years of drought, the buildup of continuous fuels is a fire hazard. Because they have expanded into areas formerly occupied by other vegetation types, management attention has focused on reducing, rather than the sustaining, these woodlands.

Pinyon pine provides utilitarian value in the form of firewood, Christmas trees, and pine nuts. Juniper is used for fence posts and firewood. Both are unsuitable for lumber because of their small size, irregular shape, and lack of self-pruning lower limbs. Approximately 600 cords of firewood (both commercial and non-commercial) and 150 Christmas trees are harvested from the RFO per year.

3.4.1.1.2 Ponderosa Pine

Ponderosa pine forests cover 43,000 acres, or about 2% of the RFO. In the inland west and southwest, ponderosa pine is a commercially valuable and productive timber tree. Currently, this species is less important economically in the planning area, but there have been limited sales of ponderosa pine in the past. Permits for ponderosa pine harvesting are limited to a few trees each and occur primarily for fire salvaged trees. Requests are evaluated on a case-by-case basis.

3.4.1.1.3 Mixed-Conifer

Less than 2% of the RFO (29,000 acres) is forested by mixed-conifer stands, which include Engelmann spruce, white fir, subalpine fir, Douglas fir, and several pine species. Although commercially important elsewhere, these forests are of limited economic value within the RFO. Requests for harvesting of mixed conifer species are evaluated on a case-by-case basis, with no known recent sales.

3.4.1.1.4 Aspen

Quaking aspen forests cover 12,000 acres, less than 1% of the RFO. Because it is easy to cut, aspen is sometimes used for firewood. It has no commercial value within the RFO. No recent permits have been issued for aspen. Requests are evaluated on a case-by-case basis.

3.4.1.2 Current Level of Forest and Woodland Activity

In 2001, RFO and Henry Mountain Field Station issued 647 permits for forest products; 268 of these permits were for the collecting of seeds from wildland sources. In 2002, the two offices issued 456 permits for forest products, with 109 of them being for the collection of seeds from wildland sources.

Because of the serious drought and the decrease in seed production in 2002, the RFO did not issue as many seed permits in 2002, and did not issue any seed permits at all in the fall/winter of 2002/2003.

3.4.1.3 Forest and Woodland Health

The RFO has many areas of diseased or insect killed trees in the pinyon-juniper woodlands. This is generally limited to single trees, but some small patches, usually less than an acre, are scattered throughout the area. During the prolonged drought of the late 1990s and early 2000s, areas of pinyon-juniper woodlands died. Forests in the Henry Mountains also suffered from disease and insect infestations. In 2003 a large number of pinyon and juniper trees died on the north end of the Henry Mountains and in other areas. Portions of Mount Ellen, Mount Pennell, and Mount Hillers burned during 2003.

In 2001 and 2002, in accordance with the National Fire Plan, the RFO and the Interagency Fire Management organization began a cooperative effort to reduce fuels and restore forest and woodland health on a much larger scale. In 2002, mechanical methods were used to reduce fuels and restore woodland health on 4,061 acres within the RFO.

3.4.2 Livestock Grazing

Passage of the Taylor Grazing Act in 1934 initiated the Federal effort to regulate livestock grazing on public lands to provide for the orderly use, improvement, and development of the range. The Act established a system for allotting grazing privileges to livestock operators based on grazing capacities and priorities of use, and for the delineation of allotment boundaries. It also established standards for rangeland improvements and implemented grazing fees. The Act placed 142 million acres of land in western states under the jurisdiction of the Grazing Service, which evolved into the BLM in 1946. FLPMA and the Public Rangelands Improvement Act (PRIA) of 1978 provided additional authority for the management of livestock grazing on public land.

3.4.2.1 Grazing Authorization

Within the RFO, the BLM manages livestock grazing on public lands in Sanpete, Sevier, Wayne, and Piute counties; portions of Garfield County; and some allotments within Glen Canyon National Recreation Area and Capitol Reef National Park. Livestock grazing on public land is administered through livestock grazing allotments, shown on Map 2-7. Through an inter-district agreement, the Price Field Office manages several allotments within the RFO, and the RFO manages several allotments within the Price Field Office. There are 194 allotments in the RFO that were used by 143 livestock operators in 2002. The total forage available for livestock use in the RFO is 109,951 animal unit months (AUMs). The total number of AUMs authorized for the past 15 years is shown in Table 3-21. Grazing permits are usually issued for 10 years. Active use varies from the permitted use in the table as a result of fluctuations in forage availability and decisions of livestock operators to use or not use the public range in a given year. Appendix 7 (Table A7-1) provides detailed information on existing grazing allotments in the RFO.

Table 3-21. Comparison of Total Permitted Use to Active Use

Year	Active Use			Permitted Use
	Cattle	Sheep	Total	
1988	40,467	9,426	49,893	109,951
1989	35,337	8,282	43,619	109,951
1990	30,202	7,793	37,995	109,951

Year	Active Use			Permitted Use
	Cattle	Sheep	Total	
1991	35,837	6,423	42,260	109,951
1992	39,783	7,478	47,261	109,951
1993	42,768	9,393	52,161	109,951
1994	43,338	8,913	52,251	109,951
1995	47,532	11,514	59,046	109,951
1996	48,996	8,788	57,784	109,951
1997	48,894	10,051	58,945	109,951
1998	59,930	9,664	69,594	109,951
1999	62,295	10,062	72,357	109,951
2000	50,246	9,160	59,406	109,951
2001	63,743	12,848	76,591	109,951
2002	52,287	7,647	59,934	109,951
2003	31,011	8,910	39,921	109,951
Average	**45,792**	**9,147**	**54,939**	**109,951**

Source: RFO Grazing Files.

3.4.2.2 Allotment Categorization and Management

Allotments in the RFO have been categorized into three selective management categories. These categories were developed in 1981 to prioritize grazing allotments to achieve cost-effective improvement of rangeland condition and production. This selective management process emphasized those allotments with the most need and the best potential for return from the investment of public funds. Most allotments have been placed into one of the three categories according to management needs, resource conflicts, potential for improvement, and funding and/or staffing constraints. The three management categories are: Improve, Maintain, and Custodial.

Improve category allotments are managed to improve current resource conditions on allotments with resource issues and which have a high potential for return on investment. They receive the highest priority for funding and management actions. Maintain category allotments are managed to maintain current satisfactory resource conditions. They are actively managed to ensure that resource values do not decline. Custodial category allotments are under custodial management by the BLM to protect resource conditions and values. As watersheds are evaluated, the allotment category is reviewed. The RFO has 91 Improve category allotments covering 1,657,475 acres, 25 Maintain category allotments covering 589,884 acres, and 25 Custodial category allotments covering 80,339 acres. Ten allotments have not been categorized because they were unalloted at the time the allotment categorization process was implemented. Information specific to each of the 184 allotments in the RFO is provided in Appendix 7.

3.4.2.3 Rangeland Improvement Projects

The BLM and its cooperators have completed structural and nonstructural projects on public lands to improve and manage rangelands since 1943. The nonstructural projects include seeding, plowing, chiseling, contour furrowing, and herbicide spraying. The structural projects have included wells, pipelines, troughs, fences, guzzlers, reservoirs, and cattle guards.

Non-native seeding has occurred since the 1950s, with most activity occurring in the 1960s. Seeding has been implemented on a very limited scale from the 1970s to the present. The original objectives of rangeland seeding with non-native species were watershed protection and increases in wildlife and livestock forage. Seeding in the Henry Mountains was undertaken to increase forage to accommodate both bison and livestock. Development of various grazing systems resulted in implementing a variety of

vegetation treatments (including seedings), which were used to take grazing pressure off of adjacent native vegetative communities. Most seedings completed since the 1970s have been developed because of emergency fire rehabilitation on sites that were susceptible to erosion and the invasion of noxious weeds and non-native annual grass species (such as cheatgrass).

As mandated in FLPMA and PRIA, a portion of the grazing fees is invested in range improvements, with the expectation that these improvements may benefit wildlife, watersheds, and livestock producers. Using emergency fire rehabilitation funds, additional public land resources have been protected through rehabilitation of burned areas, thereby reducing soil loss and decreasing the ability of noxious weeds and annual non-native grasses to become established. Livestock operators, state and Federal agencies, and other interested public entities have continued to fund rangeland improvement construction.

3.4.2.4 Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration

In May 1997, under the authority of the regulations at 43 CFR 4180 (Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration), the Utah State Director approved Utah's Standards for Rangeland Health and Guidelines for Livestock Grazing. These standards and guidelines provide a clear statement of agency policy and direction for those who use public lands for livestock grazing and for those who are responsible for their management and accountable for their conditions. The fundamentals of rangeland health combine the basic precepts of physical function and biological health with elements of law relating to water quality and plant and animal populations and communities.

The standards are goals for the desired condition of the biological and physical components and characteristics of the rangelands. These standards are measurable and attainable, comply with various Federal and State statutes, policies, and directives applicable to BLM rangelands, and are the minimum resource condition that must be achieved and maintained. An interdisciplinary team conducts watershed assessments with participation from permittees and other interested parties. The assessments determine whether the Standards for Rangeland Health are being met. The four standards for rangeland health are as follows:

- **Standard 1:** Uplands soils are in proper functioning condition.
- **Standard 2:** Riparian and wetland areas are in proper functioning condition.
- **Standard 3:** Desired species, including native, threatened, endangered, and special status species, are maintained at an appropriate level.
- **Standard 4:** Water quality meets state standards.

Based on the regulations at 43 CFR 4180, if existing grazing management and livestock use is a significant factor in the nonattainment of a standard, appropriate actions must be taken which will result in significant progress toward attainment of the standard(s).

3.4.3 Recreation

The recreational resources of the lands managed by the RFO represent some of the most unusual and least explored recreation opportunities in the region. However in certain parts of the RFO, increased visitor use is affecting soil, water, vegetation, and wildlife. Conflicts among recreationists are also beginning to increase. In some areas, recreation conflicts with other resources and uses, such as livestock grazing, wildlife habitat needs, and wilderness characteristics.

All of the RFO is included in a recreation fee demonstration project known as the Henry Mountains/Sevier River area. Participation in the recreation fee program is authorized by the Federal Lands Recreation Enhancement Act (FLREA) and allows a field office to collect fees for specific types of recreational uses, and then expend the fees to manage the lands where they were collected. Monies collected have been used to maintain and improve campgrounds and picnic areas, install new informational signs, replace waterlines and hydrants to supply drinking water, monitor recreation uses, improve hiking trails, and generally improve the recreational experience within the RFO.

3.4.3.1 Recreation Management Areas

Recreation Management Areas (RMAs) are BLM's primary means of managing recreational use of the public lands. Public land falls within either a Special RMA (SRMA) or Extensive RMA (ERMA). SRMAs are areas that require a recreation investment, where more intensive recreation management is needed, and where recreation is a principal management objective. These areas often have high levels of recreation activity and valuable natural resources. Under existing land use plans, only a small area at the head of Yuba Lake is established as an SRMA. The Yuba Lake SRMA is and will continue to be managed by the Fillmore Field Office. All other lands are managed as an ERMA. The ERMA consists of areas in which recreation is nonspecialized and dispersed and does not require intensive management (although such areas may contain recreation sites). Although the primary management objective of the ERMA is not necessarily recreation, the large number of attractive recreation sites and areas make recreation management an important consideration.

3.4.3.2 Special Recreation Permitting

As authorized by 43 CFR 2932, four types of uses exist for which special recreation permits (SRPs) are required: commercial use, competitive events, organized groups, and recreation use in special areas.

The BLM issues SRPs for noncommercial use in certain special areas, including long-term visitor areas, river use, and backcountry hiking or camping areas. The RFO issues noncommercial recreation use permits (RUPs) for individual use of three fee-site campgrounds. The RFO issued 254 RUPs during the 2004 fiscal year (FY).

Commercial SRPs are issued for commercial and competitive uses of public lands and organized events. SRPs may be issued for 10 years or less, with annual renewal, after which time outfitters must reapply for permits. The permits are issued as a means of managing visitor use, protecting natural and cultural resources, and for providing a mechanism for accommodating commercial recreational uses. The RFO issued 32 SRPs during the 2004 fiscal year. The total number of participants in recreational activities authorized by SRPs during 2004 was 12,008, generating $109,077 in revenue.

3.4.3.3 Recreation Visitation

BLM recreation visitation is recorded in the Recreation Management Information System (RMIS). RMIS estimates recreation participation for 65 types of recreation activities recorded at BLM sites and areas based on registrations, permit records, observations, and professional judgment. Visitation is estimated by numbers of participants as well as counted by actual visitor days. Participants are the actual number of people who take part in a recreational activity. A visitor day is a common recreation unit of measure used among Federal agencies. One visitor day represents an aggregate of 12 visitor hours at a site or area.

In the past decade several activities made substantial contributions to total visitation (e.g., total visitor days) within the RFO. Camping, driving for pleasure, and backpacking were the most common forms of recreation. Aggregate OHV use (attributed to ATVs as well as cars, trucks, and SUVs) is another

common form of recreation. Picnicking, hiking, and viewing wildlife, as well as fishing and big game hunting, were also common recreation activities.

Table 3-22 lists the RMIS figures for the RFO for the fiscal years 2001 through 2004.

Table 3-22. Recreation Visitation

Activity	Oct. 2000–Sept. 2001		Oct. 2001–Sept. 2002		Oct. 2002–Sept. 2003		Oct. 2003–Sept. 2004	
	Participants	Visitor Days[1]	Participants	Visitor Days[1]	Participants	Visitor Days[1]	Participants	Visitor Days[1]
Backpacking	72,368	74,079	54,754	56,338	49,766	50,826	50,786	51,610
Camping	128,418	125,787	98,951	96,285	103,968	100,783	105,128	102,144
Climbing (Mountain/Rock)	2,122	583	1,514	414	1,413	353	1,480	370
Driving for Pleasure	156,429	73,151	129,200	55,149	132,402	53,477	132,195	55,034
Environmental Education	2,320	800	1,769	639	1,722	620	1,882	670
Fishing (Freshwater)	26,815	5,890	28,075	6,215	56,103	13,246	53,296	12,581
Gather Non-Comm Prod.	4,885	1,221	4,825	1,206	4,680	1,170	4,455	1,114
Hiking/Walking/Running	80,699	42,967	62,744	31,152	65,323	30,247	66,189	31,507
Horseback Riding	4,905	1,026	4,825	1,005	4,680	975	4,455	928
Hunting—Big Game	22,364	15,878	18,684	12,240	17,955	11,720	17,871	11,945
Hunting—Small Game	9,770	2,035	9,650	2,010	9,419	1,950	8,910	1,856
Hunting—Waterfowl	990	165	1,055	176	2,675	446	2,540	423
OHV (ATV)	75,751	29,652	60,945	22,254	63,062	21,750	63,834	22,492
OHV (Cars/Trucks/SUVs)	76,600	43,785	58,804	31,954	56,483	30,625	57,787	31,836
Pack Trips	2,076	2,078	1,478	1,476	1,413	1,413	1,480	1,480
Picnicking	112,439	9,811	81,422	7,213	78,082	6,916	81,055	7,148
Powerboating	8,110	1,352	8,290	1,382	13,471	2,245	12,800	2,133
Rockhound/Mineral Coll.	4,128	1,032	2,951	738	2,826	706	2,960	740
Row/Float/Raft	2,064	2,069	1,476	1,476	1,413	1,413	1,480	1,480
Snow Play (General)	977	81	965	80	936	78	891	74
Swimming/Water Play	9,125	760	9,360	780	16,181	1,348	15,375	1,281
Target Practice	9,770	814	9,650	804	9,360	780	8,910	743
Viewing (Wildlife)	46,832	7,356	41,131	5,897	50,721	6,586	49,481	6,594
Viewing (All Other)	16,228	1,373	14,732	1,203	14,528	1,177	14,206	1,026
Other	117	141	104	106	155	154	95	86
Total	**876,302**	**443,886**	**707,354**	**338,192**	**758,737**	**341,004**	**759,541**	**347,295**

[1] A recreation visitor day is equivalent to 12 hours of participation in a given recreational activity.
Source: Bureau of Land Management, Recreation Management Information System.

3.4.3.4 Developed Recreation Sites

The RFO manages a small number of developed recreation sites as displayed in Table 3-23.

Table 3-23. Developed Recreation Sites, Richfield Field Office

Site Name	Description
Otter Creek Reservoir Fisherman's Beach Tamarisk Point South Point	Minimal day-use facilities, dispersed camping areas, and fishing access to the reservoir. Primary activities are fishing and boating.
Wolverton Mill	Day-use and interpretive facilities at a relocated cultural site adjacent to the BLM office in Hanksville.
Hog Springs Picnic Area	Day-use facility. The site serves primarily as a roadside rest stop, picnic site, and trailhead.
Lonesome Beaver Campground	Fee site with day-use and camping facilities, along with culinary water. Primary use is camping.
McMillan Spring Campground	Fee site with day-use and camping facilities with culinary water. Primary uses are camping, OHV driving, and viewing bison.
Starr Springs Campground/Picnic Area	Fee site that features day-use and camping facilities. Panorama Knoll Nature Trail and the Starr Ranch are at the site. Site is primarily used for camping.
Dandelion Flat Picnic Area	Day-use and primitive camping facilities. Serves picnicking and primitive camping uses. Also serves as a trailhead for Mt. Ellen.
Koosharem Reservoir	Minimal day-use facilities. Primarily serves as a roadside rest stop.

3.4.3.5 Recreation Use Conflicts

Recreational activities can conflict with one another and affect the available opportunities and experiences. For example, heavy use of an area by motorized users can displace non-motorized users. Recreational activities may also conflict with and affect other resources and uses. Examples of recreation conflict and impacts include damage to cultural resources, disruption of grazing activities, and damage to various natural resources. Instances of improper motorized use off designated routes in areas limited to existing/designated routes or closed have been recorded. As improper use is identified, it is rehabilitated by hand if possible. In areas of recurrent use off designated routes, additional signage, barricades and law enforcement presence have been used to resolve the recreation use conflict. There are also instances in which motorized and non-motorized recreation is affecting wildlife habitat and wilderness experiences. Areas of conflict include the Dirty Devil region, Factory Butte, and the Henry Mountains.

3.4.4 Travel Management

Development of the existing transportation system in the RFO has been associated with providing access for resource uses such as mineral development, livestock grazing, and recreation. Increased demand for access to public lands, combined with the research on the impacts of roads to resources and resource uses, has increased the need for a well designed and managed transportation system.

The transportation system includes state, county and BLM system roads, some of which receive regular maintenance. For portions of the transportation system roads that cross BLM-administered land, various government entities and individuals acquire rights-of-way (ROWs) from BLM. Issuance of ROWs is based on access needs and resource considerations. State and county system roads (depending on class of the road) are usually constructed and maintained to higher standards than BLM roads and provide the primary arterial and collector road systems for access to and through BLM lands. These state and county system roads are not maintained by BLM.

There are some locations within the RFO that are known and occasionally used for aircraft landing and departure activities that, through such casual use, have evolved into backcountry airstrips. Backcountry airstrips in the RFO receive occasional use by backcountry pilots to camp, explore, or for safety purposes.

In addition to arterial and collector routes, there are numerous smaller routes laced throughout the RFO that connect more remote locations to the larger roads. These routes are used for recreational purposes, access to range improvements, mineral developments, and non-BLM managed in-holdings. Most of these routes are not paved and most are unimproved in nature; they are of native surface (dirt, gravel, or sand). The BLM utilized a variety of methods to inventory existing routes/ways within the RFO for consideration in the planning process, including Global Positioning System data (when available), data provided by the counties, map and orthophoto data, and staff/cooperator knowledge. Based on this inventory, the BLM identified 4,380 miles of routes/ways (Map 3-10) within the RFO. It should be noted that route designations are implementation decisions and that the resulting transportation network could change over time. Detailed route inventory maps by alternative will be available for review at the Richfield Field Office and on the project website for the Richfield DRMP/DEIS at http://www.blm.gov/ut/st/en/fo/richfield/planning.html. Work on a route inventory and route designations is ongoing and will be refined between the Draft EIS and Final EIS. Comments on the route inventory and proposed route designations are invited during the DRMP/DEIS comment period.

3.4.4.1 Off-Highway Vehicles

Management direction for off-highway vehicles is provided in 43 CFR 8340, BLM Manual 8340, and the BLM National OHV Management Strategy. Resource management plans designate areas as open, closed, or limited to OHV use. Under the existing land use plans, 77% (1,636,400 acres) of the RFO is open to cross-country OHV use, 13% (277,600 acres) is limited to existing/designated/maintained routes, and 10% (214,000 acres) is closed to OHV use (Map 2-12).

The number of off-highway vehicles registered in Utah grew nearly 70% between 2001 and 2004. Registrations of OHVs within counties in the planning area have grown as well. County and statewide OHV registrations are shown in Table 3-24.

Table 3-24. OHV Registrations

County	2001	2002	2003	2004
Garfield County	353	585	569	745
Piute County	195	256	281	367
Sanpete County	2,594	3,060	2,969	3,885
Sevier County	3,523	3,819	3,708	4,554
Wayne County	277	344	341	462
State Total	**95,569**	**127,556**	**124,954**	**161,350**

Note: Registrations are for State of Utah fiscal year (July 1–June 30).
Source: Eric Stucki, Utah Division of State Parks, Personal communication 2004

The 11 WSAs within the RFO are designated as either closed or limited to OHV use. There are 188,600 acres closed to OHV use and 258,300 acres where OHV use is limited to identified routes. Within the use areas, there are 42 miles of inventoried routes within WSAs that are currently open to motorized travel.

The Factory Butte area in the eastern portion of the RFO was identified as open to off-highway vehicle use under 43 CFR 8342.1 in the 1982 Henry Mountain Management Framework Plan (MFP). One section of land (640 acres), commonly referred to as Swingarm City, was identified as an OHV activity area.

This section of land was where the most intensive use was occurring. OHV use in the Factory Butte area has continued to increase and expand beyond the OHV activity area to the point that OHVs are causing or will cause considerable adverse effects upon threatened and endangered plant species in the area. In September 2006, a restriction order notice was published in the Federal Register for the Factory Butte area. The restriction order limited OHV use to designated routes on 142,023 acres of the Factory Butte Area. The order did not affect OHV use within Swingarm City; 2,602 acres remained open as an OHV activity area and the 3,843 acres of North Caineville Mesa remained closed to OHV use. This restriction order will remain in effect until the RFO DRMP becomes final.

The Paiute and Great Western Trail systems run through the western and central portions of the planning area. They are managed under a memorandum of understanding (MOU) between the BLM, the Forest Service, the State of Utah, and several local governments. The Paiute Trail System is a 900 mile system that crosses several BLM Field Office jurisdictions, as well as U.S. Forest Service, State, Indian reservation and private lands. The RFO manages 136 miles of the Paiute trail system. A portion of the Great Western Trail System also crosses the planning area, the majority of which is on U.S. Forest Service lands. The Great Western Trail totals 138 miles within the planning area, with only 4 miles on BLM-administered land.

Use of these trail systems has been monitored over the past nine years using trail counters to provide readings of use trends over time. During the 2003 season, the BLM used 25 infrared trail counters strategically located across the two trail systems. Use data is also based on observations and comparisons offered by Paiute Trail rangers, district trail managers, trail hosts, and representatives from the BLM, state parks, Paiute ATV Trail Committee, and the Southern Utah OHV Club. Most use (90%) was via ATVs, with motorcycles and jeeps accounting for the remaining 10%. This report does not include snowmobile use.

The Paiute system sustained a 16% use increase between 2002 and 2003, while the Great Western Trail experienced a 4% increase during the same period. Results are reported in Table 3-25.

Table 3-25. Paiute ATV and Great Western Trail Systems Estimated Use

Trail	1995	1996	1997	1998	1999	2000	2001	2002	2003
Paiute ATV Trail	18,000	17,268	24,866	29,663	38,618	43,367	45,310	43,152	50,245
Great Western Trail	5,600	5,450	11,755	11,571	13,514	12,137	14,851	13,579	14,167
Total Annual OHV Use	**23,600**	**22,718**	**36,621**	**41,234**	**52,132**	**55,504**	**60,161**	**56,731**	**64,412**

Source: USFS 2003.

Growth of OHV use has become a significant issue within the planning area because of concerns related to the potential resource degradation that can result from unmanaged use.

3.4.5 Lands and Realty

Public land policy in the United States fundamentally changed with passage of FLPMA in 1976, which directed that "public lands be retained in Federal ownership, unless as a result of the land use planning procedure provided for in this Act, it is determined that disposal of a particular parcel will serve the national interest…" The lands and realty program is a support program to all other resources and resource uses. The goals of the lands and realty program are to manage the public lands to support the goals and objectives of other resource programs, provide for uses of public lands in accordance with applicable laws and regulations while protecting sensitive resources, and improve management of the public lands through land tenure adjustments. The program responds to requests for rights-of-way (ROWs), permits,

leases, withdrawals, and land tenure adjustments from other programs or outside entities. The frequency of such requests is anticipated to increase as neighboring communities grow and the demand for use of public lands increases. As a result, future management of the lands and realty program will likely become more intense, complex, and costly.

The primary responsibilities of the lands and realty program include land tenure adjustments, withdrawal review, ROWs, and other land use authorizations. The following sections describe the current conditions and status of the lands and realty program within the RFO.

The planning area is comprised of approximately 5.4 million acres in Sanpete, Sevier, Piute, and Wayne counties, and portions of Garfield County (see Map 1-1). There are also 21,500 acres of Kane County within the planning area. However, these acres lie entirely within Glen Canyon National Recreation Area so no decisions within this RMP will affect those lands. Within this area BLM manages 2.1 million acres of public land surface and mineral estate, and an additional 95,000 acres of split estate lands (Federal minerals where the surface estate is in state or private ownership). Split estate lands by county are:

- Garfield County: 7,600 acres
- Piute County: 2,800 acres
- Sanpete County: 40,400 acres
- Sevier County: 36,300 acres
- Wayne County: 7,900 acres

The BLM also has administrative responsibility for 2,082,865 acres of mineral estate where the surface is managed by other Federal agencies (U.S. Forest Service and National Park Service). Table 1-1 (in Chapter 1) summarizes the surface land ownership within the planning area.

3.4.5.1 Land Tenure Adjustment

Land tenure adjustments are often associated with accommodating public and private needs, fulfilling State of Utah entitlements, community expansion, consolidating public land, acquiring and protecting important resources, acquiring access to public lands, or serving a national priority. All land tenure adjustments must be in conformance with applicable land use plans and be subject to valid and existing rights. BLM uses several authorities to make land tenure adjustments through disposal and acquisition, including FLPMA and the Recreation and Public Purposes Act.

3.4.5.1.1 Disposals

Lands can be disposed of through sale, exchange, state quantity grant, color of title, state In Lieu selection, desert land entry, Carey Act entry, patent under the Recreation and Public Purposes Act or through Federal legislation. Public lands have potential for disposal when they are isolated and/or difficult to manage. Disposal actions are usually in response to public request, such as community expansion. Disposals result in a title transfer, wherein the lands leave the public domain. All disposal actions are coordinated with adjoining landowners, local governments, and current land users. Disposal actions require a site-specific environmental analysis in accordance with NEPA (unless the disposal is a result of Federal legislation and is exempted from NEPA review). This NEPA analysis may reveal resource conditions that could not be mitigated to the satisfaction of the authorized officer and may therefore preclude disposal.

Public sales of BLM lands are managed under the disposal criteria set forth in Section 203 of FLPMA and the Federal Land Transaction Facilitation Act. Public lands determined suitable for sale are offered on

the initiative of BLM unless their disposal was directed by Federal legislation. The lands are sold at not less than fair market value. Specific lands suitable for sale must be identified in the applicable land use plan. Any lands to be disposed of through sale that were not identified in the land use plan would require a plan amendment before a sale could occur. Public lands classified, withdrawn, reserved, or otherwise designated as not available or subject to sale are unavailable.

Lands can also be disposed of as directed by Federal legislation. Two past examples of this within the planning area are:

- Public Law 98-219 (dated February 17, 1984) provided for the transfer of title to 1,273.54 acres of public land within the RFO to the Paiute Indian Tribe of Utah.
- Public Law 102-292 (dated May 26, 1992) transferred title and jurisdiction of 10,172.89 acres of public land within the RFO to the Secretary of Agriculture. These lands were added to and administered as part of the Fishlake National Forest.

Disposal actions were considered in previous land use plans. Of the five existing land use plans that cover lands currently administered by the RFO, only the Mountain Valley MFP originally identified lands for sale. These land use plans have subsequently been amended to allow additional land sales. To date, a total of 3,557.63 acres have been sold in the RFO under authority of Section 203 of FLPMA. In addition, since the existing land use plans were prepared 335.48 acres of public land have been disposed of through exchange; 1,171.94 acres have been disposed of by R&PP sales; 83.02 acres have been disposed of by placer mineral patent; and 640 acres have been disposed of by state grants. Future disposal actions are anticipated, as lands are identified for consideration for disposal to consolidate public land, facilitate community expansion, and remove from Federal jurisdiction land parcels that are isolated or difficult to manage.

3.4.5.1.2 Acquisitions

Acquisition of lands can be pursued to facilitate various resource management objectives. Acquisitions, including easements, can be completed through exchange, purchase, or donations. Land exchanges are initiated in direct response to public demand, or by BLM to acquire sensitive resources and/or improve management of the public lands. Exchange proposals are evaluated on a case-by-case basis to determine if the proposed exchange would be in the public interest and would achieve RMP goals and objectives. A total of 36.37 acres of private land within the RFO have been acquired by BLM since the existing land use plans were prepared. Future land acquisitions are anticipated, as opportunities arise to acquire access to public lands and protect important resources.

3.4.5.2 Withdrawals

A withdrawal is a formal land designation which has the effect of reserving land for a certain use. Withdrawals remove certain public lands from the operation of one or more of the public land laws, excluding lands from settlement, sale, location, or entry, including under the general mining laws and mineral leasing laws. Withdrawals are used to protect major Federal investments in facilities or other improvements, reserve lands for specific proposes and use, support national security, protect resources, and provide for public health and safety.

Section 204(l) of FLPMA requires the review of existing withdrawals to determine if they are still serving the purposes for which they were made. If the withdrawals are no longer serving their intended purpose, they are to be revoked and the lands opened or partially opened to the uses that were previously prohibited. If withdrawals are determined to still be meeting the purposes for which they were made, they

are recommended for extension for a specific term. While BLM can make recommendations to designate, revoke, or extend withdrawals, only the Secretary has the authority to actually take these actions.

Approximately 154,700 acres of public land in the RFO are currently withdrawn for various purposes as shown in Table 3-26. More detailed information on these existing withdrawals can be found in Appendix 5 (Table A5-7). There are currently no withdrawal applications pending. The lands listed in Table 3-26 are subject to withdrawal review.

Table 3-26. Existing Withdrawals on Public Lands within the RFO

Withdrawal Type	Segregative Effect	Affected Acres
Public Water Reserve	Lands included within public water reserves are withdrawn from settlement, location, selection, sale, or entry. They are withdrawn from location of non-metalliferous minerals.	12,230.77
Henry Mountain Administrative Site	Lands are withdrawn from settlement, sale, location, or entry under the general land laws, including the mining laws, but not to leasing under the mineral leasing laws.	41.21
Federal Energy Regulatory Commission (FERC)	When an application is filed with FERC, the lands are withdrawn from operation of the public land laws. However the lands remain open to location, lease, or disposal of the mineral estate. The issuance of a FERC permit or license withdraws the lands from operation of the mining laws.	1,207.08
Power Site	Lands are withdrawn from all forms of entry, selection, disposal, settlement, or location.	72.80
Oil Shale	Lands are withdrawn from lease, except oil and gas and sodium leasing, or other disposal, and from appropriation under the general mining laws.	141,144.65
Total		**154,696.51**

Source: BLM 2004c.

3.4.5.3 Rights-of-Way

Approximately 475 rights-of-way (ROWs) exist within the RFO, authorizing construction, operation and maintenance of power lines, electric substations, telephone lines and cables, irrigation and culinary water pipelines, springs and wells used for irrigation and culinary purposes, reservoirs, communication sites, ditches and canals, roads, highways, material sites, and other similar uses. These ROWs have been granted to the State of Utah, various counties, individuals, corporations, rural electric associations, partnerships, and other entities. Whenever feasible, BLM encourages joint use and placement of new facilities in previously-disturbed areas such as existing communications sites, roads, and highways. There are no officially designated ROW corridors in the planning area; however, there are several physical corridors containing facilities that are not formally designated by a land use plan. The BLM is currently addressing designation of energy corridors in an interagency Programmatic EIS for the Western United States (see Section 1.6.4 in Chapter 1).

Prior to 1982, ROWs for Federal aid highway projects were issued using the same procedures as for other ROWs. After 1982, these ROWs were processed in accordance with an interagency agreement. The Federal Highway Administration (FHWA) may request the appropriation of public lands from BLM for highway or mineral material site ROWs for highway purposes only. The BLM then issues a Letter of Consent to FHWA, and FHWA in turn issues a Highway Easement Deed to the respective state agency. FHWA administers the deed. Since 1982, the BLM has issued over 90 authorizations for Federal aid

highway projects statewide. Several of these projects were connected with the construction and/or associated maintenance of Interstate 70, Highway 50, Highway 24, and other major highways in the RFO.

There are several major power transmission lines in the western part of the RFO that connect to the substation located near Sigurd, and numerous power distribution lines scattered across the RFO. There are currently 16 ROWs that authorize culinary water sources within the RFO. Details on these ROWs can be found in Appendix 5.

Communication sites host communication equipment and facilities for various uses, such as television, radio, microwave, seismograph, and cellular. There are currently 37 communication sites throughout the RFO; the BLM has issued 38 ROW grants for various communication uses at these sites. Detailed information is shown in Appendix 5 (Table A5-10).

3.4.5.4 Leases and Permits

Land use permits authorize short-term uses of public land involving little or no land improvement, construction, or investment. They can also be used to authorize uses that cannot be authorized under other authorities. A temporary use permit authorizes short-term use of public land for activities connected with construction, operation, maintenance, or termination of a ROW.

Leases are usually issued for longer periods of time than permits. The types of leases that can be issued by the BLM are:

- Leases issued under the authority of Section 302(b) of FLPMA
- R&PP leases
- Airport leases

Section 302(b) leases authorize uses such as residential, agricultural, industrial, and commercial, as well as uses that cannot be authorized under other authorities and that involve substantial construction, development, or land improvement and investment. R&PP leases authorize uses such as parks, shooting ranges, cemeteries, sanitary landfills, and other recreation and public purposes. Airport leases, as the name implies, authorize public airports.

R&PP leases have been issued for landfill sites, shooting ranges, parks, and other recreation and public purposes. Since 1982, approximately 35 R&PP leases have been issued for public lands within the RFO, of which nine are currently active. The decrease in R&PP leases can be partially attributed to a conversion of some leases to patents and also to a change in BLM policy that occurred in 1988. The policy was (and is) that no new sanitary landfill sites would be authorized on public land, that all existing R&PP leases for such sites would be terminated as quickly as possible, and that existing landfill sites would either be sold or closed and rehabilitated. This policy was adopted to minimize the potential liability associated with such sites. The R&PP Act was amended in 1988, allowing for the disposal (sale) of public lands to be used for the purpose of solid waste disposal or for any other purpose that includes the disposal, placement, or release of any hazardous substance. Sites other than landfills that qualify include shooting ranges, municipal water treatment plants, and municipal equipment storage facilities. Presently all R&PP leases for sanitary landfill sites have been terminated. Of the nine active R&PP leases in the RFO, four authorize shooting ranges. Information about these ranges is included in Appendix 5 (Table A5-11). The other five existing leases authorize parks and a riding arena.

3.4.5.5 Renewable Energy

Renewable energy generally is defined as energy derived from sources such as wind, solar, and biomass. Wind energy refers to the kinetic energy generated from wind produced by power-generating turbines. Solar energy includes electricity generated from photovoltaic panels. Bioenergy from biomass refers to energy from organic waste products that are either burned directly or converted to fuels that can be burned to produce energy.

A recent study, *Assessing the Potential for Renewable Energy on Public Lands* (USDI and USDOE 2003) presented a nationwide overview of renewable resources on BLM lands in the western U.S. The study employed several screening criteria to consider factors that would impact the economic and technical feasibility of renewable power production. This would help to determine the true potential of an area to produce renewable energy. Screening criteria used in the assessment included access to roads and transmission facilities, available land surface, site condition, land use restrictions, distance to population centers, government policies, and regional market conditions. The primary goal of the assessment was to identify BLM planning units in the western U.S. with the highest potential for development of renewable energy.

The assessment indicates that portions of the RFO have a high potential for solar, wind, and biomass energy. However, the potential for development of these resources is moderate to low due to distance from roads, transportation facilities, and population centers. There are no renewable energy facilities currently present within the RFO.

In June 2005, the BLM published the Wind Energy Development, Final Programmatic Environmental Impact Statement (PEIS) (BLM 2005c). This PEIS evaluates the potential environmental and socioeconomic impacts associated with wind energy development on BLM-administered lands in 11 western states over the next 20 years (e.g., 2005-2025). To determine where potential development might occur on the basis of land status and wind energy resources, the National Renewable Energy Laboratory (NREL) constructed a maximum potential development scenario to project the amount of wind power that might be generated over the next 20 years in the 11-state study area. The projection included an assessment of the potential wind power supply and demand. Maps depicting BLM-administered lands with low, medium, and high potential for wind energy development were constructed for each of the BLM Field Offices in the 11-state study area. These maps serve only as a preliminary screening tool for site selection. Developers must still investigate the properties of the wind regime at any candidate site in much greater detail before assigning a practical value to the site and deciding on a course of development.

High and medium wind resource levels are identified within the most eastern portion of Sevier County, Utah, which is located near 345-500 kV transmission lines. High and medium wind resource levels are also identified between Loa, Bicknell and East of Hanksville, Wayne County, Utah; and several isolated locations disbursed throughout Garfield County, Utah. Because of the remote nature and lack of existing infrastructure at the Wayne and Garfield County locations, the wind energy may not be economically developable and may create potential economic and resource impacts.

Solar resources are considered minimum to low throughout the RFO (five to six kilowatt hours per square meter per day). The six kilowatt hours concentration is primarily located within the northwestern portion of Wayne County, while the five kilowatt hours concentration is primarily concentrated within Sanpete, Sevier and Piute Counties.

The programmatic policies and BMPs in the proposed Wind Energy Development Program are appropriate for wind energy development activities in the RFO (see Appendix 15).

3.4.6 Minerals and Energy

BLM minerals management policy falls into three categories: leasable minerals, locatable minerals, and salable minerals, which are respectively subject to the Mineral Leasing Act of 1920, the general mining laws, and the Materials Act of 1947 and their respective amendments and implementing regulations. Leasable fluid minerals include oil and gas, coalbed methane, geothermal resources, and tar sands. Leasable solid minerals include coal and sodium. Locatable minerals include metals such as uranium, molybdenum, gold, copper, and manganese, and can include non-metals such as gypsum and limestone. Salable minerals (mineral materials) include sand and gravel, clay, stone, and humate.

The following sections contain summary information concerning mineral resources within the planning area. More specific information is contained in the Mineral Potential Report (BLM 2005b) and the coal resource evaluation reports (Appendix 8). The Reasonably Foreseeable Development Scenario for Oil and Gas and Geothermal Resources (RFD) contains information about anticipated activities related to those fluid minerals (Appendix 12).

3.4.6.1 Leasable Minerals

Exploration and development of leasable minerals are accomplished in several stages of activity. For the BLM, the process of leasing is three-fold. The first stage (land categorization through land use planning) involves determining which public domain lands are available for leasing and under what conditions. The second stage is leasing. The third stage includes exploration, development, and production operations. Leasing for fluid minerals and solid minerals follows different regulatory requirements specific to 43 CFR 3100 for oil and gas, 43 CFR 3200 for geothermal resources, 43 CFR 3400 for coal resources, and 43 CFR 3500 for non-energy solid minerals. For oil and gas, geophysical operations do not require a lease. Leases include the right to explore (usually drilling) and to develop any producible oil and gas. All oil and gas leases are offered competitively, and if not bid on, noncompetitively for two years. Leasing of geothermal resources is similar to oil and gas. Coal resources require a license for exploration, and a lease for development (production). All coal leasing is by competitive bidding. Non-energy solid minerals require a prospecting permit or license for exploration, and leases are offered competitively, by preferential right, or noncompetitively.

For oil and gas leasing, the BLM has developed leasing categories to be applied to all public lands to indicate availability for such leasing. The first three categories are open subject to the terms of the lease. The fourth category precludes oil and gas leasing altogether. These categories are described below.

- **Open Subject to Standard Lease Terms** – Areas identified as being open to exploration and development subject to standard lease terms and conditions.
- **Open Subject to Timing Limitations and/or Controlled Surface Use (CSU) (minor constraints)** – Areas identified with these stipulations are open to exploration and development with relatively minor constraints. A Timing Limitation would preclude activities during specified timeframes to protect resource values such as wildlife species. A Controlled Surface Use stipulation would require proposals for oil and gas activities to be authorized according to the controls or constraints specified, such as a distance or buffer from a particular area.
- **No Surface Occupancy (major constraint)** – Areas identified as No Surface Occupancy are open to exploration and development, but with the major constraint of precluding oil and gas activities that utilize the surface of the land.
- **Closed** – Areas identified as Closed are not available for oil and gas leasing.

Leasing for coal involves identifying lands that may have a minable coal resource, applying unsuitability criteria, and considering the impacts of coal exploration and development on other resources and vice versa. For non-energy solid leasable minerals, lands that are open or closed to leasing must be identified along with any area-wide terms, conditions, or other special considerations needed to protect other resource values during exploration or development.

3.4.6.1.1 Oil and Gas

The USGS has identified eight oil and gas plays within the planning area. These are discussed in detail in the Mineral Potential Report (BLM 2005b). In simplest terms, oil and gas are most often found in the pore spaces of sedimentary rocks, such as sandstone and limestone, having migrated there from source rocks, such as marine shales, rich in organic material. When rocks containing this organic material are subjected to heat and pressure, the organic compounds break down over time, resulting in oil and natural gas. As the oil and gas are generated, they migrate through the pore spaces of the rock or along fractures until they encounter a structural or stratigraphic trap with an impermeable seal.

In the Mineral Potential Report, high and moderate potential for oil and gas are identified for the planning area. Most of the planning area has a high potential with a variable degree of certainty. Moderate potential is assigned to most of Piute County and a relatively small area east of Factory Butte in Wayne County.

Coal bed methane (CBM) is a gas associated with coal beds. During the coalification process that accompanies burial, organic matter is converted into coal and methane gas is produced, along with water, carbon dioxide, nitrogen, and heavier hydrocarbon fractions (Rice 2000). A portion of this methane becomes trapped as the coal seam is compacted and can later be extracted as an energy resource.

CBM is produced by pumping water out of the coal, thereby lowering the hydrostatic pressure, which causes methane to desorb from the coal and migrate through the coal cleats and fractures to the production well. Initially, large amounts of water are produced before methane gas can desorb and begin to flow toward the well bore. As the coal beds are de-watered, methane gas production from the well increases over time. Eventually, gas production declines as ground water production diminishes in the last stages of a well's production.

CBM production poses some significant environmental issues, most notably the production of large volumes of water, particularly in the early stages of well development. Although water produced from CBM wells can be potable, it is frequently saline to hypersaline and may contain total dissolved solids (TDS) at concentrations up to 170,000 mg/L (USGS 2000). Produced water from CBM wells can also have high concentrations of dissolved organic constituents and metals. Depending on the water quality, the produced water is disposed of as waste or used for beneficial purposes, although some treatment is often required. Disposal includes surface discharge including evaporation or injection in subsurface formations. Uses include livestock watering, irrigation, watering artificial wetlands, or water supplies.

Exploration and development of CBM differs somewhat from conventional gas within the planning area. Two CBM plays are identified within the planning area, both associated with Cretaceous coal beds. The Uintah and Piceance Basin play is associated with the Ferron Trend that approximately extends from Price southward onto the Wasatch Plateau. The other play is generally on the west side of the Henry Mountains, east of Capitol Reef. The Ferron Trend is assigned a high potential for the occurrence of CBM, and the play west of the Henry Mountains is assigned a moderate potential, except for low potential in the vicinity of Factory Butte.

A reasonable foreseeable development scenario predicting the likelihood of oil and gas exploration and development over the next 15 years within the planning area was developed as part of this planning effort and is included in Appendix 12. The RFD is summarized in the following paragraphs.

The USGS estimates the distribution of undiscovered, technically recoverable hydrocarbon resources in the planning area to be 0 to 20,000 barrels of oil per square mile. As of 2004, some 220 exploration wells have been drilled in the planning area (IHS Energy Well Data 2004). The historical number of wells drilled each year is slightly over 3.

A discovery of oil in 2004 in western Sevier County at the Covenant field near Sigurd has promoted interest in oil and gas exploration in the western part of the planning area. Since then, the interest in leasing, the number of miles of seismic surveys, and the number of exploration wells has increased substantially and is mainly focused on the Sevier and Sanpete Valleys, although other areas within the thrust play are being explored.

Since the discovery, a large acreage of public land in the vicinity of the Sevier and Sanpete Valleys has been nominated for leasing, and the bidding for leases has been very competitive. Map 3-11 shows the current leases in the planning area. The RFD assigns a high level of activity (high development potential) and predicts 360 wells to be drilled in the western part of the planning area in the vicinity of the Sevier and Sanpete Valleys.

Two other areas have been of interest for leasing in recent years. On the Manti-LaSal National Forest, Federal leases are authorized on the Wasatch Plateau and are associated with the Cretaceous Sandstone and coal bed methane plays. Only a few leases are authorized on the Fishlake National Forest on the Wasatch Plateau or elsewhere on the Forest at this time, but the BLM anticipates additional leasing in these areas in the future. In the RFD, 49 wells are predicted in the vicinity of the southern part of the Wasatch Plateau with a moderate level of activity (moderate development potential).

The other area that has been of interest for leasing in recent years is generally in the vicinity of the Dirty Devil River and the benchlands above the river. As of August 2007, there has been no on-the-ground activity.

Aside from the Sevier and Sanpete Valleys and the southern Wasatch Plateau, the planning area is assigned a low activity level (low development potential). In these areas, the historic drilling rate is applicable at 3 wells per year or 45 wells during the next 15 years.

As of April 2007, there are 223 oil and gas leases on BLM land, 3 leases on the Fishlake National Forest, and 30 leases on the Manti-LaSal National Forest.

3.4.6.1.2 Geothermal Resources

Geothermal resources found on the Federal mineral estate are considered leasable minerals. As such, the same laws governing other leasable minerals cover exploration and development of these resources.

Interest in the potential geothermal resources in Utah increased in the early 1970s, and lease applications were filed around all areas with hot springs or other evidence of geothermal activity, including the hot springs in the vicinity of Monroe and Joseph within the planning area. The Monroe-Joseph Known Geothermal Resource Area (KGRA) was designated in 1974 due to anticipated interest in leasing geothermal resources in the Sevier Valley. The KGRA contained 16,363 acres in two separate parcels surrounding the Joseph hot spring and Monroe-Red Hill springs. Designation of this area as a KGRA meant that future leases could be obtained only through competitive bidding. For the town of Monroe, a

limited number of gradient holes and one test production hole were drilled under a Department of Energy grant to explore the potential of using the geothermal resource for space heating. The drilling did not delineate an adequate resource of high enough temperature for the proposed use, but again, the exploration was very limited.

In the 1980s, interest in geothermal resources waned, and in 1988 the KGRA was declassified after a competitive lease sale without any public interest. Currently, Federal geothermal resources in the Sevier Valley or elsewhere in the RFO are not leased.

The Mineral Potential Report identified areas with high, moderate, and low potential for the occurrence of geothermal resources in the planning area. In general, the western part of the planning area is assigned to high and moderate potential, and the eastern part is assigned to low potential.

The high potential area is centered on the Sevier and Sanpete Valleys and flanking ranges. The high potential is based on the known hot springs, including Monroe, Red Hills, and Joseph and a favorable geologic setting with a relatively high heat flow and with faulting that would appear to provide conduits for the migration of geothermal resources. Monroe and Red Hill springs are located 0.5 mile east of the town of Monroe, while Joseph hot spring is located five miles southeast of the Town of Joseph, all in southwestern Sevier County. Maximum water temperature measured at Monroe, Red Hills, and Joseph range from 151° F. to 171° F. (Utah Geological Survey 2004). Reservoir temperatures have been estimated at slightly over 212° F., which is low for energy production; however, the resource potential has not been extensively explored. Commercial development includes the use of the hot springs at Red Hills and Monroe and a spring at Richfield, both non-Federal minerals, for heating swimming pools, a direct use.

The moderate potential area generally encompasses the Southern High Plateaus and adjacent valleys not included in the area of high potential in the western part of the planning area. The eastern part of the planning area is considered low potential. In the Mineral Potential Report, geothermal resource development was considered unlikely in the next 15 years. However, the first competitive geothermal resource lease sale will be held this year (2007) for Federal minerals at the Cove Fort-Sulphurdale Known Geothermal Resource Area, west of the planning area in Beaver and Millard Counties, and interest in geothermal resources for energy production is increasing state-wide.

The lands managed by the RFO are open to geothermal leasing, subject to the oil and gas leasing categories. As previously stated, no Federal lands are currently leased for geothermal resources in the RFO.

3.4.6.1.3 Oil Shale and Tar Sands

3.4.6.1.3.1 Oil Shale

Oil shale is a very fine-grained, dense, sedimentary rock that is rich in organic material. The organic material in these sediments can be converted into low viscous oil during thermal decomposition. In the planning area, oil shale deposits occur in the Green River Formation in Sanpete County and Sevier County.

In the planning area, lands with surface exposure of the Green River Formation were withdrawn from lease or other disposal by Executive Order in 1930 in order to reserve the oil shale for the purposes of investigation, examination, and classification. Subsequent EOs and public land laws have modified the original EO. The withdrawal generally overlaps parts of the Gunnison Plateau, the Valley Mountains, and the Wasatch Plateau. The lands withdrawn for oil shale investigation are open to oil and gas as well as sodium leasing but are closed to mineral entry (mining claim location and operations) and certain realty

actions. The Federal lands withdrawn for oil shale investigation are shown on Map 11 in the Mineral Potential Report, and the lands withdrawn are classified as prospectively valuable for oil shale. Oil shale was not addressed in the Mineral Potential Report, since only limited information is available on the mineral potential in the RFO.

Under the Energy Policy Act of 2005, the BLM is required to develop regulations for the leasing of oil shale deposits. This leasing of oil shale, as well as tar sands, is being addressed in the ongoing Oil Shale and Tar Sands Leasing Programmatic EIS for the Western United States (see Section 1.6.3 in Chapter 1).

3.4.6.1.3.2 Tar Sands

Tar sands are loosely defined as any sedimentary rock impregnated with heavy, viscous crude oil that cannot be recovered by conventional techniques but rather requires an external energy source (e.g., heat) to mobilize the oil. Tar sands are also called bituminous sandstone, oil sands, and oil-impregnated rocks. In the planning area, the heavy oil is contained in sandstone, not sand as in Alberta, Canada.

Areas of high and moderate tar sand occurrence potential were identified in the planning area. In eastern Wayne and Garfield counties, high potential is assigned to the Tar Sand Triangle, which is primarily east of the Dirty Devil River, and to the Circle Cliffs in the vicinity of Capitol Reef National Park. The Tar Sand Triangle encompasses approximately 230 square miles with an estimated 16 billion barrels of oil. At the Circle Cliffs, the Waterpocket Fold (Capitol Reef) is the eastern limb of the Circle Cliffs structure, and the western limb is in Grand Staircase-Escalante National Monument. The Circle Cliffs are estimated to contain more than 860 million barrels of oil. The Tar Sand Triangle and the Circle Cliffs, in part, are defined as Special Tar Sand Areas (STSAs) due to known and delineated tar sand occurrences. In addition to the STSAs, there are indications of tar sand deposits in scattered outcrops along the Waterpocket Fold, and the occurrences are assigned a moderate potential for tar sand resources.

Tar sands contain heavy oil that may be mined or developed by drilling, depending on the depth of the deposit below the surface and the selected extraction method. In addition, the Federal lands with tar sand deposits also have a high potential for oil and gas. In an attempt to address the leasing of both oil and gas and tar sands, the Combined Hydrocarbon Leasing Act was passed in the early 1980s and authorized exploration and development of both conventional oil and gas and tar sands in a combined lease for both, which were called combined hydrocarbon leases, or CHLs. Existing oil and gas leases within the STSAs were to be converted to CHLs; however, this conversion process was never completed and the market for oil and gas declined starting in about 1985. A number of existing oil and gas leases are pending conversion to CHLs in the STSAs. (See Maps 10 and 22 of the Mineral Potential Report.)

Under the Energy Policy Act of 2005, the BLM is required to develop new regulations for the leasing of tar sand deposits. As stated above, this leasing of tar sands, as well as oil shale, is being addressed in the ongoing Oil Shale and Tar Sands Leasing Programmatic EIS for the Western United States (see Section 1.6.3 in Chapter 1).

3.4.6.1.4 Coal

Significant coal resources are delineated in three coal fields within the planning area, which are the Wasatch Plateau, Emery, and Henry Mountains coal fields as shown on Map 3-12. The coal resources within the planning area were evaluated for development potential, based on available coal data; assumptions for depth, thickness, and continuity of the deposits; and assumptions on the parameters for certain mining methods. The Wasatch Plateau coal field has the most data; the Henry Mountains, the least. The estimated unleased coal resources with development potential at each coal field are as follows: more than 290 million tons at the Wasatch Plateau, 199 million tons at the Emery, and 1,750 million tons at the Henry Mountains. The coal at the Wasatch Plateau would be mined by underground methods; the

Emery, underground mostly (190 million tons); the Henry Mountains, surface and underground methods (466 million tons and 1,284 million tons, respectively).

Federal coal leases were authorized at all three coal fields in the past, mainly in the 1970s and early 1980s. Development has only occurred at the Wasatch Plateau coal field. The Wasatch Plateau coal field is the only coal field with a producing coal mine at present within the planning area. The SUFCO Mine in Sevier County includes seven Federal coal leases, accounts for about one-quarter of the total coal production in Utah, and the coal production exceeds any other coal mine in Utah. Approximately, 24,000 acres of public lands are under lease at the SUFCO Mine. Production and revenue figures are contained in Table 3-27.

Table 3-27. Sevier County Coal Production[1] (1984–2001)

Year	Units[2]	Revenues[3]
1984	2,141,000	$96,113,384
1985	1,797,000	$74,079,461
1986	2,360,000	$94,657,512
1987	2,228,000	$80,983,867
1988	2,625,000	$82,325,371
1989	3,059,000	$88,794,500
1990	2,887,000	$79,919,360
1991	3,079,000	$81,211,800
1992	2,580,000	$67,144,882
1993	3,553,000	$87,581,011
1994	3,569,000	$81,639,793
1995	3,906,000	$83,269,860
1996	4,214,000	$85,263,758
1997	4,939,000	$97,173,834
1998	5,719,000	$107,867,625
1999	5,763,000	$104,468,169
2000	5,906,000	$102,298,887
2001	6,111,000	$108,531,360

[1] No coal production has been reported in Garfield, Piute, Sanpete, or Wayne counties between 1980 and 2001.
[2] Units are shown in short tons (2000 lb).
[3] Revenues are in 2001 dollars.
Source: BLM 2003b.

Based on coal resource evaluations, prepared in 2004-2005, exploration and development of coal resources in the Wasatch Plateau coal field are anticipated; however, coal resources in the Emery and Henry Mountains coal fields were not anticipated to be developed within the planning time frame, or before 2030. This forecast for coal resources is likely to change, as market conditions for coal are likely to change.

3.4.6.1.5 Non-Energy Solid Leasable Minerals

Non-energy solid minerals include sodium and potassium. Such minerals in the RFO include salt and alunite. There are currently no prospecting permits or leases for non-energy solid leasable minerals in the RFO. The Sevier and Sanpete Valleys, in part, are underlain by deposits of salt and other evaporitic minerals, and in the vicinity of Marysvale, alunite deposits are associated with the volcanic rocks. Salt is currently mined on private land near Redmond, but there is no current interest in leases on BLM-

administered lands. Alunite is an alteration of volcanic rock as clay. Depending on the composition and the proposed use, alunite could be a leasable mineral.

3.4.6.1.5.1 Salt

Saline deposits are loosely defined to include all minerals that have precipitated from waters of either marine or continental origin through evaporation (USGS 1969). Saline potassium minerals, such as sylvite and carnallite, are often referred to as potash, and the most common sodium mineral is halite, which is composed of sodium chloride. Other valuable salts include potassium sulfate, sodium carbonate, sodium sulfate, and salts of magnesium, lithium, bromine, and boron. Saline deposits, explored and prospected for their sodium and potassium content, would be considered as non-energy solid minerals. Within the planning area, salt deposits occur in the Arapien Shale in Sevier and Sanpete Valleys and in the Pennsylvanian Paradox Formation in the subsurface in the eastern part of the planning area.

Salt mining has a long history in the Sevier Valley, dating back to 1879; it was the first mineral resource produced in the valley. Salt has been prospected at several locations in the Arapien Shale in the Sevier and Sanpete Valleys, but there is only one mine now operating, which is the RCS salt mine located on private land near Redmond. This is the only current salt producing mine in Utah besides those on the Great Salt Lake (UGS 2002).

Areas of high salt occurrence potential were identified in the Sevier-Sanpete Valley and in eastern Wayne County. Development of salt deposits on BLM-administered lands within the planning area is considered unlikely in the next 15 years.

3.4.6.1.5.2 Potassium (Alunite)

Alunite may be a non-energy leasable mineral if it is explored and developed for its potassium content. Alunite is either a vein deposit or a clay alteration product, both associated with Tertiary volcanic terranes in the vicinity of Marysvale. The altered alunite deposits are intricately associated with other clays such as kaolinite. In the Mineral Potential Report, clays including alunite were considered as clay only, rather than differentiating specific clays as to alteration types.

Alunite was historically mined in the vicinity of Marysvale. The vein deposits, southwest of Marysvale, were extensively mined during World War I, as well as some altered alunite deposits north and east of Marysvale. The alunite was mined for potassium for use as an explosive material. Subsequently, during World War II, the alunite deposits were investigated as a possible source for alumina; however, alumina deposits in the Pacific Northwest were more prevalent and cheaper to process to aluminum. Following World War II, primarily in the 1950s and 1960s, the deposits were still evaluated as an alumina source as well as for potassium for fertilizer. Since then, given the variable chemical composition of alumina, potassium and other constituents, the deposits have only seen limited interest.

3.4.6.2 Locatable Minerals

Locatable minerals include base metals (such as copper, lead, and zinc), precious metals (such as gold and silver), and some industrial minerals. Locatable minerals are subject to the U.S. mining laws, including the 1872 Mining Law, and are subject to location as mining claims and mineral entry (patenting). Open, unappropriated public land is open to entry and location, unless it has been withdrawn from the operation of the mining laws. Operations under the mining laws are subject to the undue and unnecessary standard in the regulations at 43 CFR Part 3809, and operations in WSAs are subject to the non-impairment of suitability for inclusion in the Wilderness Preservation System under the Interim Management Policy for Lands Under Wilderness Review (IMP).

Developers of these minerals stake a mining claim (location) over the deposit and then acquire the necessary permits to explore or mine. As of October 2004, there were 4,199 active (recorded) mining claims in the planning area, and 3,158 of those are located on BLM-administered lands (March 2007, LR2000 database) (Map 3-13). In addition, there are nine authorized Mining Law Notices filed in the RFO, one plan of operation pending approval, and one plan of operations pending closure when reclamation is complete (May 2007, LR2000 database).

3.4.6.2.1 Metals

Historically, metals have been prospected in the vicinity of Marysvale, the Henry Mountains, and the Colorado Plateau. Historically, gold, lead and zinc have been mined in the vicinity of the Tushar Mountains near Marysvale; gold and copper have seen limited development in the Henry Mountains; and uranium has been mined in the Antelope Range north of Marysvale and in the Colorado Plateau. These mines were generally small-scale, underground operations.

The Mineral Potential Report assigns high, moderate, and low potential for the occurrence of metals in the planning area. The Colorado Plateau in the eastern part of the planning area is rated as having high potential for metals, including uranium, vanadium, and copper (due to favorable sedimentary deposits, known occurrences, and historic mining), as well as gold (due to known occurrences and favorable intrusive rocks). The western part of the planning area, generally in the vicinity of Marysvale, is assigned high potential for metals including uranium due to the presence of volcanic and intrusive rocks, known occurrences of precious and base metals and uranium, and historic mining. In the western part of planning area, moderate potential is assigned to the volcanic terrane outside the area of prevalent mineral occurrences and historic mining, and low potential is assigned to the area not associated with volcanic deposits.

The Mineral Potential Report, prepared in 2005, was based largely on market conditions in 2003 when metal prices were generally low. Since that time, the market value of uranium and other metals has increased significantly, and exploration and development for metals are more likely under current market conditions. A substantial number of new mining claims have been located since 2005, most notably for uranium, and exploration activity for uranium in the RFO has increased. Between October 2004 and March 2007, the number of mining claims increased from approximately 1,000 to 5,000. Although development was considered unlikely in the Mineral Potential Report, exploration activity is likely to increase and development is more likely than that reflected in the Mineral Potential Report due to current market conditions in 2007.

3.4.6.2.2 Gypsum

Gypsum is formed by the evaporation of seawater and precipitation of calcium sulfate. Gypsum frequently occurs interbedded with limestone and calcareous shales. Most gypsum mined in Utah, as well as in the United States, is processed for plaster and used in the manufacture of wallboard, lath, and other prefabricated gypsum products. Raw gypsum is used in Portland cement as a setting retardant and in agriculture as a soil amendment.

Within the planning area, exploration and development of gypsum resources has been focused in the Sevier and Sanpete Valleys. Gypsum has been mined from the Arapien Shale since 1918. The gypsum deposits in the Sevier Valley are centrally located in Utah, and wallboard and other products are shipped to regional markets. Mills for processing gypsum are operated by U. S. Gypsum and Georgia-Pacific Corporation near Sigurd, the primary product being wallboard. In addition, Diamond K has constructed a mill at Richfield that processes pulverized gypsum for pharmaceutical uses, and the gypsum for that use is

mined within the San Rafael Swell. In Utah, gypsum production was 500,000 tons in 2000 and 390,000 tons in 2001.

In the Mineral Potential Report, high potential for the occurrence of gypsum was assigned within the planning area. In the Sevier and Sanpete Valleys in the western part of the planning area, high potential is assigned to the known occurrence of gypsum that is associated with the Arapien Shale. In the eastern part of the planning area, gypsum also occurs in the Summerville and other formations; however, gypsum does not occur in beds that are economic to develop at this time.

Development in the Sevier and Sanpete Valleys will likely continue over the next 20 years. Commercial development elsewhere is considered unlikely in the Mineral Potential Report.

3.4.6.3 Salable Minerals

Salable minerals are mineral materials, subject to the Materials Act of 1947 and the Surface Resource Act of 1955 and the regulations at 43 CFR 3600. Mineral materials include sand, gravel, clay, and stone. These minerals are disposed by sale contracts and by free use to government agencies and non-profit organizations. Disposal sites may be authorized for exclusive use and non-exclusive use; non-exclusive use disposal sites are community pits and common use areas. The BLM will not dispose of salable minerals in areas not available by law (e.g., wilderness areas) or in areas identified in land use plans as not appropriate for disposal.

As of May 2007, there are 18 authorized community pits in the RFO that provide commodities such as sand, gravel, topsoil, fill material, and stone. There are 7 exclusive, negotiated sales that provide riprap, sand and gravel, oyster shell, humate, and stone. There are also 15 exclusive, free-use permits in the RFO that provide sand and gravel and fill material. Most of these mineral material sites are for the disposal of sand and gravel material (LR2000 database).

The Federal Highway Administration also obtains sand and gravel and other mineral materials for Federal Highways and Federal Aid Highways. These disposal sites are not authorized as salable minerals under the regulations at 43 CFR 3600. The disposals are authorized as a mineral material ROW under the regulations at 43 CFR 2800. These ROWs are obtained by the Federal Highway Administration.

3.4.6.3.1 Sand and Gravel

Past and present exploration and development of sand and gravel deposits in the planning area has been for local public works projects. The largest single project was the construction of Interstate 70 in the 1970s through the early 1990s. Because sand and gravel are generally the lowest-priced of industrial mineral products, transportation costs from the pit to the point of end use are a large part of the cost to consumers. As such, even short transportation distances can adversely affect the cost of the final product, and it is imperative that sand and gravel sources be located as close as possible to the point of use and major roadways. For this reason, the sand and gravel industry is widely dispersed across Utah, and disposal sites are generally associated with roadways and near population centers.

Most sand and gravel disposals in recent years have been to County Road Departments. Typically, the counties permit disposals that are between 10,000 and 20,000 cubic yards per year. Commercial disposals vary in volume, and most contracts are issued from community pits where the volume ranges from 30 to 500 cubic yards per individual sale.

3.4.6.3.2 Clay

Clay is generally a salable mineral and is used for a variety of commercial and industrial purposes, including bricks, drilling and quarrying mud, sealants, liquid dyes, paints, china, ceramics, absorbents, molecular sieves, fillers, binders, cosmetics, and inert ingredients in pharmaceutical tablets. The end use of the clay is determined by its physical properties and purity. Physical properties that determine clay usage include plasticity, bonding strength, color, vitrification range, deformation with drying and heating, gelation, crystal structure and size, viscosity, and swelling capacity (USGS 1969). Bentonite and bentonitic clays are among the most desirable; they swell when saturated with water and can be used as a natural sealant for reservoirs, stock ponds, ditches, and landfills. High-swelling bentonite is primarily used by the petroleum industry as a component of drilling mud and by the iron industry as a binder in casting molds and casts. As discussed under Section 3.4.6.1.5.2, alunite may be a non-energy solid leasable mineral if it is explored and developed for its potassium content, or a salable mineral as a clay (as an alteration product of volcanic rocks).

In Utah, the most common use for clay is for brick and tile. Within the planning area, clay has been used for swelling clays such as bentonitic clay, reservoir liner material, Fuller's earth, and other applications. Most of the clay resources in the planning area have a volcanic association.

On the western side of the planning area, high potential for the occurrence of clay has been assigned in the vicinity of Marysvale in association with alteration zones in the Tertiary Volcanics and known clay deposits in the Sevier Valley which are also associated with volcanic deposits. This high potential includes alunite deposits. Moderate potential is assigned to the area with volcanic rocks, but where clay alteration is unreported. Two active clay mines exist at Box Creek on the Sevier Plateau in the Fishlake National Forest and at the Redmond clay mine north of Redmond on private land. Other clay deposits have been explored and/or mined in the past on a small scale in the western part of the planning area. A clay prospect in the Antelope Range, north of Marysvale, has been explored in the last 3-4 years for the manufacture of cement and other possible uses.

In the eastern part of the planning area, high potential for clay is associated with outcrop (surface exposure) of the Morrison Formation and Dakota Sandstone. These deposits have been prospected mainly for swelling clays with minor, small-scale development, mostly for local use.

As stated in the Mineral Potential Report, clay is likely to be developed on BLM-administered land during the planning horizon of 15 years, but such development is likely to remain relatively small scale.

3.4.6.3.3 Stone

Stone quarries are found throughout Utah and are generally small-scale operations. Transportation cost is a factor in the location of quarries. Most of the stone quarried in Utah and in the planning area is used by the construction industry for either building stone, aggregate (crushed rock), or cement (pulverized limestone). Volcanic tuffs in Sevier and Sanpete Counties have been quarried for use as dimension stone, crushed for lightweight aggregate in the manufacture of building block, and used as a soil amendment or as nutritional supplement for certain livestock animals, primarily poultry.

In the planning area, stone has been quarried from the following formations for the specified use:

- Limestone of the Green River Formation – building stone
- Sandstone of Crazy Hollow – building stone
- Limestone of the Flagstaff Formation – rock dust, kiln material, and cement manufacturing
- Tuff of the Moroni Formation – poultry feed and agricultural uses

- Tuff of the Joe Lott Tuff – building stone and crushed aggregate as an insulating block
- Tuff of the Bullion Canyon Volcanics – decorative rock (landscape, aquarium display)
- Sandstone of the Moenkopi Formation – building stone
- Navajo Sandstone – decorative rock

In addition to quarrying of stone, the public has utilized pick-up stone or field stone. This material is generally boulders or cobbles and is present in numerous locations in the planning area. The areas that have the most use for collection are generally close to the population centers, and the material of interest has mainly included basalt, tuff, sandstone, or limestone. The demand has been relatively low and the material is disposed in small tonnages. Although field stone is present throughout the planning area, the principle areas of interest have been in the Sevier Valley and near Loa.

Most of the stone quarries in the planning area are relatively small disposal sites, generally less than 5-10 acres. The disposals from BLM public lands range from a few tons to a few thousand tons per year. Development on a small-scale at many quarries is likely to continue.

3.4.6.3.4 Humate

Humates are carbonaceous shale associated with weathered coal beds. The material is mined as a dietary colloidal mineral supplement and as a soil amendment for agricultural applications. Humate increases the water holding and ion exchange capacity of the soil, acts as a pH buffer for alkaline soils, and may aid animal and plant growth as humic acids. Most humate in Utah is mined from coal beds in the Ferron Sandstone of the Mancos Shale. The only active mining in the planning area is in the vicinity of Factory Butte in Wayne County.

In the planning area, high potential for occurrence of humate has been assigned to Ferron Sandstone outcrop in the vicinity of Factory Butte, north of the Henry Mountains and to the east side of the Wasatch Plateau. Moderate potential is assigned to the west side of the Henry Mountains, and low potential is identified in the central and western part the Wasatch Plateau.

As stated above, the only authorized, active mining for humates in the planning area are north of Highway 24, near Factory Butte; two sites are BLM-authorized contracts and one is on State land. The mines are relatively small and only periodically active. Exploration and development are likely to continue in the vicinity of Factory Butte at a small scale and are not considered likely elsewhere in the planning area.

3.4.6.3.5 Other Minerals

Other mineral materials considered in the Mineral Potential Report include oyster shell, petrified wood, jasper, agate, and chalcedony. Oyster shell from the Dakota Formation has been used for road surfacing in Wayne County. There is also interest in oyster shell for agricultural use. It is considered unlikely that the other mineral materials considered will have development beyond hobby or casual use within the next 15 years.

3.5 SPECIAL DESIGNATIONS

3.5.1 Wilderness Study Areas

In 1964, Congress passed the Wilderness Act establishing (1) a national system of lands for the purpose of preserving a representative sample of ecosystems in their natural condition for the benefit of future generations, and (2) a process for reviewing other lands for their wilderness potential. The act originally

applied only to national forests, national parks and national wildlife refuges. With the passage of FLPMA in 1976, Congress directed BLM to also inventory, study, and recommend which public lands under its administration should be designated wilderness.

In 1979, the BLM began a wilderness inventory of 22 million acres of public land in Utah. By 1986, following the inventory and public inventory process, and the settlement of appeals, the BLM designated 11 wilderness study areas (WSAs) within what is now the RFO (see Table 3-28 and Map 3-14). These WSAs total 446,900 acres, about 21% of the RFO. A discussion of the current resource values and uses in each WSA, established in 1980 under the authority of Section 603(c) of FLPMA, can be found in the *Utah BLM Statewide Wilderness Final Environmental Impact Statement* (BLM 1990b). Those values and resources described in the 1990 document have not changed significantly since that time, as documented in monthly WSA monitoring reports available in the RFO.

Although WSAs are by definition roadless, several of the WSAs in the RFO do include inventoried ways. During the 1979-1980 Utah Wilderness Inventory, it was necessary to divide routes used by motorized vehicles into "roads" and "ways." To be considered a road, three criteria had to be met: (1) constructed; (2) maintained by mechanical means; and (3) regular and continuous use. All other motorized routes were defined as ways, which could be left open to motorized travel as long as their use did not "impair" the suitability of the area for wilderness designation. Decisions as to which routes will remain open and which will be closed will be made as part of this land use planning process. The number and miles of inventoried ways are identified by WSA in Table 3-28. Map 3-10, Route Inventory for the RFO depicts routes and how they overlay with WSAs.

Table 3-28. Wilderness Study Areas

Wilderness Study Area	Acreage	Number of Inventoried Ways	Miles of Inventoried Ways
Bull Mountain	13,200	7	3.9
Dirty Devil	72,100	21	15.6
Fiddler Butte	74,000	8	5.5
Fremont Gorge	2,800	1	0.2
French Spring/Happy Canyon	24,300	3	3.6
Little Rockies	40,700	3	1.3
Mount Ellen/Blue Hills	81,400	12	9.3
Mount Hillers	19,300	9	6.6
Mount Pennell	77,100	9	8.1
Horseshoe Canyon (south)	39,900	4	5.6
Portion of the Horseshoe Canyon (north)	2,100	0	0
Total	**446,900**	**77**	**59.7**

FLPMA Section 603(c) directs the BLM to manage the WSAs so as not to impair their suitability for designation as wilderness. The *Interim Management Policy for Lands Under Wilderness Review* (BLM Handbook 8550-1) provides policy guidance to manage WSAs to a non-impairment standard. The wilderness characteristics that must be protected include the appearance of naturalness and outstanding opportunities for primitive and unconfined recreation. The status of the existing WSAs will not change as a result of the Richfield RMP. Only Congress can designate the WSAs as wilderness or release them for other uses.

BLM policies and guidance providing for management of existing WSAs and consideration of values associated with wilderness characteristics in land use planning are detailed in:

- Handbook H-1601-1, Land Use Planning Handbook
- Hand book H-8550-1, Interim Management Policy and Guidelines for Lands Under Wilderness Review

The BLM's IMP provides specific policy and guidance for management of most resource values and uses in WSAs. However, visual resource management (VRM) decisions and OHV designations and route designations are made during land use planning. A summary of some aspects of WSA management are as follows:

- The non-impairment standard applies to all uses and activities except those specifically exempted from this standard by FLPMA (grandfathered uses and valid existing rights).
- Activities that are permitted in WSAs (except valid existing rights and grandfathered uses) must be temporary, create no new surface disturbance, and not involve the permanent placement of structures. There are exceptions to this standard.
- Grazing, mining, and mineral leasing uses that existed as of the passage of FLPMA (October 21, 1976) may continue in the same manner and degree, even if this would impair wilderness suitability.
- WSAs may not be closed to location under the mining laws in order to preserve their wilderness character (although the wilderness character of the area cannot be impaired through actions to perfect claims located after October 21, 1976). Valid existing rights will be recognized.
- WSAs will be managed to prevent unnecessary and undue degradation, as required by law.

3.5.2 Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968 (WSRA) established legislation for a National Wild and Scenic Rivers System (NWSRS) to protect and preserve designated rivers throughout the nation in their free-flowing condition and to protect and preserve their immediate environments. The WSRA includes policy for managing designated rivers and created processes for designating additional rivers for the NWSRS. Section 5(d) of the Act directs Federal agencies to consider the potential for national wild, scenic, and recreational river areas in all planning for the use and development of water and related land resources.

The first phase of the WSR review was to inventory all potentially eligible rivers within the RFO to determine which of those rivers are eligible for consideration as part of the NWSRS. To be eligible, rivers must be free-flowing and possess at least one outstandingly remarkable value. Outstandingly remarkable values are evaluated in the context of regional and/or national significance and must be river-related. Each river/segment determined to be eligible is then given a tentative classification based on the current level of human development associated with that river/segment. The tentative classification is based on the criteria listed in the classification table from *Wild and Scenic River Review in the State of Utah* (BLM 1996) as noted below.

- A *Wild* river is free of impoundments, with shorelines or watersheds essentially primitive, and with unpolluted waters.
- A *Scenic* river may have some development, and may be accessible in places by roads.
- A *Recreational* river is accessible by road (or railroad), may have more extensive development along its shoreline, and may have undergone some impoundment or diversion in the past.

The BLM conducted a wild and scenic river (WSR) review as part of this planning process. The BLM inventoried 304 drainages/rivers/streams in the lands managed by the RFO. Of those, 12 segments totaling 135 miles were determined to be free-flowing and possess one or more outstandingly remarkable values, making them eligible for further consideration for inclusion in the NWSRS. The eligible rivers, along with their outstandingly remarkable values, tentative classifications, and river miles, are shown in Table 3-29 and on Map 3-15. Detailed descriptions and analysis can be found in Appendix 2 and Appendix 3. BLM policy requires that the outstandingly remarkable values, tentative classification, and free-flowing nature of eligible river segments be protected on a case-by-case basis until a suitability determination is made. For rivers designated as suitable as a result of this planning effort, protections for wild and scenic values will continue, and the decisions in the RMP will support such protection. Rivers designated as not suitable will not be managed for wild and scenic purposes, but rather in conjunction with other decisions in the RMP.

Table 3-29. Eligible Wild and Scenic Rivers

River or River Segment	Outstandingly Remarkable Value(s)	Tentative Classification	BLM Miles
Dirty Devil River	Scenic, recreational, geologic, fish and wildlife, cultural	Wild	54
Beaver Wash Canyon	Scenic, ecological	Wild	6.8
Larry Canyon	Scenic, recreational, wildlife, ecological	Wild	4
No Mans Canyon	Scenic, recreational, cultural	Wild	7.1
Robbers Roost Canyon	Scenic, recreational, historic, cultural	Wild	31
Sams Mesa Box Canyon	Scenic and wildlife	Wild	9.5
Twin Corral Box	Scenic and wildlife	Wild	9
Fish Creek	Cultural	Scenic	.25
Fremont River—Fremont Gorge	Scenic	Wild	5
Fremont River—Capitol Reef NP to Caineville Diversion	Scenic and geologic	Recreational	4
Maidenwater Creek	Scenic, recreational, geologic, wildlife, ecological	Scenic	3
Quitchupah Creek	Cultural	Recreational	1.4
Total BLM Miles:			**135.05**

3.5.3 Areas of Critical Environmental Concern (ACECs)

FLPMA defines an ACEC as an area "within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards." (43 CFR 1601.0-5 (a)). Private lands and lands administered by other agencies are not included in the boundaries of ACECs.

FLPMA states that the BLM will give priority to the designation and protection of ACECs in the development and revision of land use plans. ACECs differ from some other special designations in that designation by itself does not automatically prohibit or restrict other uses in the area. The special management attention is designed specifically for the relevant and important values, and therefore varies from area to area. The one exception is that a mining plan of operation is required for any proposed mining activity that would create surface disturbance greater than casual use within a designated ACEC (per the regulations at 43 CFR 3809).

To qualify as a potential ACEC, both relevance and importance criteria outlined in 43 CFR 1610.7-2 must be met. These criteria are defined as:

- **Relevance:** Presence of a significant historic, cultural, or scenic value; a fish or wildlife resource or other natural system or process; or a natural hazard.
- **Importance:** The value, resource, system, process, or hazard must have substantial significance and value. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern.

3.5.3.1 Existing Areas of Critical Environmental Concern

There are currently four ACECs in the RFO. These ACECs, and their relevant and important values, are listed in Table 3-30. Refer to Map 3-16 for their locations.

Table 3-30. Existing Areas of Critical Environmental Concern

Area	Acreage	County	Relevant and Important Values
North Caineville Mesa ACEC	2,200	Wayne	Relict vegetation
South Caineville Mesa ACEC	4,100	Wayne	Relict vegetation
Gilbert Badlands Research Natural Area ACEC	3,680	Wayne	Natural systems or processes—badlands
Beaver Wash Canyon ACEC	4,800	Wayne	Natural processes, riparian
Total Acreage:	**14,780**		

3.5.3.1.1 North Caineville Mesa ACEC (2,200 acres)

The North Caineville Mesa ACEC was designated as an ACEC to protect the relict vegetation that is found on the top of the mesa. The ACEC is located north of Highway 24, about 12 miles west of Hanksville. It was designated in the 1982 Henry Mountain Management Framework Plan. Current management for this ACEC includes the following:

- closed to OHV use
- unavailable to livestock grazing
- open to leasing for oil and gas with major constraints (no surface occupancy).

3.5.3.1.2 South Caineville Mesa ACEC (4,100 acres)

The South Caineville Mesa ACEC was designated as an ACEC to protect the relict vegetation that is found on top of the mesa, as well as the historic resources that include a circa 1920 bilevel stone cabin associated with early area sheep and goat grazing. South Caineville Mesa is located south of Highway 24, about 12 miles west of Hanksville. It was designated as an ACEC in the 1982 Henry Mountain MFP. Located entirely within the Mount Ellen/Blue Hills WSA, the South Caineville Mesa ACEC is subject to management under the Interim Management Policy for Lands under Wilderness Review (BLM H-8550-1). Current management for this ACEC includes the following:

- closed to OHV use
- unavailable for livestock grazing
- closed to leasing for oil and gas

3.5.3.1.3 Gilbert Badlands Research Natural Area (RNA) ACEC (3,680 acres)

The Gilbert Badlands Research Natural Area ACEC was designated in 1987 to protect the scientific and educational (research) values of the geomorphology found in the Gilbert Badlands. Located in Wayne County south of Highway 24, the Gilbert Badlands are about 15 miles west of Hanksville. Located

entirely within the Mount Ellen/Blue Hills WSA, the Gilbert Badlands ACEC is subject to management under the IMP. Current management for this ACEC includes the following:

- closed to OHV use
- closed to leasing for oil and gas
- recommended for withdrawal from mineral entry
- no surface disturbing activities
- acquire inholdings within the ACEC boundary

3.5.3.1.4 Beaver Wash Canyon ACEC (4,800 acres)

Beaver Wash Canyon contains a unique area identified as a cold riparian ecosystem located in an otherwise desert environment. In 1982, it was noted of Beaver Wash Canyon that, "special management is needed to prevent irreparable damage to the ecological refugia (e.g., an isolated habitat that has preserved suitable environmental conditions for those species adapted to it and is unique in its ecological and geographical position in the region), which could be significantly impaired from certain surface disturbing activities" (BLM 1982). Beaver Wash Canyon is located on a tributary of the Dirty Devil River, east of Highway 95, and about 13 miles southeast of Hanksville. The majority of the Beaver Wash Canyon ACEC (99%) is located within the Dirty Devil WSA, and is subject to management under the IMP. Current management for this ACEC includes the following:

- closed to OHV use
- unavailable for grazing
- closed to oil and gas leasing
- recommended for withdrawal from mineral entry
- acquire inholdings within the ACEC boundary

3.5.3.2 Potential Areas of Critical Environmental Concern

During scoping for the Richfield RMP, the public nominated 30 areas to be designated as ACECs. Four of these areas were primarily within the Price Field Office (with small acreages within the RFO) and were evaluated for relevance and importance by the Price Field Office. The remaining 26 areas, totaling 1.6 million acres, were evaluated for relevance and importance by the RFO staff as part of the planning process. Based on these evaluations, the RFO identified 16 areas totaling approximately 886,810 acres as potential ACECs (see Table 3-31 and Maps 2-43 and 2-44). Information concerning all 26 nominated areas, as well as their evaluations, is summarized in Appendix 1. More detailed information can be found in the *Evaluations of Areas of Critical Environmental Concern* report (2005) which is available for review in the RFO.

Table 3-31. Potential Areas of Critical Environmental Concern

Area	Acreage	County(ies)
Badlands Potential ACEC	88,900	Wayne
Bull Creek Archaeological District Potential ACEC	4,800	Wayne
Dirty Devil/North Wash Potential ACEC	205,300	Wayne and Garfield
Fremont Gorge/Cockscomb Potential ACEC	34,300	Wayne
Henry Mountains Potential ACEC	288,200	Wayne and Garfield
Horseshoe Canyon Potential ACEC	40,900	Wayne
Kingston Canyon Potential ACEC	22,100	Piute
Little Rockies Potential ACEC	49,200	Garfield

Area	Acreage	County(ies)
Lower Muddy Creek Potential ACEC	16,200	Wayne
Old Woman Front RNA Potential ACEC	330	Sevier
Parker Mountain Potential ACEC	107,900	Wayne
Quitchupah Potential ACEC	180	Sevier
Rainbow Hills Potential ACEC	4,000	Sevier
Sevier Canyon Potential ACEC	8,900	Piute and Sevier
Thousand Lake Bench Potential ACEC	500	Wayne
Special Status Species Potential ACEC	15,100	Wayne, Garfield and Sevier
Total Acreage:	**886,810**	

3.5.3.2.1 Badlands Potential ACEC (Includes North and South Caineville Mesas and Gilbert Badlands Existing ACECs) (88,900 acres)

Purpose: The purpose of the Badlands Potential ACEC is to recognize and provide special management for relevant and important scenic, special status plant, natural processes (wind erosion), and riparian and relict vegetation values.

Description: The potential ACEC is located in central Wayne County, east of Capitol Reef National Park, north and south of State Highway 24. Notable geographic features include North Caineville Mesa, South Caineville Mesa, Factory Butte, and the surrounding Mancos Shale badlands. Portions of the Badlands potential ACEC are within the Mt. Ellen/Blue Hills WSA and, as such, are subject to management under the IMP.

Area: The potential ACEC is defined by Class A Scenery, and the badlands formations and relict vegetation areas within the nominated and existing ACECs named above. The potential ACEC contains additional acreage from that of the existing ACECs and overlaps the northern portion of the Mount Ellen/Blue Hills WSA.

3.5.3.2.2 Bull Creek Archaeological District Potential ACEC (4,800 acres)

Purpose: The purpose of the Bull Creek Archaeological District Potential ACEC is to recognize and protect the relevant and important archaeological values in the area.

Description: The Bull Creek Archaeological District is located along Bull Creek in the foothills of the Henry Mountains, directly south of Hanksville. It was listed on the National Register of Historic Places in 1981.

Area: The potential ACEC boundary is coincident with the Bull Creek Archaeological District boundary for which the relevant and important archaeological values were identified.

3.5.3.2.3 Dirty Devil/North Wash Potential ACEC (includes existing Beaver Wash Canyon ACEC) (205,300 acres)

Purpose: The purpose of the Dirty Devil/North Wash Potential ACEC is to recognize and provide special management for relevant and important scenic, cultural, paleontological, wildlife, and special status species values.

Description: The Dirty Devil River and side canyons are located southeast of Hanksville in Wayne and Garfield counties.

Area: The potential ACEC is defined by Class A Scenery, Mexican spotted owl suitable habitat, and desert bighorn crucial yearlong habitat within the nominated areas. The potential ACEC includes the existing Beaver Wash Canyon ACEC. The potential ACEC overlaps portions of the Dirty Devil, French Spring/Happy Canyon, and Fiddler Butte WSAs; thus management would be governed by the IMP for these areas. The Dirty Devil River and several of its side canyons were determined to be eligible as wild and scenic rivers.

3.5.3.2.4 Fremont Gorge/Cockscomb Potential ACEC (34,300 acres)

Purpose: The purpose of the Fremont Gorge/Cockscomb Potential ACEC is to recognize and provide special management for relevant and important cultural, scenic, riparian, plant, and wildlife resources. Relevant and important values were determined by evaluating the Fish Creek Cove/Cockscomb, Fremont Gorge/Miners Mountain, and Fremont Gateway nominated ACECs.

Description: The potential ACEC is located on public lands east of the Red Gate and west of Capitol Reef National Park in the Torrey-Teasdale-Grover area of central Wayne County.

Area: The potential ACEC is defined by mule deer crucial habitat within the boundary of the three nominated ACECs. The potential ACEC contains the entire Fremont Gorge WSA, which is subject to management under the IMP. The potential ACEC also contains the Fremont River in Fremont Gorge, identified by the BLM as an eligible wild and scenic river.

3.5.3.2.5 Henry Mountains Potential ACEC (288,200 acres)

Purpose: The purpose of the Henry Mountains Potential ACEC is to recognize and provide special management for relevant and important scenic, wildlife (bison and deer), special status species (Townsend's big-eared bat, ferruginous hawk, burrowing owl, hole-in-the-rock prairie clover), and ecological values. The No Man's Mesa portion of the ACEC would be designated as a Research Natural Area.

Description: Discovered by the Powell Expedition in the 1870s, the Henry Mountains, south of Hanksville, tower over the surrounding desert country.

Area: The potential ACEC is defined by crucial bison habitat, crucial mule deer habitat, and Class A Scenery. Other relevant and important values are included within this boundary. The potential ACEC includes portions of the following nominated ACECs: Bull Creek/Birch Creek, Bullfrog Creek, Granite Creek, Mount Hillers, No Man's Mesa, Ragged Mountain/Slate Creek, and Upper Sweetwater/Tarantula Mesa. The potential ACEC also overlaps all or parts of four WSAs: Mount Hillers, Mount Pennell, Bull Mountain, and Mount Ellen/Blue Hills; management of these lands would be governed by the IMP.

3.5.3.2.6 Horseshoe Canyon Potential ACEC (40,900 acres)

Purpose: The purpose of the Horseshoe Canyon Potential ACEC is to recognize and provide special management for relevant and important scenic and cultural values, notably Cowboy Cave. Other relevant and important values include riparian corridors and Townsend's big-eared bat.

Description: Horseshoe Canyon is a tributary of the Green River in northeastern Wayne County and is noted for its rock art. Part of the canyon is included within Canyonlands National Park.

Area: The Horseshoe Canyon Potential ACEC is defined by the Class A Scenery within the nominated area. Cultural, riparian, and special status species values are included within this boundary. The potential

ACEC overlaps portions of the Horseshoe Canyon North and Horseshoe Canyon South WSAs, which would be governed by the IMP.

3.5.3.2.7 Kingston Canyon Potential ACEC (22,100 acres)

Purpose: The purpose of the Kingston Canyon potential ACEC is to recognize and provide special management for relevant and important riparian and mule deer habitat in the area.

Description: The potential ACEC encompasses the canyon north and south of the Sevier River between the towns of Kingston and Antimony in Sevier County.

Area: The potential ACEC is defined by the mule deer habitat within the nominated ACEC. The riparian area is included in the mule deer habitat boundary. (**Note:** The riparian area is largely in state and private ownership.)

3.5.3.2.8 Little Rockies Potential ACEC (49,200 acres)

Purpose: The purpose of the Little Rockies Potential ACEC is to recognize and provide special management for scenic and wildlife values, notably desert bighorn sheep. Other relevant and important values within the ACEC include Townsend's big-eared bat, hole-in-the-rock prairie clover, and ecologic values.

Description: The potential ACEC is located in the southwest corner of Garfield County, north of Ticaboo. It overlaps the entire Little Rockies National Natural Landmark and most of the Little Rockies WSA, which would be governed by the IMP.

Area: Class A Scenery defines the ACEC boundary.

3.5.3.2.9 Lower Muddy Creek Potential ACEC (16,200 acres)

Purpose: The purpose of the Lower Muddy Creek Potential ACEC is to recognize and provide special management for the relevant and important scenic, riparian, and special status plant values in the area.

Description: The potential ACEC is located along Lower Muddy Creek in north-central Wayne County and south-central Emery County.

Area: Class A Scenery defines the ACEC boundary.

3.5.3.2.10 Old Woman Front Research Natural Area Potential ACEC (330 acres)

Purpose: The purpose of the Old Woman Front Research Natural Area Potential ACEC is to recognize and protect the relevant and important relict vegetation in the area. This Research Natural Area ACEC would complement the existing National Forest RNA.

Description: The potential ACEC is located in eastern Sevier County adjacent to the Fishlake National Forest.

Area: The potential ACEC is on public land adjacent to the Forest Service Old Woman Cove RNA in the Fishlake National Forest.

3.5.3.2.11 Parker Mountain Potential ACEC (107,900 acres)

Purpose: The purpose of the Parker Mountain Potential ACEC is to recognize and provide special management for sagebrush-steppe habitat and wildlife values, notably the greater sage grouse, Utah prairie dog, and pygmy rabbit.

Description: Parker Mountain, also known as the Awapa Plateau, is located in western Wayne County, southwest of the town of Loa.

Area: The potential ACEC includes all of the area that was nominated by the public.

3.5.3.2.12 Quitchupah Potential ACEC (180 acres)

Purpose: The purpose of the Quitchupah Potential ACEC is to recognize and provide special management for relevant and important archaeological, and riparian values.

Description: Quitchupah Creek is located in western Sevier County. The creek flows off the Fishlake National Forest across public lands managed by the Richfield and Price BLM field offices.

Area: The potential ACEC boundary includes the riparian corridors and associated cultural resource sites and areas that have spiritual value to American Indians.

3.5.3.2.13 Rainbow Hills Potential ACEC (4,000 acres)

Purpose: The purpose of the Rainbow Hills Potential ACEC is to recognize and provide special management for relevant and important mule deer habitat, natural systems, and special status species values in the area.

Description: The Rainbow Hills are located just east of Richfield, in a colorful Arapien shale formation. The potential ACEC nomination includes the shale and other lands adjacent to it.

Area: The potential ACEC boundary is defined by the crucial mule deer range. The plant and natural system values are included within this boundary.

3.5.3.2.14 Sevier Canyon Potential ACEC (8,900 acres)

Purpose: The purpose of the Sevier Canyon Potential ACEC is to recognize and provide special management for relevant and important mule deer habitat, riparian, and special status species values in the area.

Description: Sevier Canyon (also known as Marysvale Canyon) is a gorge bordering the Sevier River between the towns of Sevier and Marysvale. Big Rock Candy Mountain (privately owned) is located in the canyon.

Area: The potential ACEC boundary is defined by the mule deer habitat and the riparian corridor on public land along the Sevier River. (**Note:** The riparian area is largely in private ownership.)

3.5.3.2.15 Thousand Lake Bench Potential ACEC (500 acres)

Purpose: The purpose of the Thousand Lake Bench Potential ACEC is to recognize and provide special management for relevant and important cultural resources, special status plants, and riparian areas.

Description: The potential ACEC is located in southeastern Sevier County, south of I-70 and east of Thousand Lake Mountain.

Area: The potential ACEC is defined by riparian areas and the locations of cultural resources and special status plants.

3.5.3.2.16 Special Status Species Potential ACEC (15,100 acres)

Purpose: The purpose of the Special Status Species Potential ACEC is to recognize and provide special management for isolated and scattered locations of specific plant and wildlife species identified in the evaluations of the various ACEC nominations as relevant and important and not included in other potential ACECs. Species include Winkler pincushion cactus, Wright fishhook cactus, last chance townsendia, rabbit valley gilia, Cronquist wild buckwheat, basalt milkvetch, hole-in-the-rock prairie clover, Psoralea globemallow, Jane's globemallow, Townsend's big-eared bat, Allen's big-eared bat, big free-tailed bat, fringed myotis, ferruginous hawk, bald eagle, burrowing owl, long-billed curlew, southwestern willow flycatcher, greater sage grouse, bluehead sucker, flannelmouth sucker, leatherside chub, and desert night lizard.

Description: See "Purpose" above.

Area: The Special Status and Endemic Species ACEC is represented by documented locations of the above-listed species. In contrast with the other potential ACECs, this ACEC is composed of many small, discrete areas rather than a large contiguous area.

3.6 SOCIAL AND ECONOMIC CONDITIONS

The socioeconomic study area includes all of four counties (Piute, Sanpete, Sevier and Wayne) and the eastern portion of Garfield County. (As stated previously, there are also 21,500 acres of Kane County within the RMP planning area. However, since those lands lie entirely within Glen Canyon National Recreation Area and no decisions within this RMP will affect those lands, Kane County is not included within the socioeconomic study area.) This section summarizes demographic and economic trend information, including descriptions of the key industries in the five county socioeconomic study area that could be affected by BLM management actions. Study area industries most affected by BLM land management policies and programs are (1) production agriculture, in particular cattle grazing and production, (2) mining and oil and gas production, and (3) travel, tourism, and recreation. BLM lands provide areas for activities such as hunting and fishing, hiking, camping or picnicking, traditional natural resource uses (e.g., firewood or pine-nut gathering), and sightseeing.

Although some resources managed by the RFO may be of regional or national interest, this EIS assumes that RFO management decisions primarily affect the economies of the counties and towns within the five counties encompassed by the planning area boundary. This section presents baseline information used to help analyze the socioeconomic impacts of the alternatives considered in this EIS. More detailed information is provided in the Baseline Socioeconomic Profile (BLM 2003b). This section refers to numerous figures and tables from the baseline profile.

3.6.1 Social Background

The Baseline Socioeconomic Profile (BLM 2003b) discusses characteristics of the study area in some detail. The five counties in the study area are predominantly rural, with large land areas and dispersed populations. The number of persons per square mile ranges from 0.9 in Garfield County to 14.3 in Sanpete County, well below state and national averages.

At least half of the lands in each county within the socioeconomic study area are publicly-owned and Federally-managed. As shown in Table 3-32, the socioeconomic study area comprises more than 80% Federally-managed land, with 12.5% in private ownership. Lands managed by the RFO total 2.1 million acres, about 39% of the planning area.

Table 3-32. Land Ownership in the Socioeconomic Study Area

Area	Total Population (2000 Census)	Land Area (Sq. Miles)	Persons Per Square Mile	Federally Owned Land	Privately Owned Land
Garfield County	4,735	5,176	0.9	90.0%	5.1%
Piute County	1,435	757	1.9	74.3%	12.7%
Sanpete County	22,763	1,598	14.2	51.7%	42.5%
Sevier County	18,842	1,910	9.9	76.0%	19.1%
Wayne County	2,509	2,464	1.0	85.6%	3.5%
Socioeconomic Study Area	**50,284**	**11,905**	**4.2**	**80.7%**	**12.5%**
Utah	**2,193,000**	**84,583**	**25.9**	**63.9%**	**21.6%**

Note: The Garfield County figures include all land in the socioeconomic study area, not just land in the field office study area.
Source: Utah Division of Travel Development 2004; U.S. Census Bureau 2004.

The socioeconomic study area has sustained human populations for thousands of years. The people of this region, dating back to the Ute, Paiute, Navajo, and Hopi tribes, and even earlier civilizations such as the Fremont and ancestral Puebloan peoples, maintained very close connections to the land. As these native people lived in or moved through the area, the area's plants and animals provided them with food, medicine, and clothing.

European settlement began in 1849 with the establishment of Manti in Sanpete County. Settlement expanded throughout the area over the next 30 years, with Hanksville in eastern Wayne County being settled in 1882. Settlers supported themselves by irrigating the valleys, running livestock on the rangelands, and to a lesser extent, mining and lumbering. Settlements were closely tied to locations where water was available for farming and forage available for livestock. The Sevier-Sanpete Valley proved fertile land for farm production, whereas the areas around Parker Mountain and Monroe Mountain and extending through Capitol Reef National Park into the Henry Mountains were utilized for grazing livestock. Some of the current livestock permittees are heirs of families who have grazed stock on the public land for generations.

As early pioneers labored to make a living with agricultural products, prospectors were busy exploring the mountains of the area in search of metals and minerals that could be sold for a profit. Specifically, what is now Piute County supported a rich mining boom in the late 1800s. With industrialization and mechanization of agriculture, many of the initial pioneer settlements in the region matured. Throughout the 20th century, the roots of the natural resource–related industries and the persons associated with them became well established in the area. Although today few families earn their livelihoods solely from these basic industries, agriculture and to a lesser extent mining are still an integral part of the social structure of the area. Over time, the connection to public lands has changed from economic to social and traditional. The historical uses of public lands that continue today include hunting, wood gathering, pine-nut collecting, family picnics and other family gatherings, wildlife viewing, Christmas tree cutting, and other traditional activities. These uses provide opportunities for socialization within and between families and other social groups. Large population centers resulting from industrialization and urbanization have heightened social regard for areas without much human development. The socioeconomic study area

provides several opportunities for such areas. Use of these areas for outdoor recreation activities has increased over the past 20 years. Major recreational resources in the area, such as the Paiute and Great Western Trails, hiking and canyoneering opportunities in the Dirty Devil region, and bison viewing and hunting in the Henry Mountains attract many people each year to the region. Hunting and fishing opportunities in the socioeconomic study area and in the nearby Fishlake and Manti-LaSal National Forests complement camping, wildlife viewing, and other recreational activities, as people look for a break from the urban life. Residents in the socioeconomic study area understand and enjoy the lifestyle that comes with living in the area. The recreation component has created yet another connection to the public lands that is important not only to local residents but also to those who come from other areas in Utah, other states, and other countries to enjoy these natural resources.

3.6.1.1 County Perspectives

The following statements, taken from county plans, represent county perspectives on the management of public lands occurring in the five-county area. County plans are summarized in Appendix 13.

Garfield County: "The county deems it critical that Resource Management Plans provide for range improvements, that current grazing on public lands be preserved, that county water rights be maintained, that public lands timber harvesting be continued, and that mining leases be considered and encouraged" (Garfield County 1998).

Piute County: "It is in the county's best interest that BLM and USFS lands be managed for multiple use and that access is maintained on public lands" (Piute County 1994).

Sanpete County: "The culture and sentiment of Sanpete County residents is such that they…will want input on the management and use of public lands in the county" (Sanpete County 1997).

Sevier County: "Multiple use activities on public lands in Sevier County should continue and should include uses such as agricultural grazing, fishing and hunting, mineral exploration and mining, recreation, wildlife habitat, and timber sales"(Sevier County 1998).

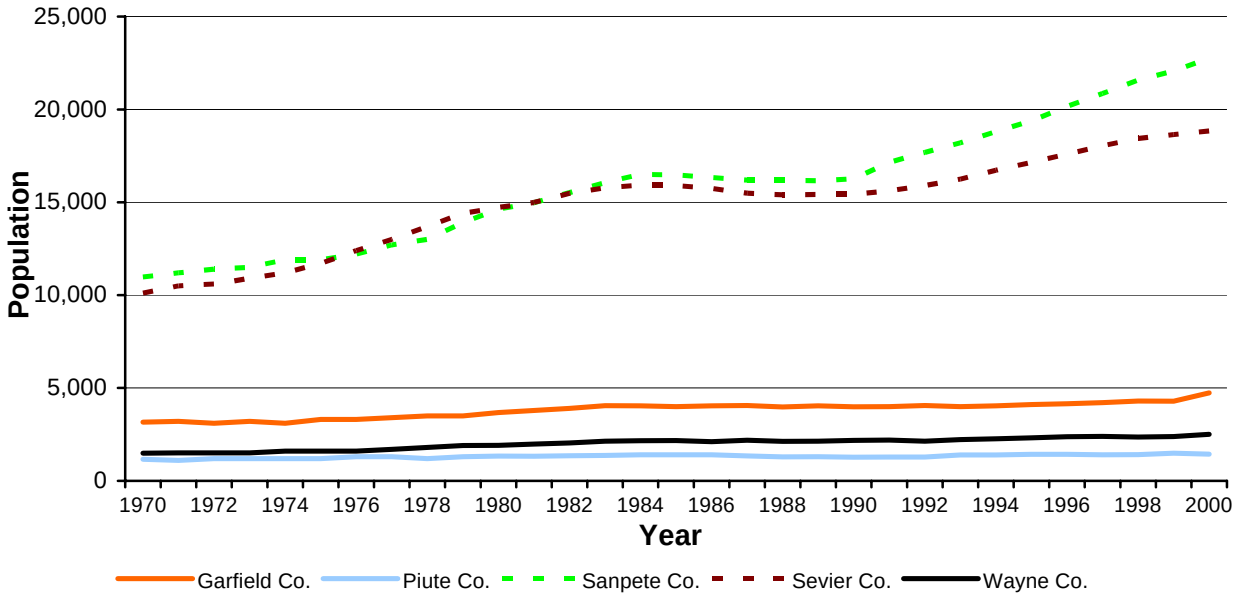
Wayne County: "It is the county's desire that each resource be managed for the optimal economic return, but in ways which do not sacrifice the county's natural aesthetic values" (Wayne County 1994).

3.6.1.2 Population

Approximately 85% of the people residing in the socioeconomic study area live in Sanpete and Sevier counties. In contrast, the eastern portion of the socioeconomic study area is very sparsely populated because of its isolation, aridity, and ruggedness.

Population trends for the five counties are plotted in Figure 3-5. Population growth in the five counties is on an upward trend, although Garfield, Piute, and Wayne counties are growing at a very slow rate. The higher growth rates of Sanpete and Sevier counties have been sustained by increased business opportunities following the construction of Interstate 70, construction of an annex of the Utah State Prison, and expansion of other business related to retail trade.

Figure 3-5. Population Estimates, 1970–2000



Source: BLM 2003b.

The population of the socioeconomic study area increased by almost 8% during the 1980s and grew by 24.9% in the 1990s. Population growth in the socioeconomic study area lagged significantly behind the state's population growth during the 1980s but outpaced the state's growth during the 1990s (BLM 2003b). The 1980s were marked by a 6.5% decline in net migration (e.g., the net result of persons moving in and out of the area). However the 1990s showed a marked change in this trend. Net migration increased in the socioeconomic study area by nearly 16%. These trends are similar to the statewide pattern during both the 1980s and 1990s, with the socioeconomic study area doubling the statewide trends (BLM 2003b).

3.6.2 General Economic Characteristics

All of the counties within the socioeconomic study area as well as the entire state showed large increases in the civilian labor force throughout the 1990s. Only Sevier and Garfield counties had percentage increases lower than the State of Utah as a whole and their increases were more than 20% and nearly 19%, respectively. The nine-year average annual increase in the civilian labor force for the socioeconomic study area was 2.53%, slightly higher than the State's 2.49% average. The increases varied within the socioeconomic study area, from a 2.1% annual increase in Garfield County to a 3.75% increase in Wayne County (BLM 2003b).

Total employment in the socioeconomic study area increased more than 50% over the last decade, from 17,202 jobs in 1990 to 25,876 jobs in 2000. This growth rate exceeded the national rate but lagged behind the Utah growth rate.

Throughout the 1990s unemployment in the socioeconomic study area showed a downward though sometimes unsettled trend. Except for 1993, when the national and socioeconomic study area rates were the same, the unemployment rate for the socioeconomic study area was higher than the national and state rates. All trends show a reversal between 2000 and 2001, with marked increases in the unemployment

rate. The yearly average unemployment rate for the years 1990-2001 is 7% for the socioeconomic study area, 5.5% for the nation, and 3.9% for the State of Utah (BLM 2003b).

Total personal income for the socioeconomic study area well exceeded $844 million for 2000, an increase of more than $254 million since 1990. This represents a total growth in real (inflation-adjusted) personal income of more than 43% in 10 years (BLM 2003b).

The socioeconomic study area has shown minor changes in how income is earned. Labor income (e.g., wages, salaries, and self-employment income) during 2000 was 63.6% of total personal income, whereas investment income was 17.1%. These numbers represent small decreases over the last two decades. During the same period, transfer payment income (largely derived from Social Security or other retirement benefits, Medicare and Medicaid benefits, and other income support and assistance) has absorbed the decreases in investment and labor income, growing from 14.6% of total personal income in 1980 to 17.5% in 1990 and 19.3% in 2000 (BLM 2003b). These trends are similar to state and national trends.

Per capita income (in 2002 dollars) in the socioeconomic study area has increased at a much slower rate than statewide per capita income, resulting in an increasingly large disparity between socioeconomic study area and state income levels. In 1990 socioeconomic study area per capita income was 79.3% of the per capita income throughout the state. That percentage decreased to 70% of state per capita income in 2000. In 2000, the socioeconomic study area per capita income was $16,793, significantly below the national figure ($30,150) and state figure ($23,977).

All five counties had a higher poverty rate (percentage of individuals living in households with an income below thresholds defined by the U.S. Census Bureau) than state or national rates in 1989, but in 1999, Sevier County and Garfield County each had a lower poverty rate than the United States. The percentage of individuals within the socioeconomic study area living below the poverty level declined from 17% in 1989 to 13% in 1999 (BLM 2003b).

3.6.2.1 Employment and Earnings by Industry

Rural areas like the socioeconomic study area are often more dependent on traditional natural resource-based industries, such as mining and agriculture. For example, the socioeconomic study area is more dependent on mining and agriculture jobs than the State of Utah as a whole. Mining and farm employment made up just over 2% of Utah's total employment in 2000, whereas those same industries provided for just over 11% of jobs in the socioeconomic study area. Mining and agriculture are also important as an economic base for the socioeconomic study area because they export their goods outside the region and in turn support ancillary industries such as retail trade, construction, and services (BLM 2003b).

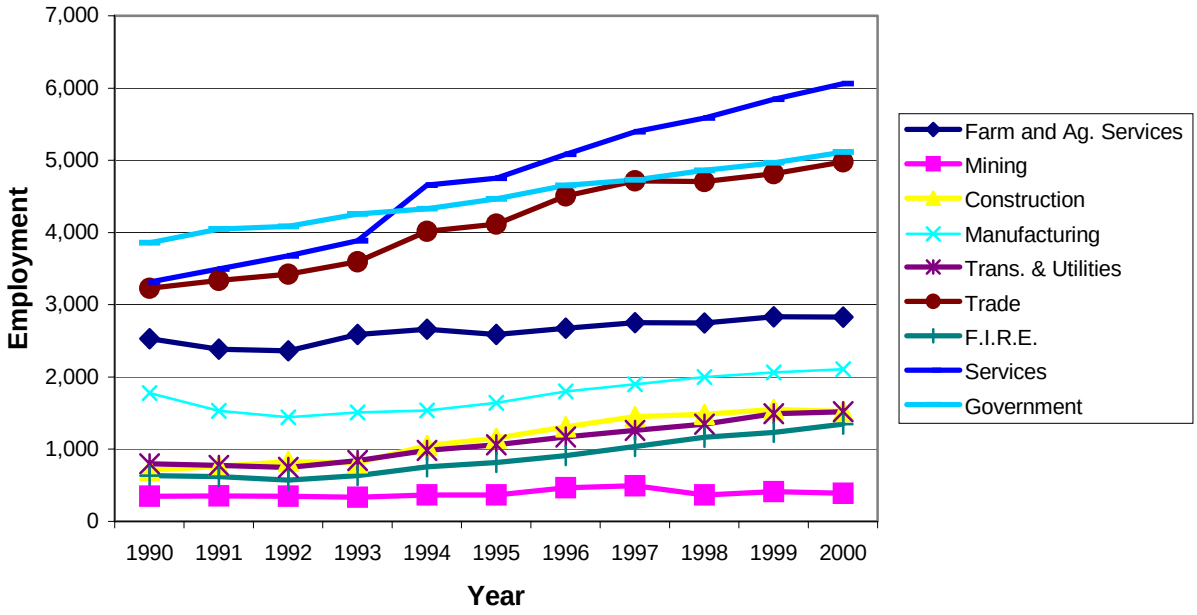
Services, government, and retail trade comprised more than 60% of employment in the socioeconomic study area in 2000 (BLM 2003b). Figure 3-6 shows the trends in employment by industry during the last decade. Industries showing the greatest numerical increase in employment from 1990–2000 included services (2,744 new jobs), trade (1,751 new jobs), government (1,253 new jobs), and construction (815 new jobs). Industries reporting the slowest growth in the socioeconomic study area included farm and agricultural services and mining, both increasing by 12% over the last decade. Transportation and utilities; construction; and finance, insurance, and real estate (F.I.R.E.) showed significant growth but accounted for relatively small percentages of total employment.

Mining, transportation, and utilities continue to provide the highest-paying jobs in the socioeconomic study area, though both industries have experienced a decline in average real earnings per job over the last

decade, as shown in Figure 3-7. The government and manufacturing sectors have shown growth in average real earnings per job and now provide the third and fourth highest paying jobs in the area. Farm and agricultural services, trade, and F.I.R.E. reported the lowest earnings per job throughout much of the latter part of the 1990s. Agriculture and mining showed the most volatility in average earnings per job over the course of the decade.

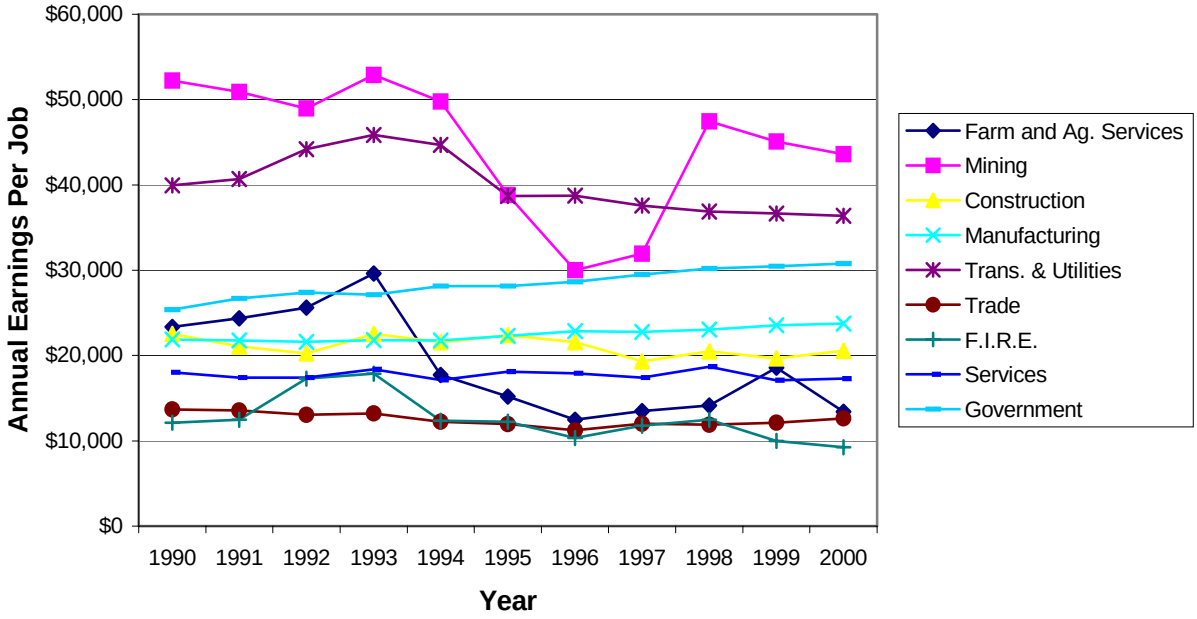
Gross real earnings for all socioeconomic study area industries grew by more than 40% from 1990 to 2000. Earnings from government jobs have consistently been higher than all other industries, totaling more than $157 million in 2000 and accounting for nearly 29% of all earnings. The service sector has become an integral part of the economy, growing from $59 million and 16% of total earnings in 1990 to $104 million and 21% of total earnings in 2000. After growing sharply (207%) in the 1980s, earnings from jobs in the farm sector dipped (by 36%) in the 1990s. The farm sector accounted for $38 million and 7.2% of total socioeconomic study area earnings in 2000. Mining also reported a decline in real earnings during the last decade, falling by 6%, from $18 million in 1990 to $17 million (3.1% of total earnings) in 2000 (BLM 2003b).

Figure 3-6. Trends in Full-Time and Part-Time Employment by Industry, 1990–2000



Source: BLM 2003b.

Figure 3-7. Average Earnings Per Job (2002$)



Source: BLM 2003b.

3.6.2.2 Government Revenue from Natural Resources

3.6.2.2.1 Revenues to the Federal Government

The Federal government's Minerals Management Service (MMS) collects royalties and rents from leases of Federal lands for production of coal, oil, gas, and other leasable minerals. For coal leases issued or readjusted after August 4, 1976, the royalty rate is 8% of the value of production for underground mines and 12.5% for surface mines. However, there are no surface coal mines in the planning area at this time. Coal leases are offered competitively with a bonus bid in either dollars-per-acre or cents-per-ton; the minimum bid is $100.00 per acre or its equivalent in cents-per-ton. Annual rents on a coal lease are $3.00 per acre. For oil and gas leases issued after December 22, 1987, royalties are 12.5% of the amount or value of production. Oil and gas leases are offered competitively with a minimum bonus bid of $2.00 per acre. The rents for an oil and gas lease are $1.50 per acre for the first five years and $2.00 per acre for subsequent years. Royalties, bid prices, and rents are collectively referred to as lease revenue. Leases for non-energy solid leasable minerals are also subject to royalties, competitive bidding as required by regulation, and rents, but at this time, there are no non-energy solid leases in the planning area.

Revenues, collected as royalties, rents, and bonus bids on a Federal lease, are distributed within the Federal government and to the State of origin of the revenue. The Federal government returns 50% of the lease revenues to the State of origin of the revenues, and the other 50% is variously distributed within the Federal government, depending on the type of lease, which varies depending on when the lease was issued. In Utah the revenues distributed to the State flow through the Utah Department of Community and Economic Development to various state funds and other state and local agencies.

The Federal government also receives bonus bid revenue from minerals underlying former Federal lands exchanged with the State of Utah's School and Institutional Trust Lands Administration as part of the Utah School and Lands Exchange Act of 1998 (Public Law 105-335). Only two counties in the state, Carbon and Emery, produce significant mineral lease revenue from exchanged lands. In the socioeconomic study area, only Sevier County has produced any such revenue in fiscal years 2000 through 2004: a total of $500.00 in FY 2000. Because this was lease revenue and not bonus bid revenue, all of this revenue went to SITLA (none to the Federal government).

Table 3-33 provides figures on a county basis for mineral revenue collections by MMS and subsequent disbursements to the state. These figures encompass all Federal lands in the included counties. Tracing revenues and disbursements to BLM lands in particular was not feasible for this study. Most of the revenue in Table 3-33 is generated in Sevier County as a result of coal production.

The RFO collects fees and other revenues for a variety of uses on BLM lands. These revenue sources include right-of-way rents, recreation fees, mineral material and vegetative material permit fees, and grazing fees. Table 3-34 provides figures for the most significant local BLM revenue sources for fiscal years 2002 to 2004. The table also indicates how each type of revenue is distributed. Revenue from sales of land and materials, along with right-of-way rents, mostly leave the RFO. Recreation fees are retained. Fifty percent of grazing fees go to the BLM Range Improvement Fund and are returned to the district of origin.

Table 3-33. Mineral Lease and Bonus Revenues Collected and Disbursed by the Federal Government, State of Utah Fiscal Years 2001–2004

State Fiscal Year and Collections/Disbursements	Garfield County	Piute County	Sanpete County	Sevier County	Wayne County	Study Area Total	State Total
2001							
Federal Mineral Lease Collections	$798,451	$2,290	$106,725	$10,467,631	$17,779	$11,392,876	$92,368,329
Federal Mineral Bonus Collections	$0	$0	$0	$3,203,946	$0	$3,203,946	$6,723,764
Total Federal Collections	$798,451	$2,290	$106,725	$13,671,577	$17,779	$14,596,822	$99,130,862
Total Disbursed to State	$399,226	$1,145	$53,362	$6,835,788	$8,890	$7,298,411	$49,565,431
2002							
Federal Mineral Lease Collections	$241,975	$2,345	$39,163	$4,350,638	$1,431	$4,635,553	$27,021,330
Federal Mineral Bonus Collections	$0	$0	$0	$3,203,946	$0	$3,203,946	$3,526,947
Total Federal Collections	$241,975	$2,345	$39,163	$7,554,584	$1,431	$7,839,499	$30,548,276
Total Disbursed to State	$120,988	$1,173	$19,581	$3,777,292	$716	$3,919,749	$15,274,138
2003							
Federal Mineral Lease Collections	$526,921	$2,371	$3,746	$10,121,739	$0	$10,654,777	$63,953,116
Federal Mineral Bonus Collections	$111,054	$0	$163,070	$3,447,920	$1,431	$3,723,475	$15,767,107
Total Federal Collections	$637,975	$2,371	$166,816	$13,569,660	$1,431	$14,378,252	$79,720,223
Total Disbursed to State	$318,988	$1,185	$83,408	$6,784,830	$716	$7,189,126	$39,860,112
2004							
Federal Mineral Lease Collections	$576,836	$2,436	$1,552	$8,375,727	$0	$8,956,551	$115,121,675
Federal Mineral Bonus Collections	$27,845	$0	$297,448	$3,621,065	$1,908	$3,948,266	$19,310,291
Total Federal Collections	$604,681	$2,436	$299,001	$11,996,792	$1,908	$12,904,817	$134,431,966
Total Disbursed to State	$302,340	$1,218	$149,500	$5,998,396	$954	$6,452,409	$67,215,983

Note: All figures are rounded to the nearest dollar.
Source: Utah Division of Housing and Community Development (2004). State receipts data grossed-up to Federal collections based on 50-50 state-Federal split (U.S. Minerals Management Service 2004b).

Table 3-34. Richfield Field Office Revenue Collections, Federal FY2002–FY2004, and Primary Distribution of Funds

Type of Revenue	Data Source	2002	2003	2004	Distribution (3)
Right-of-way and communication site annual rents	1	$71,693	$71,203	$61,648	To national BLM account and Federal Treasury general fund
Commercial/group Special Recreation Permits; campground fees	2	$207,394	$99,964	$109,833	Retained by BLM (Recreation Fee Demo Program)
Little Sahara recreation site entrance fees	1	$5,089	$0	$0	Retained by BLM (Recreation Fee Demo Program)
Mineral material permit fees (sand and gravel, stone, soil, and other)	1	$8,725	$21,599	$14,036	76% to U.S. Bureau of Reclamation's Reclamation Fund, 20% to Federal Treasury General Fund, 4% to state
Vegetative material permit fees (native seed collection, firewood, posts/poles, Christmas trees, other)	2	$10,633	$3,767	$3,476	76% to U.S. Bureau of Reclamation's Reclamation Fund, 20% to Federal Treasury General Fund, 4% to state
Sale of public land	1	$0	$167,440	$0	76% to U.S. Bureau of Reclamation's Reclamation Fund, 20% to Federal Treasury General Fund, 4% to state
Grazing fees, related maintenance and trespass fees	1	$87,826	$41,360	$68,019	50% to BLM Range Improvement Fund (returned to the district of origin), 37.5% to Federal Treasury General Fund, 12.5% to state
Right-of-way (primarily monitoring fees)	1	$40,604	$36,019	$0	Retained by BLM
Road maintenance (vegetative materials)	1	$6,323	$1,566	$1,397	Retained by BLM

Sources:
1 – Data provided by RFO accounting office, October 2004; figures are collections net of reversals and transfers.
2 – Figures provided by RFO resource specialists, October/November 2004.
3 – BLM National Business Center, Collections and Billing Branch, interviews November 2004 and “Distribution of Receipts Synopsis.”

3.6.2.2.2 Revenues to State Government

As noted above, the Federal government, through the MMS, pays the State of Utah 50% of the mineral lease and bonus revenues it collects from Federal leases in the state. These disbursements are shown in Table 3-35. State exchange lands, as noted above, produce negligible revenue in the socioeconomic study area. Other lands in the socioeconomic study area administered by SITLA may produce mineral revenues, but because these lands are not managed by BLM, this data was not collected for this study.

The State of Utah collects several taxes and fees that derive from natural resources on both private lands and public lands:

- **Mining Severance Tax.** The tax is 2.6% of the taxable value of all metals or metalliferous minerals sold or otherwise disposed of (Utah Code 2004). Every person or business engaged in mining metals or metalliferous minerals must file an annual report with the Utah State Tax Commission. However the first $50,000 of value is exempt from the tax.
- **Oil and Gas Severance Tax.** The tax is three or 5%, depending on the value at the well per barrel of oil or per million cubic feet of gas, and 4% for natural gas liquids, minus certain credits and reductions (Utah Code 2004). Statewide severance tax revenue totaled $18,893,082 in FY 2002 and $26,745,279 in FY 2003 (Utah State Tax Commission 2003). The state does not report this revenue on a county basis. However, production from the socioeconomic study area for FY 2000 to FY 2003 was entirely limited to Garfield County and averaged about 1.5% of state production for oil, and was considerably less than 0.001% for gas (UDOGM 2004). Thus, oil and gas severance tax revenue to the state from the socioeconomic study area has been negligible in recent years.
- **Coal Severance Tax.** Utah does not have a state severance tax on coal.
- **Oil and Gas Conservation Fee.** The fee is 0.2% of the value at the well (Utah Code 2004). Statewide conservation fee revenue totaled $1,710,219 in FY 2002 and $1,943,755 in FY 2003 (Utah State Tax Commission 2003). The state does not report this revenue on a county basis. Conservation fee revenue to the state from the five-county area has been negligible in recent years for the same reason noted for the severance tax.
- **Income Taxes.** There are various state income tax rates, depending on individual or corporate status, type of corporation, taxable income, and other factors. The state requires 5% withholding on most mineral production income (Utah Code 2004). State income tax revenue derived from income on natural resources in the five-county area is not reported on a county basis by the state and cannot be reliably estimated for this study.

3.6.2.2.3 Revenues to Local Governments

Much of the Federal and state mineral revenue is disbursed to local government. The major means for the disbursements are as follows:

- **UDOT.** Most of Utah's share of Federal land mineral lease revenue is deposited in the state Mineral Lease Account. In addition, 39.5% of state exchange land mineral lease revenue (minus 3% taken by SITLA for administration) is deposited in the Mineral Lease Account. Forty percent of the funds in the Mineral Lease Account are returned to the county of origin through UDOT in proportion to the amount generated by each county.
- **Community Impact Fund.** A total of 32.5% of the revenue in the Mineral Lease Account (plus a remainder after other funds are paid, if available) goes to this special fund set up by the legislature to award grants and loans to state and local agencies that are socially or economically impacted by mineral resource development. In addition, 12.16% of exchange lands bonus

revenue goes into the Community Impact Fund. The funds are awarded on a competitive basis and can be used for planning, construction, and maintenance of public facilities, and provision of public services.

- **Special Service Districts.** Five percent of the revenue in the Mineral Lease Account is distributed to 11 counties that are impacted by mineral extraction but receive limited funds through UDOT or the Community Impact Fund. These counties include four of the five counties in the planning area: Garfield, Piute, Sanpete, and Wayne. Each county receives an equal base payment and a portion based on population.

Table 3-35 shows these distributions of mineral lease and bonus revenues by county for recent years.

Table 3-35. Distribution of Mineral Revenues by County, State of Utah Fiscal Years 2001–2004

Data Source	Revenue Source	Garfield County	Piute County	Sanpete County	Sevier County	Wayne County	Study Area Total	State Totals
FY2001								
1	State Distribution to Counties - UDOT	$219,434	$458	$21,138	$2,073,944	$3,556	$2,318,530	$20,609,660
2	State Distribution to Special Service Districts	$168,349	$132,727	$374,995	$0	$143,686	$819,757	$2,476,644
3	State Distribution to Counties - Community Impact Fund	$127,000	$176,000	$4,450,000	$4,160,000	$100,000	$9,013,000	$34,274,472
Sum of Above Distributions*		**$514,783**	**$309,185**	**$4,846,133**	**$6,233,944**	**$247,242**	**$12,151,287**	**$57,360,776**
FY2002								
1	State Distribution to Counties - UDOT	$138,518	$0	$13,797	$1,779,957	$902	$1,933,174	$11,120,386
2	State Distribution to Special Service Districts	$99,391	$76,910	$222,204	$0	$84,227	$482,732	$1,476,957
3	State Distribution to Counties - Community Impact Fund	$28,916	$0	$160,000	$1,027,500	$430,000	$1,646,416	$20,933,850
Sum of Above Distributions*		**$266,825**	**$76,910**	**$396,001**	**$2,807,457**	**$515,129**	**$4,062,322**	**$33,531,193**
FY2003								
1	State Distribution to Counties - UDOT	$154,878	$615	$1,324	$1,614,650	$0	$1,771,467	$16,221,449
2	State Distribution to Special Service Districts	$136,263	$105,442	$304,637	$0	$115,473	$661,815	$2,024,878
3	State Distribution to Counties - Community Impact Fund	$697,700	$0	$918,000	$8,992,961	$207,000	$10,815,661	$38,410,192
Sum of Above Distributions*		**$988,841**	**$106,057**	**$1,223,961**	**$10,607,611**	**$322,473**	**$13,248,943**	**$56,656,519**
FY2004								
1	State Distribution to Counties - UDOT	$148,853	$486	$309	$1,672,796	$0	$1,822,444	$25,564,750
2	State Distribution to Special Service Districts	$216,541	$167,563	$484,112	$0	$183,503	$1,051,719	$3,217,821
3	State Distribution to Counties - Community Impact Fund	$59,000	$980,000	$1,532,400	$892,000	$1,390,000	$4,853,400	$28,797,224
Sum of Above Distributions*		**$424,394**	**$1,148,049**	**$2,016,821**	**$2,564,796**	**$1,573,503**	**$7,727,563**	**$57,579,795**

*Counties may benefit from additional mineral revenues distributed by other state funds/agencies.

Sources:

1 - Spreadsheets provided November 2004 by Kevin Anderson, Financial Manager, Utah Department of Transportation. Also available at http://www.dot.utah.gov/index.php/m=c/tid=135 (accessed November 2004).

2 - Spreadsheets provided November 2004 by Arthur Peterson, HCD Accountant, Utah Department of Community and Economic Development.

3 - Utah Department of Community and Economic Development, Division of Community Development. Legislative Report of the Permanent Community Impact Fund. Reports for FYs 2001–2004 used.

The State of Utah assesses the value of natural resource properties: specifically oil and gas wells, metal mines, coal mines, sand and gravel mines, and nonmetal mines. County treasurers then set and collect taxes from these properties. On public lands, the taxes are based on the higher of (a) the value of equipment on the site or (b) discounted cash flow from production if the well or mine is producing. Table 3-36 shows the natural resource property tax amounts collected by the five counties in the planning area in 2003 for all lands. A breakdown for BLM lands only is not available. Natural resource properties are a significant source of tax revenue for local government, totaling $1.3 million in the five-county area in 2003. This represents 5% of all property taxes collected by local government (real and personal property taxes, taxes on utility and natural resource properties, and motor vehicle fees in lieu of taxes). Of this amount, coal mines contributed 70%, with nearly $908,144 in taxes paid on coal mines in Sevier County, the third-highest coal-producing county in the state.

Table 3-36. Property Taxes Charged Against Natural Resource Property, 2003

Area	Oil and Gas Extraction	Metal Mines	Coal Mines	Sand and Gravel	Non-Metal Mines	Total Natural Resource Taxes	Total as Percentage of Total Property Taxes
Garfield	$67,885	$53,556	$0	$8,582	$0	$130,023	3.2%
Piute	$0	$7,446	$0	$0	$1,557	$9,003	1.4%
Sanpete	$212	$347	$0	$22,113	$24,165	$46,837	0.5%
Sevier	$0	$477	$908,144	$21,429	$186,229	$1,116,279	11.0%
Wayne	$0	$0	$0	$1,131	$2,499	$3,630	0.3%
Total-Study Area	**$68,097**	**$61,826**	**$908,144**	**$53,255**	**$214,450**	**$1,305,772**	**5.1%**

Source: Utah State Tax Commission 2004

A source of local government revenue directly attributable to the public lands in each of the counties is Payments In Lieu of Taxes (PILT). PILT payments are made by the Federal government to compensate counties for lost property tax revenue attributed to Federal lands, which are not taxable. PILT payments are calculated with a complex formula that considers numerous factors, including acreage of eligible lands; population; and other Federal transfers, such as mineral royalties. In fiscal year 2004, PILT payments for all Federal lands in the five county socioeconomic study area totaled nearly $2.5 million, comprising $113,302 to Piute County, $240,126 to Wayne County, $428,693 to Garfield County, $724,561 to Sanpete County, and $951,083 to Sevier County (USDI 2004). These payments cannot be readily attributed to BLM versus other Federal lands.

3.6.2.2.4 Mineral Economics

The mineral industries produce direct and indirect labor earnings that circulate throughout the socioeconomic study area. Mining is a cyclical industry, and there have been times in the past when mineral development has played a smaller role in the economy of the socioeconomic study area than at the present time. Coal production is at record levels, and there is continuing activity in mining of aggregate, salt, and gypsum. Mining and mining-related employment makes a significant contribution to Sevier county. There are undeveloped mineral resources located throughout the socioeconomic study area. Development of these resources is dependent on economic and other factors within and outside the area.

The main mineral production in the socioeconomic study area is the coal resource within Sevier County. Sevier County is the third-highest producer of coal in Utah and contains the highest-producing coal mine

in the state: the SUFCO Mine in Convulsion Canyon. Between 1984 and 2001, coal production rose and fell somewhat from year to year, with a low production value of $67.1 million in 1992 and a high production value of $108.5 million in 2001 (BLM 2003b).

Oil production in the five county area (Sevier, Garfield and Sanpete counties are the only producing counties) generated nearly $5 million in sales in 2001 (BLM 2003b). Gas production, which occurs only in Garfield and Sanpete counties, is associated with the production of oil and generated $33,764 in sales in 2001 (BLM 2003b). The production in Sanpete County is from one well that has minor production on an intermittent basis. Production in Garfield County is primarily oil at the Upper Valley field in the western part of the county, outside the planning area. The Covenant field in the Sevier Valley is the newest discovery of oil in the State and has increased production of oil in the State by 10%. The discovery of oil at the Covenant field has increased interest in leasing and exploration in the western part of the planning area. It should be noted that Garfield County's oil and gas production occurs in the western part of the county, outside the planning area. Recent drilling in the Sevier Valley area could lead to increased exploration and development within the planning horizon. Increased leasing activity has occurred in the Sevier-Sanpete Valley.

3.6.2.2.5 Grazing Economics

The farm sector, which includes grazing on public lands, provided 2,508 jobs in the five county area throughout 2000. Although this number is marginally higher than numbers for 1980 and 1990, total employment in the farm sector has dropped from nearly 16% in the area in 1980 to nearly 10% in 2000 (BLM 2003b). Total earnings in the farm sector were reported as approximately $38.6 million during 2000, or 7.2% of total earnings in the five county area (BLM 2003b). These figures result in an average yearly income of $15,385 for jobs in the farm sector. Total numbers of cattle in the five county area have remained mostly constant over the past 14 years, whereas the number of sheep has declined by more than 35% (BLM 2003b).

Within the RFO, the number of permitted AUMs available for livestock grazing has been constant at 109,951 since at least 1988. An AUM is a standardized measure of the amount of forage necessary for the sustenance of one cow unit or its equivalent (e.g., five sheep) for one month. Active use, as represented by the number of AUMs licensed (purchased) yearly, has increased from a low of nearly 38,000 in 1990 to a high of nearly 76,600 in 2001. The discrepancy between permitted AUMs and active AUMs can be attributed to the variability of range conditions year-to-year, fluctuations of prices in the livestock markets, individual permittees taking voluntary nonuse, or combinations of the three. BLM grazing fees rose to their highest point ($1.98 per AUM) in the mid-1990s but quickly declined and have held steady at or near the base rate of $1.35 per AUM through 2004. The number of livestock operators using BLM lands managed by the RFO has increased steadily, from a low of 120 in 1990 to a high of 148 in 1999 (BLM 2003b).

Calculation of the value of livestock grazing within the RFO is based on the 10-year average of active AUMs (see the livestock grazing section of this chapter). Active AUMs in this period averaged 50,827 for cattle and 9,756 for sheep. The average value of production per AUM in 2003 dollars for the State of Utah is $41.22 for cattle AUMs, and $22.93 for sheep AUMs, based on the methodology described in the Socioeconomic Baseline Report. Applying these values to the active AUM figures shows that the average value of production for livestock grazing within the RFO in recent years is about $2.1 million per year for cattle and $223,700 for sheep in 2003 dollars (Table 3-37). Combined with information on livestock production across the entire five county socioeconomic study area (BLM 2003b, USDA 2004; both updated to 2003 dollars), these data show that 1.5% of the $154.2 million 10-year annual average of cash receipts for livestock and livestock products in the five county socioeconomic study area can be attributed to grazing on BLM lands. However, this small figure may not reflect the full significance of grazing on

BLM lands: for instance, this grazing could be critical to certain operators at certain times of the year when other forage or feed is unavailable or expensive.

Table 3-37. Value of Grazing Output on Richfield Field Office Public Lands

Stock Type	Active (Licensed) AUMs*	Estimated Value of Production per AUM (2003$)*	Value of Grazing Output (2003$)
Cattle	50,827	$41.22	$2,095,100
Sheep	9,756	$22.93	$223,700
Total	**60,583**		**$2,318,800**

Notes: 10-year Average 1994-2003
Source: USDA 2004.

3.6.2.2.6 Recreation and Tourism Economics

Recreation visitation to the five county socioeconomic study area has declined in the past several years, mirroring trends for the state and nation. Figures from the Utah Division of Travel Development (2004) indicate visitation to most area state and national parks peaked in 1999 and in most cases has declined steadily through 2002 (Grand Staircase-Escalante National Monument, minus 41%; Yuba State Park, minus 22% since peak in 2000; Capitol Reef National Park, minus 23%; Glen Canyon National Recreation Area, minus 20%; Canyonlands National Park, minus 16%; Goblin Valley State Park, minus 13%; Palisade State Park, minus 5% since peak in 2000). Despite these visitation declines, recreation and tourism-related sectors have the greatest potential for growth among sectors that use public land resources. Long-term increases in recreation visits are likely a result of projected state and regional population growth and an aging population that will demand increased opportunities for leisure and recreation.

Employment and earnings provided by recreation and tourism are typically within the service and retail sectors, although not all employment and earnings from these sectors can be directly attributed to tourism and recreation. The Utah Division of Travel Development (2004) estimates that there were 2,979 travel and tourism-related jobs in the five-county area in 2003. According to the Division, 44% of total employment in Garfield County in 2003 occurred in tourism-related jobs. Figures for this measure for other counties are as follows: Wayne County, 26%; Piute County, 17%; Sevier County 17%; and Sanpete County, 7%. For all five counties, the *2007 Economic Report to the Governor* (Utah Governor's Office of Planning and Budget 2007) estimates that 15.4% of all jobs (in 2005) were in the leisure and hospitality industries; this is more than double the percentage for Utah as a whole (7.3%). The Division estimates that travelers spent a total of $92 million in the five county area in 2003, resulting in $1.9 million in tax revenues to local governments.

Recreation participation and visitor days (12 hours of participation in any recreational activity) for the lands managed by the RFO for fiscal years 2001 through 2004 are detailed in Table 3-22. For the fiscal year ending September 30, 2004, the greatest number of recreationists participated in driving for pleasure (132,195), camping (105,128), picnicking (81,055), hiking/walking/running (66,189), and OHV/ATV use (63,834), whereas the greatest number of visitor days was spent camping (102,144), driving for pleasure (55,034), backpacking (51,610), hiking/walking/running (31,507), and using OHVs (cars/trucks/SUVs) (31,836).

3.6.3 Environmental Justice

"Environmental justice" refers to the fair and equitable treatment of individuals regardless of race ethnicity, or income level, in the development and implementation of environmental management policies and actions. In February 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority and Low Income Populations." The objective of this EO is to require each Federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low income populations" (EO 12898, 1994).

Where the impacts of a proposed Federal action may involve such populations, an analysis of the potential for disproportionate impacts and meaningful community outreach and public involvement is required.

3.6.3.1 Minority Populations

BLM Instruction Memorandum (IM) 2002-164, "Guidance to Address Environmental Justice in Land Use Plans and Related NEPA Documents," provides policy and guidance for addressing environmental justice in BLM land use planning. IM 2002-164 defines minority persons as "Black/African American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut and other non-white persons." Further, IM 2002-164 indicates that an area should be considered to contain a minority population where either the minority population of the affected area exceeds 50%, or the percentage of minority population in the affected area is meaningfully greater than the percentage in the general population.

Populations of the five counties encompassed within the socioeconomic study area are predominately Caucasian and non-Hispanic. All five counties have a larger proportion of Caucasian residents than does the state. Table 3-38 provides a summary of population by race and ethnicity in 2004.

Table 3-38. Racial and Ethnic Groups for Richfield Planning Area Counties and Utah (Percent of Population)

Race or Ethnicity	Garfield County	Piute County	Sevier County	Sanpete County	Wayne County	State of Utah
Caucasian persons	97.4%	98.4%	97.0%	96.6%	99.0%	93.8%
African American persons	0.2%	0.1%	0.3%	0.5%	0.2%	0.9%
American Indian/Alaska Native	1.8%	1.2%	1.8%	1.0%	0.3%	1.3%
Asian	0.4%	0.1%	0.3%	0.7%	0.0%	1.9%
Native Hawaiian, or Pacific Islander	0.0%	0.0%	0.1%	0.7%	0.3%	0.7%
Persons reporting two or more races	0.2%	0.1%	0.5%	7.6%	0.2%	1.3%

Race or Ethnicity	Garfield County	Piute County	Sevier County	Sanpete County	Wayne County	State of Utah
Persons of Hispanic or Latino origin	3.3%	5.0%	2.8%	7.6%	2.6%	10.6%
White persons, not Hispanic	94.5%	93.7%	94.5%	89.4%	96.4%	83.8%

Source: U.S. Census Bureau, 2004.
Notes:
[1]Detail may not add up to 100% due to rounding
[2]Hispanic breakout is separate because Hispanics can be of any race.
[3]Figures for Garfield County represent the entire county, not just the portion within the planning area.

As Table 3-38 shows, the percentage of minority residents does not exceed 50% of the total population in any of the five counties in the socioeconomic study area. Thus, none of the five counties contain a minority population that is meaningfully greater than the general population.

3.6.3.2 Low-Income Populations

With respect to low-income populations, IM 2002-164 indicates that low income populations can be identified according to poverty thresholds published by the US Census Bureau. In addition, the IM notes that "when considering these definitions, it is important to recognize that some low-income and minority populations may comprise transitory users of the public lands and thus not be associated with a particular geographic area."

As shown in Table 3-39, 10% of the persons living in Utah had incomes below the poverty level in 2003. Persons with incomes below the poverty level in the counties within the planning area ranged from 10% to 13.8%. For the purposes of this analysis, this was not determined to represent a substantial concentration of persons living in poverty or to be meaningfully greater than the statewide percentage.

Table 3-39. Persons below the Poverty Level for Richfield Socioeconomic Study Area by County (Percent of Population, 2003)

Income	Garfield County	Piute County	Sevier County	Sanpete County	Wayne County	State of Utah
Persons below poverty level	10.0%	13.8%	11.8%	13.5%	11.5%	10%

3.7 HEALTH AND SAFETY

3.7.1 Introduction

A major priority in land management for the RFO is ensuring health and human safety on its public lands. The BLM's goals are to effectively manage hazardous materials and safety hazards on the public lands to protect the health and safety of public land users, protect the natural and environmental resources, minimize future hazardous materials and related risks, costs and liabilities, and to mitigate physical hazards in compliance with all applicable laws, regulations, and policies. The BLM follows its national, state, and local contingency plans as they apply to emergency responses. These plans are also consistent with Federal and state laws and regulations.

3.7.2 Hazardous Materials

Hazardous materials are generally defined as a usable product or substance that may cause harm to humans, natural resources, or the environment when spilled, released, or contacted. Hazardous materials are used in every day activities and may be in the form of a solid, liquid, or gas. Regardless of their physical state, hazardous materials may be toxic, flammable, combustible, reactive, and/or corrosive. These can include, but are not limited to, discarded chemicals, chemical spills, discarded wastes, etc. Once hazardous materials are disposed of, spilled or dumped, they are classified as "hazardous waste." Hazardous waste problems within the RFO can result from programs conducted by state and local governments, by local businesses and industries, and/or by illegal dumping of hazardous materials on lands administered by the BLM. In coordination with cooperating agencies, BLM-administered public land sites contaminated with hazardous wastes would be reported, secured, and cleaned up according to applicable Federal and state regulations and contingency plans. Parties responsible for contamination would be liable for damage assessment, removal, and restoration costs as prescribed in Federal and state regulations. Currently no hazardous waste sites listed on the National Priority List or Superfund Cleanup List exist within the RFO.

3.7.2.1 Potential Hazards

The various hazardous waste generators pose a potential impact to the health and safety of area residents, visitors, and to the physical environment itself. Both commercial and illegal activities can lead to the creation of hazardous waste sites. Spills, illegal dumping, and the discovery of abandoned hazardous materials are likely to occur within the RFO. Contaminants from these sites can pose an imminent threat to public safety and adversely impact the environment by impacting soils, ground water, air, and surface water quality. Potential hazardous waste generators within the RFO include the following: oil and gas drilling operations, natural gas pipelines, mining operations, uranium tailings, storage tanks, landfills, and illegal dumps.

3.7.2.2 Hazardous Materials Management

The RFO Hazardous Materials Program is responsible for hazardous materials handling, storage, transport, and emergency response. Several state and Federal mandates, authorities, and handbooks provide the BLM with management guidelines, objectives, and actions pertaining to hazardous materials management. The Federal and state prescribed mandates ensure the RFO's compliance with applicable laws and regulations.

3.7.3 Abandoned Mines

The early mining practices within the planning area were subject to minimal safety and environmental regulations. Prior to 1981, the BLM did not regulate surface disturbance related to mining operations and did not have regulations for public safety in association with mining operations. Prior to 1981, mine openings such as shafts, adits, and other access to mine workings were left open in many cases when the mining operations ceased. These open, abandoned mine workings are a safety and/or health concern to the public as the workings can pose a risk of serious injury and/or toxic threat for humans. In addition, abandoned mines can contribute heavy metals and other contaminants to surface and ground water. This uncontrolled drainage can pose a health risk to humans and be a source of environmental degradation.

The BLM has conducted inventories of abandoned mine sites and some remediation, such as stabilizing sites, closing mine openings, and/or reclaiming mine-related land disturbances within the RFO. In the RFO, the areas most likely to have abandoned mine openings are in the vicinity of Marysvale and the

Henry Mountains. In the 1990s, many abandoned mines around Marysvale were closed as part of Abandoned Mined Land projects as completed by the State of Utah in cooperation with the BLM; however, many abandoned mine workings are still present. The BLM and the State will continue to inventory and close abandoned sites that are a safety and/or health concern for the public and an environmental concern.

3.7.3.1 Potential Hazards

Abandoned mine sites may pose hazards to human health, the environment, and physical safety. Threats to health and the environment include: acid drainage, heavy metal contamination, metal contaminated tailings impoundments, stored chemicals, and leaking containers. Changes in the chemical composition or soil loss near abandoned mine sites can result in alterations or loss of natural habitat for native wildlife. Abandoned mines may also impact surface and ground water. The impacts to water quality are generally the result of contaminated sediments or metal salts that can affect human health, fisheries, wildlife, and vegetation. Contaminants from tailings impoundments, waste rock piles near abandoned mill sites and mine workings can become air borne or water transported and become a risk to public health. Releases of hazardous substances from waste piles and acid drainage can affect lands beyond abandoned mine sites.

Open, abandoned, underground mines are unstable; mine adits (horizontal openings at the surface) may collapse, internal supports for levels (passages within the mine) may fail, and mine shafts (vertical openings at the surface) and winzes or raises (vertical connections between mine levels) may be obstructed or unseen. Toxic or lethal air conditions may exist due to low concentration of oxygen or high concentrations of other gases. Exposure to radiation in the mine, particularly radon gas, can be a hazard, especially in abandoned uranium mines in southern Utah.

Abandoned, unreclaimed surface mines can include hazards related to physical safety. Such features could include abandoned unstable highwalls, waste dumps and other slopes, and can also include equipment.

Water can be a hazard in flooded underground mines; the water may cover and conceal sharp or other hazardous objects and winzes or raises to a lower level. Water at surface mines can also be a hazard and safety risk by concealing objects or concealing abrupt changes in surface.

Hazardous wastes, such as explosive materials and chemicals could be present. Explosive materials can be a safety hazard and can be in a deteriorated, unstable condition. Containers of chemicals can be damaged, in a state of deterioration, or otherwise leaking. Tanks, holding or processing ponds, or other fluid containment structures may have lost integrity and may allow for leakage and seepage into soils, transport by surface and ground water, or other contamination of the environment and threat to human health. Illegal dumping of hazardous wastes within abandoned mines is also a possibility.

3.7.3.2 Abandoned Mine Management/Reclamation Activities

The BLM has recently developed the Abandoned Mine Lands program (AML) that addresses the environmental and safety hazards associated with AML sites on public lands. Once the sites are identified, they are prioritized, and appropriate actions are taken on those historic mine sites that pose health and safety risks. The BLM's priority for reclamation of environmentally contaminated sites is based on risk assessments that address threats to human health and the environment. For example, abandoned mine land sites that impact water quality are usually a greater concern and receive a higher priority for reclamation than those that do not impact water quality. See Chapter 2 for AML program priorities.

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter describes environmental consequences that may result from implementing each of the five alternatives described in Chapter 2. The purpose of this chapter is to analyze and disclose potential impacts of the Federal action on the human environment. An impact is defined as a modification of the existing environment that is brought about by an outside action. The Federal action for this Environmental Impact Statement (EIS) is the Bureau of Land Management's (BLM's) land use plan revision for the Richfield Field Office (RFO), including the ultimate decision of selecting an alternative or components of various alternatives that will direct future land management within the RFO.

This chapter is organized by resource topic and contains potential impacts that could or would result from the management actions under Alternatives N, A, B, C, and D. Topics are presented in the same order as in Chapter 3. Discussions of cumulative impacts, irretrievable and irreversible commitment of resources, unavoidable adverse impacts, and the relationship between local short-term and long-term uses concludes this chapter. The baseline data used for determining the potential impacts are the current resource conditions described in Chapter 3.

4.2 ANALYSIS BACKGROUND

4.2.1 Approach to the Analysis

This impact analysis identifies effects that enhance and improve a given resource from a management action and those that have the potential to degrade a resource. The analysis describes the actions that have direct and immediate effects, as well as those that result in indirect effects. If an activity or action is not addressed in a given section, no impacts are expected or the impact is expected to be negligible, based on existing knowledge.

The detailed impact analyses and conclusions are based on the BLM's knowledge of resources and the planning area, reviews of existing literature, and information provided by experts in the BLM, cooperating agencies, other agencies, interest groups, and concerned citizens. Impacts on resources and resource uses are analyzed and discussed in detail commensurate with resources issues and concerns identified throughout the process. Geographic information system (GIS) analyses and data from field investigations were used to quantify effects where possible. However, in the absence of quantitative data, qualitative information and best professional judgment was used. Acreage calculations and other numbers used in this analysis are approximate and provided for comparison and analytic purposes; they do not necessarily reflect exact measurements on-the-ground. At times, impacts are described using ranges of potential impacts or in qualitative terms.

Many management actions presented in Chapter 2 would not result in direct, on-the-ground changes. However, the analysis considers impacts that could eventually result in on-the ground changes by planning for uses on BLM-administered surface estate and Federal mineral estate during the life of the RMP. Impacts could occur from management of both BLM-managed surface estate and Federal mineral estate. BLM-administered Federal minerals occur beneath surface estate managed by BLM as well as beneath surface estate within State or private jurisdiction (known as split-estate lands). Some BLM management actions may affect only certain resources and alternatives.

4.2.2 Impact Analysis Terminology

This chapter describes the direct, indirect, and cumulative impact of implementing the No Action Alternative and each of the four action alternatives. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by the action and occur later or farther away but are still reasonably foreseeable. Cumulative impacts are the effects on the environment that result from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

Impacts are also described as to their context, intensity, and duration. Context relates to environmental circumstances at the location of the impact and in the immediate vicinity, affected interests, and the locality. Intensity refers to the severity or extent of the impact or magnitude of change from existing conditions. Duration refers to the permanence or longevity of the impacts, which is depicted as short-term or long-term. Short-term is defined as anticipated to begin and end within the first five years after the action is implemented. Long-term is defined as lasting beyond five years.

4.2.3 Assumptions for Analysis

Assumptions are made in the analysis regarding level of land use activity, resource condition, and resource response. Potential impacts and their significance are determined based on these assumptions. The following assumptions were used in the analysis, and apply to all alternatives unless otherwise noted.

- Management actions proposed in the alternatives apply to BLM-administered public lands and resources only. However, cumulative impacts analyses consider potential actions by individuals or entities other than the BLM.
- The alternatives would be implemented as described in Chapter 2 and would be implemented in accordance with applicable laws, regulations, and standard management guidelines.
- BLM policies, including Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration, and Utah's Standards for Rangeland Health and Guidelines for Livestock Grazing, would be applied as appropriate across all alternatives. Rangeland health would be assessed according to the Standards, and the Guidelines would provide strategies to achieve Standards and other desired resource conditions and management objectives.
- Funding would be available to implement the alternatives, as described in Chapter 2.
- Appropriate maintenance would be carried out to maintain the functional capability of all developments (e.g., roads, fences, and other facilities).
- Restrictions or prohibitions on activities in specific areas would protect sensitive resources.
- Mitigation requirements would be applied as described and would prevent or limit direct impacts associated with land use activities, or would result in reclamation of the land after the activity has been completed.
- Monitoring would be completed as indicated and adjustments or revisions made as identified.
- The level of activity on BLM-administered land is expected to increase, based on historical trends, existing land use agreements such as leases or permits, and statements of interest in land use by individuals and industry organizations.

4.2.4 Availability of Data and Incomplete Information

Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA) require that agencies evaluating reasonably foreseeable significant adverse effects on the human environment in an EIS identify incomplete or unavailable information, if that information is essential to a reasoned choice among alternatives (43 Code of Federal Regulations [CFR] 1502.22). As is typical in programmatic planning efforts, site-specific data are used to the extent possible but may not be entirely available. The best available information that is pertinent to management actions was used in developing this Draft Resource Management Plan/Draft Environmental Impact Statement (DRMP/DEIS). Considerable effort has been taken to acquire and convert resource data into digital format for use in this DRMP/DEIS—data was acquired from both BLM and from outside sources, such as the Utah Division of Wildlife Resources (UDWR). However, certain information was unavailable for use in developing this DRMP/DEIS. The following types of data are unavailable for all or portions of the planning area:

- Field inventory of soils and water conditions;
- Field inventory of wildlife and special status species occurrence and condition;
- American Indian traditional use areas;
- Surveys for cultural or paleontological resources.

For these resources (and others where information was unavailable or incomplete), estimates were made regarding the number, type, and significance based on previous surveys and existing knowledge. Additionally, some impacts cannot be quantified given the proposed management actions. Where this gap occurs, impacts are projected in qualitative terms. In many situations, subsequent project-level analysis will provide the opportunity to collect and examine site-specific inventory data required to determine appropriate application of RMP-level guidance. In addition, ongoing inventory efforts by BLM and other agencies within the planning area continue to update and refine information that will be used to implement this RMP.

4.3 IMPACTS TO PHYSICAL, BIOLOGICAL AND CULTURAL RESOURCES

4.3.1 Air Quality

Impacts to air quality come primarily from sources outside the planning area, such as regional haze, or from activities on private lands within the planning area (including increased vehicle traffic on highways and roads, and industrial development such as coal-fired power plants) and are thus outside the scope of this DRMP/DEIS. However, short-term air quality effects could result from fugitive dust and smoke that both directly and indirectly relate to proposed management actions. Main sources of fugitive dust include vehicle and equipment use on unpaved roads, road construction and maintenance activities, and mineral operations. Main sources of smoke arise from wildland fire use and prescribed fires. Wildfire smoke is outside the scope of this document, but will likely remain the largest source of emissions in the next 15 years.

Methods and Assumptions

The analysis of potential impacts to air quality is based on the expertise of BLM resource specialists at the Richfield FO and Utah State Office. These specialists possess an extensive knowledge of air quality within the planning area. The impact analysis is also based on review of existing literature and information provided by experts in the BLM and other agencies.

Quantifying air quality effects is difficult due to the lack of air quality monitoring data for the planning area. Due to its remoteness and the lack of potential factors that could influence a change in air quality levels, such as large population centers and industrial development, the State of Utah does no routine monitoring in the planning area. In absence of quantitative data, the BLM relied on best professional judgment. Impacts are sometimes described using ranges of potential impacts or in qualitative terms, if appropriate.

Environmental Consequences

Impacts to air quality would likely result from actions proposed under the following resource management programs:

- Air Quality, Soil Resources, and Water Resources
- Vegetation and Fire and Fuels Management
- Travel Management
- Minerals and Energy

Other programs were determined to have little or no impact on air quality.

Alternative N: No Action

Impacts from Air Quality, Soil Resources, and Water Resources

Application of best management practices (BMPs) (as listed in Appendix 14) and specific mitigation measures identified in activity level planning and NEPA level review would prevent or reduce impacts to air quality. Mitigation during surface disturbing projects would reduce or eliminate the potential for fugitive dust.

Impacts from Vegetation and Fire and Fuels Management

Wildland fires are a source of air pollutant emissions during combustion of vegetation. The amount of emissions depends on the size and intensity of the fire, the fuel type and moisture content, and available fuel load. The level of resulting air quality impact depends on the amount and duration of emissions, atmospheric dispersions conditions, and terrain. Under all alternatives, BLM intends to comply with the Utah Smoke Management Plan (UDAQ 2003), implementing actions and mitigations designed to minimize impacts from both wildland fire and prescribed fire.

Alternative N, under the 2005 Land Use Plan Amendment for Fire and Fuels Management, allows for the full range of fire and fuels management actions to achieve ecosystem sustainability. This alternative allows a wide range of treatment of vegetation (including mechanical, wildland and/or prescribed fire, and chemical methods). Some of the treatments methods proposed (e.g., mechanical and chemical) would result in localized and short-term impacts to air quality, including fugitive dust, emission/exhaust from equipment, and chemical fumes. The use of naturally ignited wildland fire and prescribed fire would result in smoke emissions in the immediate area. In general, these impacts would be minor, although moderate intensity impacts could be experienced in the immediate vicinity of the treatment areas. The effects on air quality from wildland fires would potentially be of longer duration than planned ignitions, depending on the vegetation types involved. Wildland fires, however, would result in greater, direct impacts resulting from smoke and fire abatement efforts. Indirect impacts from wildfires could stem from reduced or eliminated vegetation cover, exposing the underlying soil to wind and water erosion, which would in turn increase levels of fugitive dust (in the short-term) during wind events until the area revegetated.

Alternative N's wildland fire use, prescribed fire, and non-fire fuel treatments would minimize smoke and other emissions in the short-term, but could result in increased fuel build-up, more frequent and larger wildland fires, and greater emissions in the long-term until enough treatment has occurred to bring ecosystems within properly functioning parameters.

Impacts from Travel Management

Off-highway vehicle (OHV) use impacts air quality by increasing fugitive dust levels, particularly in heavily-used areas during times of drought when soil is drier and the potential to generate dust is greater. Since off-road vehicle use contributes to air impairments from fugitive dust, closing areas to cross-country, off-highway vehicle use, except for authorized administrative and emergency purposes, and limiting travel to designated routes would limit impacts to air quality. Fugitive dust would be minimal or nonexistent on 214,000 acres (10%) of the RFO that are closed to motorized and mechanized vehicle use, although some dust could blow in from adjacent routes along the boundaries of such areas.

The public would have access to 4,315 miles of unpaved routes in the RFO under Alternative N. Use of these routes would continue to create localized air pollution in the form of light fugitive dust.

Unimproved routes, due to their often rough condition, help keep vehicle speeds down, further reducing the levels of dust. Route maintenance activities, although minimal and designed solely to correct those conditions that are unsafe or hazardous, would also result in fugitive dust. Watering and the use of chemical dust suppressants would greatly reduce the amount of dust emissions. Closing 65 miles of routes would result in reduced amount of fugitive dust within the immediate vicinity of the closed routes. Overall impacts to air quality from travel on unpaved routes and maintenance/improvement activities would be localized and short-term, and could be rated from negligible to minor.

Under Alternative N, motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO. Since the vast majority of routes are not paved, use of these routes would result in fugitive dust. In addition, 1,636,400 acres (77%) of public lands would be open to motorized and mechanized cross-country vehicle use under Alternative N. Vehicle use, specifically OHV use, in open areas compared to designated and existing routes has the potential to cause the greatest amount of direct impacts to air quality in terms of fugitive dust. These impacts would be negligible to minor on the overall air quality of the planning area, depending upon the level of use, speed of vehicle, and climatic conditions (e.g., amount of wind, humidity, and soil moisture). Route maintenance activities, which would be limited to existing route types, maintenance levels, and frequencies, would also result in fugitive dust. Watering and the use of chemical dust suppressants would greatly reduce the amount of dust emissions from maintenance and on haul roads from gravel pits, mines, and oil drilling sites.

Impacts from Minerals and Energy

Air quality could be impacted during all phases of oil and gas development, including exploration, well development, production, and well abandonment. Equipment used for exploration and development emits particulate matter (PM), carbon monoxide (CO), nitrogen oxides, sulfur dioxide, and volatile organic compounds, including hazardous air pollutants. Heavy equipment used in well development, drilling, and construction activities could cause increases in particulate matter and tailpipe emissions. Additionally, vehicle traffic on unpaved roads could cause increases in fugitive dust. Oil and gas production could cause emissions of nitrogen oxides and carbon monoxide. Glycol operations and flashing activities could produce particulate matter, sulfur dioxide, nitrogen oxides, and hydrocarbons. Additionally, flaring of gases would impact air quality from produced methane, hydrogen sulfide, soot or particulate matter, carbon monoxide, and nitrogen oxides.

Adherence to best management practices outlined in mining laws, plans of operation, pertinent restrictions, standard terms and conditions, etc., would help minimize such impacts (see Appendices 10

and 14). Closing 459,700 acres to fluids mineral leasing, withdrawing 169,480 acres to mineral entry, and closing 459,700 acres to mineral material disposal would virtually eliminate fugitive dust from mineral management within those areas. Overall impacts to air quality would be minor.

Alternative A

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same as described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N; although under Alternative A maximum acreage limits would be set (averaging 73,600 annually for all treatments). While no maximum treatment acreage limits exist under Alternative N, it is likely that more acres would actually be treated under that alternative in some years (active fire years) because it generally employs full use of wildland fire and allows for treatment of vegetation to reduce hazardous fuel and restore ecosystem function. Impacts to air quality under Alternative A would likely result in reduced smoke and other emissions in the short-term (as compared to Alternative N), but increased fuel build-up, more frequent and larger wildland fires, and increased emissions in the long-term.

Impacts from Travel Management

The types of impacts experienced as a result of travel management decisions under this alternative would be similar to those described under Alternative N. OHV use, which contributes to air impairments from fugitive dust, would continue on public lands within the RFO. Under Alternative A, motorized and mechanized vehicles would be limited to designated routes on 1,679,000 acres (79%) of the RFO, 449,000 acres (21%) of public lands would be open to cross-country motorized and mechanized vehicle use, and no areas would be closed to motorized and mechanized use. The amount of open areas, although greatly reduced as compared to Alternative N, would still result in the potential for air quality impacts (e.g., fugitive dust and emissions) from vehicle use in and near such areas. The remainder of the RFO would have motorized/mechanized use limited to designated routes (no areas would be closed). The public would have access to 4,312 miles of unpaved routes (slightly more than Alternative N), which could result in increased impacts to air quality from fugitive dust. The BLM would close 68 miles of routes (slightly more than those closed in Alternative N). Impacts from route maintenance/improvement activities would be the same as described under Alternative N. Overall impacts to air quality would be negligible to minor, depending upon the level of use, speed of vehicle, and climatic conditions (e.g., amount of wind, humidity, and soil moisture).

Impacts from Minerals and Energy

Under Alternative A, similar amounts of BLM lands would be closed to fluid mineral leasing (446,900 acres), withdrawn from mineral location (154,700 acres), and closed to mineral material disposal (446, 900 acres) as proposed under Alternative N, thus resulting in similar impacts.

Alternative B: Preferred Alternative

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would the same as described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would the same as described under Alternative N.

Impacts from Travel Management

The types of impacts experienced as a result of travel management decisions under this alternative would be similar to those described under Alternative N. Off-highway vehicle use, which contributes to air impairments from fugitive dust, would continue on public lands within the RFO. Under Alternative B, motorized and mechanized vehicles would be limited to designated routes on 1,909,200 acres (90%) of the RFO, 8,400 acres (<1%) would be open to motorized and mechanized vehicle use, and 210,400 (10%) would be closed to motorized and mechanized use. While motorized and mechanized vehicle use would be limited to designated routes on a similar number of acres as Alternative A, substantially fewer areas would be open to motorized and mechanized vehicle use under Alternative B, which would eliminate impacts from vehicle use in open areas. In addition, 10% of the RFO would be closed to motorized/mechanized use under Alternative B, which would decrease the potential for fugitive dust in those areas.

The public would have access to 4,176 miles of unpaved routes in the RFO. Use of these roads would continue to create localized air pollution in the form of light fugitive dust. Substantially more miles of routes would be closed (204 miles) as compared to either Alternative N or A, further reducing the level of fugitive dust near these closed routes. Overall impacts to air quality would be negligible to minor, depending upon the level of use, speed of vehicle, and climatic conditions (e.g., amount of wind, humidity, and soil moisture).

Impacts from Minerals and Energy

Under Alternative B, similar amounts of BLM lands would be closed to fluid mineral leasing (450,500 acres), withdrawn from mineral location (176,200 acres), and closed to mineral material disposal (450,500 acres) as proposed under Alternative N, thus resulting in similar impacts.

Alternative C

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would the same as described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternatives A and B, although under Alternative C fewer acres would be treated annually (up to 26,000 annually for all treatments). Thus, impacts to air quality under Alternative C would result in decreased smoke and other emissions in the short-term, but potentially increased fuel build-up, more frequent and larger wildfires, and increased emissions in the long-term as compared to Alternatives A and B.

Impacts from Travel Management

The types of impacts experienced as a result of travel management decisions under this alternative would be similar to those described under Alternative N. Off-highway vehicle use, which contributes to air impairments from fugitive dust, would continue on public lands within the RFO. Under Alternative C, motorized and mechanized vehicles would be limited to designated routes on 1,445,000 acres (68%) of the RFO, 683,000 (32%) would be closed to motorized and mechanized use, and no areas would be open to motorized and mechanized vehicle use. With greater area closed to motor vehicle use and no area open, overall fugitive dust within the RFO would likely be reduced.

The public would have access to 3,192 miles of unpaved routes in the RFO. Use of these roads would continue to create localized air pollution in the form of light fugitive dust. More miles of routes would be closed (1,188 miles) as compared to Alternative N, A or B, further reducing the level of fugitive dust near

these closed routes. Overall impacts to air quality would be negligible to minor, depending upon the level of use, speed of vehicle, and climatic conditions (e.g., amount of wind, humidity, and soil moisture).

Impacts from Minerals and Energy

Under Alternative C, more BLM lands would be closed to fluid mineral leasing and to mineral material disposal (586,300 acres); substantially more areas would be withdrawn from mineral location (331,100 acres), as compared to Alternatives N, A or B. The impacts to air quality described for Alternative N would therefore occur over less area. Overall impacts to air quality would be minor.

Alternative D

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would the same as described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would the same as described under Alternative C

Impacts from Travel Management

The types of impacts experienced as a result of travel management decisions under this alternative would be similar to those described under Alternative N. Off-highway vehicle use, which contributes to air impairments from fugitive dust, would continue on public lands within the RFO. Under Alternative D motorized and mechanized vehicles would be limited to designated routes on 972,800 acres (46%) of the RFO, 1,155,200 (54%) would be closed to motorized and mechanized use, and no areas would be open to motorized and mechanized vehicle use. With greater area closed to motor vehicle use and no area open, overall fugitive dust within the RFO would be reduced.

The public would have access to 3,043 miles of unpaved routes in the RFO. Use of these roads would continue to create localized air pollution in the form of light fugitive dust. More miles of routes would be closed (1,242 miles) as compared to any of the alternatives, further reducing the level of fugitive dust near these closed routes. Overall impacts to air quality would be negligible to minor, depending upon the level of use, speed of vehicle, and climatic conditions (e.g., amount of wind, humidity, and soil moisture).

Impacts from Minerals and Energy

Under Alternative D, substantially more BLM lands would be closed to fluid mineral leasing, closed to mineral material disposal (1,160,500 acres), and withdrawn from mineral location (903,900 acres), as compared to any of the other alternatives. The impacts to air quality described for Alternative N would therefore occur over much less area, with overall impacts to air quality being negligible.

4.3.2 Soil Resources

Soils within the RFO are susceptible to impacts from compaction and disturbance, which can lead to accelerated erosion, soil loss, and reduced productivity. Management actions that involve ground-disturbing activities, reducing vegetation cover, trampling, and using vehicles and heavy machinery can result in such impacts, especially in areas where natural erosion rates are very high due to soil or geologic factors. The greatest impacts to soil come from cross-country vehicle travel, the use of vehicles on poorly constructed routes, mineral operations, and visitor use. The effects of cross-country travel include reduction or disturbance of surface cover (e.g., soil-holding vegetation, litter, and rocks), displaced soil particles, increased soil compaction, creation of new flow paths and channels, and increased runoff. All of these combine to increase soil erosion. The effects of travel on poorly constructed routes are similar to the

cross-country effects. Thus, the greater the number of poorly constructed routes left open, the greater the impacts through compaction and erosion.

Surface disturbances generally increase soil susceptibility to erosion and compaction, which in turn increase the potential for off-site movement and salinity and sediment delivery to streams, and increase the potential for adverse impacts on soil resources. However, there are times and situations when short-term activities that disturb soils may be necessary to make long-term improvements in soil condition and vegetation cover. Activities such as land treatment are expected to slow erosion rates, and improve soil productivity, water holding capacity, and nutrient cycling capability.

Proposed decisions allowing surface disturbing activities pose greater risks for adverse impacts to soils, and, in some places, their associated biological crusts (e.g., OHV open areas and certain activities allowed under VRM Classes III and IV). Decisions restricting surface disturbing activities are generally beneficial (e.g., OHV limited and closed areas, restrictions to vegetation and surface disturbance under VRM Classes I and II, mineral withdrawals, and special designations). Some surface disturbing activities such as hazardous fuels treatments and other vegetation treatments could have adverse short-term, but beneficial long-term impacts. Sometimes soil disturbance could be required for successful restoration treatments such as tillage to alleviate compaction or scarifying to incorporate seed. Although implementing Rangeland Health Standards, BMPs, and other soil protection measures to maintain long-term soil productivity is common to all alternatives, the risks of adverse soil impacts due to surface disturbing activities does vary by alternative.

Methods and Assumptions

This analysis was based on the following assumptions:

- Soil resources would be managed to meet Standard 1 of Utah's Standards for Rangeland Health and Guidelines for Livestock Grazing.
- Substantial surface disturbance to soil, including compaction of soil or loss of vegetative cover, could increase water runoff and downstream sediment loads and lower soil productivity, thereby degrading water quality, altering channel structure, and affecting overall watershed health.
- The degree of impact attributed to any one disturbance or series of disturbances would be influenced by several factors, including location within the watershed, time and degree of disturbance, existing vegetation, and precipitation.
- An increase of pollutants in surface waters would affect other beneficial uses (e.g., stock watering, irrigation, and/or drinking water supplies).
- Roads and trails would be properly designed.
- Surface disturbances would be restored or mitigated.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources in the RFO, review of existing literature, and information provided by other agencies. Effects are quantified where possible. Spatial analyses were conducted using GIS data and analyses. Impacts are described using ranges of potential impacts or in qualitative terms, if appropriate.

Environmental Consequences

Impacts to soils would likely result from actions proposed under the following resource management programs:

- Air Quality, Soil Resources, and Water Resources
- Vegetation and Fire and Fuels Management

- Visual Resources
- Special Status Species
- Fish and Wildlife
- Wild Horses and Burros
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on soils.

Alternative N: No Action

Impacts from Air Quality, Soil Resources and Water Resources

Specific stipulations and permit requirements, including reclamation plans, to protect soils during and after surface disturbing activities in the RFO, would minimize the types of impacts described above. These include restrictions that all surface disturbing activities be the minimum necessary to complete the task; reclamation plans for road upgrades and/or realignments; specific soil stability measures for all surface disturbing activities and saline soils; and closing and reclaiming temporary roads, facilities, and improvements that are unnecessary. Impacts would be minor RFO-wide, but potentially moderate at specific sites. In the long-term, these actions would reduce soil compaction and surface runoff.

Impacts from Vegetation and Fire and Fuels Management

Managing vegetation communities and associations to achieve the Standards for Rangeland Health could increase organic matter content, structure, and permeability, thereby improving the overall productivity of soils. In addition, this alternative allows for only limited treatment of vegetation, although a full range of tools would be available (including mechanical, wildland and/or prescribed fire, and chemical methods). Restoration and vegetation treatment projects aimed at improving vegetation health and cover would reduce erosion potential and increase soil productivity. However, mechanical, manual, or chemical treatments could result in soil compaction, some loss in vegetation cover, erosion, and changes in soil chemistry, and could thus result in erosion. Restrictions in sensitive areas would help protect fragile soil resources in such habitats. These management actions would improve soil stability and prevent soil loss due to erosion. Initially, vegetation treatments change the vegetation structure and increase local erosion and sedimentation rates. In the long-term, vegetation treatments would improve cover and increase plant diversity, thereby stabilizing soil, improving overall watershed function and condition, and allowing greater infiltration and soil moisture storage. Therefore, impacts would generally be beneficial overall.

The majority of impacts to soils from vegetation management would occur from fire and fuels management. Impacts to soil resources related to wildland fires are complex; involving changes in nutrient cycling, water infiltration and runoff, and erosion potential. Impacts are a function of the severity of the burn, whether the vegetation community is adapted to fire and its fuel condition class and the condition of soils (e.g., disturbed) before the burn. Alternative N allows for the full range of fire and fuels management actions to achieve ecosystem sustainability. High severity fires remove vegetation and soil surface cover, which drastically increases the potential for wind and water erosion and sedimentation to streams. Use of heavy fire equipment off and on road to suppress the fires would cause compaction,

and chemical retardant could alter soil chemistry. Management prescriptions and post fire rehabilitation would minimize some of these impacts. Suppressing fires in areas of excessive fuel buildup could minimize, in the short-term, high severity fires and associated impacts of vegetation loss and erosion. However, continued suppression of wildland fires could result in increased fuel loading and increase the risk of high severity wildfires and adverse soil impacts in the longer term. Impacts to soils associated with wildfire could be much greater due to a high percentage of vegetative cover loss and intense deep heating, resulting in soil sterilization and creation of hydrophobic surface layers.

Impacts from Visual Resources

In general, VRM class designations would limit or allow surface disturbing activities in certain areas, thereby affecting soil resources. VRM Classes I and II would be aimed at greater retention of existing landscape character than Classes III or IV. Under Alternative N, none of the lands managed by the RFO are classified as VRM Class I; 529,500 acres (25%) would be managed as VRM Class II; 569,000 (27%) would be managed as VRM Class III; and 1,029,500 (48%) would be managed as VRM Class IV. Managing areas as VRM Class II would reduce surface disturbance and retain existing vegetation, thereby reducing soil erosion. Areas managed as VRM Class III or IV (75% of the RFO under this alternative) would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance, resulting in the types of impacts discussed on Page 4-8. These areas could be subject to such actions as complete vegetation removal, which drastically increases the potential for wind and water erosion and sedimentation to streams.

Impacts from Special Status Species

This alternative (along with all the other alternatives) prohibits actions that destroy, adversely modify, or fragment Federally-listed species habitat; proposes habitat improvements for special status species; generally retains special status species habitat in Federal ownership; and considers special status species habitat in all wildland fire suppression efforts. All of these actions would have beneficial impacts on soils by helping to minimize surface disturbance, thereby maintaining soil productivity and limiting erosion. Springtime seasonal restrictions placed on surface disturbing activities can also minimize compaction by reducing equipment operations when soils are moist and most susceptible.

Impacts from Fish and Wildlife

Proposed decisions for fish and wildlife, such as avoiding habitat fragmentation, reducing road densities, and restricting surface disturbance or surface occupancy within 500 feet of riparian areas, would have beneficial impacts on soils by reducing erosion, compaction, or vegetation loss within the riparian buffer zone. These management actions would improve soil stability and prevent soil loss due to erosion.

This alternative also proposes habitat treatments to meet terrestrial, aquatic and riparian habitat objectives. These vegetation treatments would initially change the vegetation structure and increase local erosion and sedimentation rates. However, in the long-term, vegetation treatments would improve cover and increase plant diversity, thereby stabilizing soil, improving overall watershed function and condition, and allowing greater infiltration and soil moisture storage. Therefore, impacts would be beneficial overall.

Impacts from Wild Horses and Burros

In general, the greater the number of burros, the greater the possibility of adverse impacts on soil resources due to trampling, compaction, and reduced vegetation cover. Under this alternative, 100 animal unit months (AUMs) are allocated to burros in the Canyonlands Herd Management Area (HMA), although no appropriate management level (AML) is established. These numbers are greater than Alternative A (which establishes an AML of zero and allocates no AUMs) but less than B, C, or D (which establish a herd size of between 120 to 200 head). Thus, impacts to soils under Alternative N would be minimal due to the small herd size.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for soils.

Impacts from Forestry and Woodland Products

Conducting commercial timber harvests on a case-by-case basis west of Capitol Reef National Park could result in localized surface disturbance, soil compaction, and changes in vegetation community composition and structure. Soil compaction would reduce water infiltration and could reduce plant growth and nutrient cycling. Indirectly, this could increase sediment loading in streams and reduce riparian-wetland function. Implementing mitigation measures would reduce the long-term effects of these impacts. Removal of dead and down material would reduce large-size fuels and could alter the physical properties of soil resources.

This alternative allows for harvesting of forest and woodland products across most of the RFO (all areas, outside of WSAs, on a case-by-case basis). Harvesting of forest and woodland products would have localized, minor to moderate impacts on soils from vehicle use to access the harvesting site and from loss of vegetative cover. Indirect effects would include reduced soil infiltration, increased erosion and sedimentation, increased soil surface temperatures, and short or long-term changes in species composition and/or community structure. However, removal of pinyon and juniper trees from areas where they have invaded or areas where canopy densities have increased results in reduced amounts of bare ground and increased litter at the soil surface. Since pinyon pine and juniper vigorously compete with other plants for available soil water, their removal allows for regrowth of grasses and shrubs in the understory vegetation. This acts as a protective vegetative cover for the soil surface, resulting in decreased erosion.

Impacts from Livestock Grazing

Under this alternative, 138,952 acres would continue to be unavailable to livestock grazing, while 1,989,048 acres would continue to be available to grazing. Livestock grazing can increase soil compaction in trailing, watering, and mineral supplement areas. However, livestock grazing within the RFO would be managed in keeping with applicable laws and regulations, and with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration. Adhering to these standards and guidelines would minimize impacts from livestock grazing by maintaining plant vigor and increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, and productivity. This would ensure that upland soils would exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform. Impacts would therefore be minor area-wide, but potentially moderate in specific areas where livestock tend to congregate.

Impacts from Recreation

Recreational activities have site-specific impacts to soil resources near frequent and high-use areas such as campgrounds, parking lots, trailheads, and other recreation-related use areas. Long duration trail use (e.g., walking, equestrian, OHV, and mountain biking), especially during wet periods, could result in soil compaction and loss of vegetation cover, and indirectly could lead to increased erosion and loss of soil resources. Large group recreation events and camping could compact soils, which could change infiltration rates and the distribution of water in soil and increase surface runoff. Increased runoff and soil erosion would lower the functioning condition of the riparian area. These impacts would be site-specific and localized (Hammitt and Cole 1998).

Visitor use is expected to increase throughout the RFO. Under this alternative, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore Field Office [FO]) is identified and managed as an extensive recreation management area (ERMA). Management of recreation in ERMAs is

restricted to custodial actions only, with no special prescriptions identified that would affect soils. Thus, intensively used recreation sites (such as near Otter Creek, Big Rock, Factory Butte, Dirty Devil/Robbers Roost) would experience more intense, regular impacts to soils. Impacts to soils in these areas occur from off-road vehicle use and use by large numbers of visitors in a limited space. These activities result in loss of vegetation cover and soil compaction, leading to increased wind and water erosion. These impacts to soils would continue under this alternative, or even increase as visitor use increases.

Impacts from Travel Management

Generally, the more area open to OHV use, the greater the potential for adverse impacts to soil resources from trampling of vegetation and biological soil crusts, which leads to compaction and accelerated erosion. Limiting travel to designated routes confines the impacts to areas already disturbed and/or hardened for vehicle use. Under this alternative, 1,636,400 acres (77%) of the RFO would be open to motorized and mechanized vehicles, allowing potential impacts to soil over a large portion of the RFO; motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO; and 214,000 acres (10%) of the RFO would be closed to motorized and mechanized vehicle use. The public would have access to 4,315 miles of unpaved routes in the RFO. Use of these routes would continue to create the potential for soils impacts in the immediate vicinity of these routes.

Among the alternatives, Alternative N would have the greatest adverse impacts to soils due to the large amount of lands open to cross-country motorized and mechanized use.

Impacts from Lands and Realty

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws would provide protection to soils from the impacts of mining exploration and development which could cause soil compaction and erosion. This alternative proposes a total of 169,480 acres of withdrawals. Mining disturbance and associated soil resource impacts would therefore not occur in these areas.

Retaining habitat for listed and candidate species in Federal ownership would continue to provide protection to soils in these areas. Identifying 760 acres as available for sale would make these lands susceptible to increased impacts to soils compared with retaining the land in Federal ownership since the BLM would implement best management practices for the protection of soils in any actions it authorizes.

Any new land use authorizations (ROWs, permits, leases, easements, etc.) could impact soils through compaction and vegetation removal, which could lead to erosion. Under this alternative, all Areas of Critical Environmental Concern (ACECs) (14,780 acres), eligible WSR corridors (12 segments – 135 miles), areas closed to oil and gas leasing (459,700 acres), and areas open to oil and gas leasing with no surface occupancy (NSO) (22,600 acres) would be managed as right-of-way (ROW) avoidance areas (with exceptions granted only if the proposed authorization would not create substantial surface disturbance or would create only temporary impacts). Thus, impacts to soils in these avoidance areas would be negligible to minor and localized.

Impacts from Minerals and Energy

Disturbance of soils associated with mineral resource development would contribute to adverse impacts to soils, including loss of vegetative cover and soil productivity. In particular, noxious weed infestation resulting from disturbance of reclamation-limited soils would impact soil productivity. Biological soil crusts would potentially be crushed during surface disturbance and would no longer be protected from wind and/or water erosion.

The acreage in each leasing category (e.g., standard conditions, controlled surface use [CSU] and/or timing limitations, no surface occupancy, and closed, listed from greatest to least amount of surface

disturbance) would quantify impacts to soils in terms of acres of surface disturbance. Generally, areas that are closed to development or subject to no surface occupancy would experience little or no surface disturbance due to minerals development; thus, negligible or no adverse impacts to soils would occur. Areas subject to standard conditions or conditions of controlled surface use and/or timing limitations would experience short- and long-term impacts to soils from surface disturbance associated with minerals development. These short- and long-term adverse impacts would include destruction of biological soil crusts; erosion and subsequent sedimentation of surface waters; changes in surface hydrology and infiltration; and possible alteration of soil chemistry and/or productivity by noxious weeds.

Under this alternative, 459,700 acres would be closed to leasing, 22,600 acres would be open to leasing with no surface occupancy, and 1,645,700 acres would be open to leasing subject to standard conditions or conditions of controlled surface use and/or timing limitations. Closing or withdrawing areas from mineral operations would prevent impacts to soils within those areas. In addition, adherence to best management practices outlined in mining laws, plans of operation, pertinent restrictions, standard terms and conditions, etc., would help minimize impacts to soils.

Impacts from Special Designations

Wilderness Study Areas

Managing WSAs pursuant to the Interim Management Policy for Lands Under Wilderness Review (IMP) would prevent most ground disturbing activities. This would result in protection for soil resources.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible wild and scenic rivers would help protect soil by preventing ground disturbing activities in the river corridors. All eligible segments (12 segments – 135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would benefit soils by limiting ground disturbance in these areas.

Areas of Critical Environmental Concern

Although ACEC designation alone does not necessarily provide protection, management actions included in ACECs are often more restrictive, which indirectly provides protection for soils. Protections associated with ACEC designation that would affect soils include managing oil and gas leasing as closed or open with no surface occupancy; more restrictive VRM designations; restricting livestock grazing; and travel limitations. Alternative N continues the designation of four ACECs (14,780 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; unavailable for livestock grazing in three of the four ACECs; and acquisition of inholdings) would reduce surface disturbing activities within those four ACECs, protecting soil resources.

Alternative A

Impacts from Air Quality, Soil Resources and Water Resources

Impacts would be the same as described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N, although under Alternative A maximum treatment acreage limits would be set (averaging 73,600 annually for all treatments). No target (maximum or minimum) treatment acreage limits would be set under Alternative N. It is therefore likely that in some years, fewer acres would be treated under that alternative; however, in other years (when there are numerous wildland

fires) more acres could be treated because the 2005 Land Use Plan Amendment for Fire and Fuels Management allows the full range of fire and fuels management actions to achieve ecosystem sustainability.

Full suppression of wildland fires is not mandated under Alternative A. Thus, impacts to soils under Alternative A would likely result in decreased short-term impacts (altered vegetation structure and increased local erosion and sedimentation rates) as compared to Alternative N. However, continued suppression of wildland fires could result in increased fuel loading and increase the risk of high severity wildfires and adverse soil impacts in the longer term. Impacts to soils associated with wildfire would then be much greater in the long-term due to a high percentage of vegetative cover loss and intense deep heating from high intensity fires, resulting in soil sterilization and creation of hydrophobic surface layers.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N. Under Alternative A, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 0 acres would be designated as VRM Class II; 392,800 (18%) would be designated as VRM Class III; and 1,288,300 (61%) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate to major modifications in the existing character of the landscape, with accompanying surface disturbance. These areas could be subject to such actions as complete vegetation removal, which drastically increases the potential for wind and water erosion and sedimentation to streams. Thus, this alternative has the greatest potential to impact soils.

Impacts from Special Status Species

The types of impacts experienced as a result of special status species management would be similar to those described under Alternative N. However, this alternative includes additional strategies to avoid or reduce fragmenting habitat (including employing directional drilling for oil and gas; closing and reclaiming roads; mitigating the effects of proposed projects that have the potential of causing long-term or permanent impacts or losses of habitat; and using species-specific buffers for surface-disturbing activities). All of these actions would have beneficial impacts on soils by helping to maintain soil productivity and limit erosion. Springtime seasonal restrictions placed on surface disturbing activities can also minimize compaction by reducing equipment operations when soils are moist and most susceptible.

Impacts from Fish and Wildlife

The types of impacts experienced as a result of fish and wildlife management would be similar to those described under Alternative N. However, this alternative proposes restricting surface disturbance or surface occupancy within 330 feet of riparian areas (versus 500 feet for Alternative N), and includes less restrictions on OHV use in crucial wildlife habitats. These management actions would increase the potential for soils impacts under this alternative.

Impacts from Wild Horses and Burros

In general, the greater the number of burros, the greater the possibility of adverse impacts on soil resources. Under this alternative, no AUMs would be allocated to burros in the Canyonlands HMA, and the AML would be set at zero. Keeping the AML at zero would eliminate impacts to soils caused by trampling, compaction, and reduced vegetation cover.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for soils.

Impacts from Forestry and Woodland Products

This alternative allows for harvesting of forest and woodland products across most of the RFO (all areas, outside of WSAs) where sustainable and compatible with restoring, maintaining, or improving forest health. The types of impacts would be similar to those described for Alternative N. However, this alternative includes objectives to emphasize woodland health, one component of which is maximizing soil productivity and minimizing soil loss. These objectives would be emphasized and addressed for harvesting and mitigation included as appropriate to reduce the potential for soil compaction, erosion, etc. Thus, management of forestry and woodland products under Alternative A would have less potential to adversely impact soils than Alternative N and may result in beneficial impacts by improving woodland health.

Impacts from Livestock Grazing

Under this alternative, 102,002 acres would be unavailable to livestock grazing, while 2,025,998 acres would be available for grazing. Livestock grazing can increase soil compaction in trailing, watering, and mineral supplement areas. However, livestock grazing within the RFO would be managed in keeping with applicable laws and regulations, with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration and with BLM's riparian policy. Adhering to these statewide standards, guidelines, and policy would minimize impacts from livestock grazing by maintaining plant vigor and increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, and productivity. This would ensure that upland soils would exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform. Impacts would therefore be minor area-wide, but potentially moderate in specific areas where livestock tend to congregate.

Impacts from Recreation

Under Alternative A, five SRMAs (516,400 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Limiting OHV use in the Otter Creek Reservoir SRMA to designated routes would maintain existing soil, water, and riparian resource conditions by concentrating impacts to already disturbed areas and reducing the extent of soil compaction. Maintaining the existing condition of riparian-wetland areas would reduce soil erosion. Reducing the extent of soil compaction would indirectly maintain existing infiltration and soil-water distribution patterns.

The construction of recreation facilities in the Big Rock SRMA could have localized short-term adverse impacts, including soil compaction, reduced infiltration, and changes in surface hydrology; long-term impacts to soils would be beneficial by concentrating use areas and thus limiting the extent of soil disturbance. Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for soil disturbance from recreation. Limiting OHV recreation use in the Dirty Devil/Robbers Roost SRMA to designated routes would reduce potential surface disturbance and localized soil erosion. Managing the Sahara Sands SRMA (12,300 acres) for a roaded natural recreational opportunity and the development of facilities would have site-specific impacts, including soil compaction, changes in surface hydrology, and increased runoff. Managing the Factory Butte SRMA (199,700 acres) for a motorized recreational opportunity and allowing moderate to extensive landscape modification would have potentially major impacts including vegetation removal, soil compaction, changes in surface hydrology, and increased runoff over a relatively large area.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, this alternative designates 449,000 acres (21%) of the RFO as open to motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,679,000

acres (79%) of the RFO; and 0 acres would be closed to motorized and mechanized vehicle use. The amount of open areas, although greatly reduced as compared to Alternative N, would still result in impacts to soil from vehicle use in those areas. The remainder of the RFO would have motorized/mechanized use limited to designated routes – the public would have access to 4,312 miles of unpaved routes while 68 miles of routes would be closed (both of which are essentially the same as Alternative N). No areas would be closed to motorized/mechanized use, with no accompanying benefits to soils.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty management would be similar to those described under Alternative N, although impacts to soils could occur over a larger area due to fewer acres proposed for withdrawal (154,700 acres under Alternative A), more acres proposed for disposal (13,400 acres), and fewer right-of-way avoidance areas (446,900 acres closed to oil and gas leasing). Thus, impacts to soils from surface disturbing activities (such as compaction and vegetation removal, which could lead to erosion) would be greater under this alternative as compared to Alternative N.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy management would be similar to those described under Alternative N. Development of oil and gas resources could affect soils due to the surface disturbances associated with such development. However, adherence to best management practices outlined in mining laws, plans of operation, pertinent restrictions, standard terms and conditions, etc., would help minimize impacts to soils. Closing or withdrawing areas from mineral operations would prevent impacts to soils within those areas (see Lands and Realty section for a discussion on withdrawals). This alternative proposes fewer acres of mineral withdrawals (154,700 acres), which would provide less protection to soils.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Under this alternative, no eligible river segments would be recommended as suitable, and no special management to protect the outstandingly remarkable values of these rivers would be provided. Thus, impacts to soils from surface disturbing activities (such as compaction and vegetation removal, which could lead to erosion) could occur in the river corridors. Potential impacts to soils from wild and scenic rivers decisions could be greatest under this alternative. However, since most of the eligible river segments (98 of the 135 total miles) are within WSAs, none of the above-described ground disturbing activities would occur in those river corridors.

Areas of Critical Environmental Concern

Under this alternative, no areas would be designated as ACECs. Providing no special management prescriptions would allow surface disturbing activities within those areas that could result in impacts to soils.

Alternative B: Preferred Alternative

Impacts from Air Quality, Soil Resources and Water Resources

Impacts would be the same as described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as described under Alternative A.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N. Under Alternative B, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 209,000 acres (10%) would be designated as VRM Class II; 410,800 (19%) would be designated as VRM Class III; and 1,061,300 (50%) would be designated as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV (which could result in large areas of moderate to major modifications in the existing character of the landscape, with accompanying surface disturbance and potential for wind and water erosion and sedimentation to streams), less of the RFO would be designated in these VRM classes than in Alternatives N or A, resulting in less potential impacts to soils as compared to those alternatives.

Impacts from Special Status Species

Impacts would be the same as described under Alternative A.

Impacts from Fish and Wildlife

Impacts to soils under this alternative would be similar to those described for Alternative A. However, this alternative also proposes temporal (winter and/or spring, depending on species) restrictions on surface disturbing activities (to protect wildlife during critical life stages) and restricts OHV use in crucial habitats. These management actions would also benefit soils by limiting activities during wet seasons (which would reduce soil compaction) and restricting activities that could result in vegetation loss. These management actions would improve soil stability and prevent soil loss due to erosion.

Impacts from Wild Horses and Burros

Under this alternative, 600 AUMs are allocated to burros in the Canyonlands HMA to meet an AML upper limit of 100. These numbers are greater than either Alternative N or A, but less than C or D (which establish a herd size of between 120 to 200 head). Since more burros result in a greater possibility of adverse impacts on soil resources due to trampling, compaction, and reduced vegetation cover, this alternative would potentially impact soils more than Alternative N or A, but less than C or D.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for soils.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forest and woodland products management would be similar to Alternative A, although more lands would be closed to this type of use under Alternative B (2 WSR segments – 59 miles as compared to zero segments under Alternative N). Thus, localized surface disturbance, soil compaction, and changes in vegetation community composition and structure would be reduced under this alternative as compared to Alternative A.

Impacts from Livestock Grazing

The types of impacts experienced as a result of livestock grazing decisions would be similar to Alternative A, although less lands would be available for grazing under this alternative (1,989,048 acres as compared to 2,025,998 acres under Alternative A). Thus, impacts to soils from livestock grazing (increased soil compaction in trailing, watering, and mineral supplement areas) could occur over a larger area, although the difference between alternatives is negligible.

Impacts from Recreation

Under Alternative B, five SRMAs (838,700 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Establishing a Factory Butte SRMA would limit the impacts of cross-country off-highway vehicle use on soils to a 2,600 acre area. Construction of facilities in the Big Rock SRMA would have localized short-term impacts including soil compaction, reduced infiltration, and changes in surface hydrology. Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for surface disturbance from recreation. Closing canyons within the Dirty Devil/Robbers Roost SRMA to OHV recreation use and limiting OHV recreation use to designated routes would reduce potential surface disturbance and localized soil erosion. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural recreation experience and the development of facilities would have site-specific impacts, including soil compaction, changes in surface hydrology, and increased runoff. Managing the Henry Mountains SRMA for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for soil disturbance.

This alternative, which establishes more areas as SRMAs than either Alternative N or A but less than Alternative C or D, would therefore provide more protection to soils as a result of recreation decisions than either Alternative N or A and less than Alternative C or D.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, this alternative designates only 8,400 acres (<1% of the RFO) as open to motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,909,200 acres (90%) of the RFO; and 210,400 acres (10%) would be closed to motorized and mechanized vehicle use. The amount of open areas, although greatly reduced as compared to Alternative N, would still result in impacts to soil from vehicle use in those areas. The remainder of the RFO would be have motorized/mechanized use limited to designated routes – the public would have access to 4,176 miles of unpaved routes. Under this alternative 204 miles of routes would be closed, allowing these areas to revegetate, which would benefit soils by reducing compaction, reducing runoff, increasing infiltration, and reducing erosion.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty management would be similar to those described under Alternative N, although impacts to soils could occur over a smaller area due to more acres proposed for withdrawal (176,200 acres under Alternative B) and more right-of-way avoidance areas (561,400 acres closed to oil and gas leasing or open with no surface occupancy, 2 suitable WSR segments – 59 miles, and 2 ACECs – 2,530 acres). Thus, impacts to soils from surface disturbing activities (such as compaction and vegetation removal, which could lead to erosion) would be less under this alternative as compared to Alternative N.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy management would be similar to those described under Alternative N. Development of oil and gas resources could affect soils due to the surface disturbances associated with such development. However, adherence to best management practices outlined in mining laws, plans of operation, pertinent restrictions, standard terms and conditions, etc., would help minimize impacts to soils. Closing or withdrawing areas from mineral operations would prevent impacts to soils within those areas (see Lands and Realty section for a discussion on withdrawals). This alternative proposes more acres of mineral withdrawals (176,200 acres) as compared to Alternatives N or A, which would preclude mineral and energy development in those areas and thus provide more protection to soils.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable wild and scenic rivers would help protect soil by preventing ground disturbing activities in the river corridors. Two suitable segments (59 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would benefit soils by limiting ground disturbance in these areas. Of the remaining segments, 63 miles are within WSAs, leaving 13 miles on which ground disturbing activities could potentially impact soils. This alternative would provide less protection to soils from WSR decisions than Alternatives N, C or D, but more than Alternative A.

Areas of Critical Environmental Concern

Alternative B designates two ACECs (2,530 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; unavailable for livestock grazing; and acquiring inholdings) would reduce surface disturbing activities within those areas, protecting soil resources.

Alternative C

Impacts from Air Quality, Soil Resources and Water Resources

Impacts would be the same as described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative A, although under Alternative C fewer acres would be treated annually (averaging 26,000 annually for all treatments). In addition, this alternative proposes using only natural processes to manage vegetation, which could be less effective than conventional vegetation treatments and would not be effective in all vegetation communities. This could result in the loss of existing vegetation cover, indirectly increasing erosion. Thus, impacts to soils under Alternative C would likely result in reduced short-term impacts (altered vegetation structure and increased local erosion and sedimentation rates) as compared to Alternative A, as well as reduced long-term impacts (improved vegetative cover and increased plant diversity, thereby stabilizing soil, improving overall watershed function and condition, and allowing greater infiltration and soil moisture storage).

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N. Under Alternative C, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 230,600 acres (11%) would be designated as VRM Class II; 509,100 (24%) would be designated as VRM Class III; and 941,400 (44%) would be designated as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV (which could result in large areas of moderate to major modifications in the existing character of the landscape, with accompanying surface disturbance and potential for wind and water erosion and sedimentation to streams), less of the RFO would be designated in these VRM classes than in Alternatives N, A or B, resulting in less potential impacts to soils as compared to those alternatives.

Impacts from Special Status Species

Impacts would be the same as described under Alternative A.

Impacts from Fish and Wildlife

The types of impacts experienced as a result of fish and wildlife management would be similar to those described under Alternative A. However, this alternative proposes restricting surface disturbance or surface occupancy within 660 feet of riparian areas (versus 330 feet for Alternative A), includes more restrictions on OHV use in crucial wildlife habitats, and designates an ACEC in the Henry Mountains (288,200 acres) for the protection of wildlife values. These additional management actions would decrease the potential for soils impacts under this alternative.

Impacts from Wild Horses and Burros

Under this alternative, 1,200 AUMs are allocated to burros in the Canyonlands HMA to meet an AML upper limit of 200. These numbers are greater than Alternatives N, A, or B. Since more burros result in a greater possibility of adverse impacts on soil resources due to trampling, compaction, and reduced vegetation cover, this alternative would potentially impact soils more than Alternatives N, A or B.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for soils.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forestry and woodlands management would be similar to Alternative B, although more lands would be closed to this type of use under Alternative C (12 WSR segments – 135 miles). Thus, localized surface disturbance, soil compaction, and changes in vegetation community composition and structure would be reduced under this alternative as compared to Alternative B.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative B.

Impacts from Recreation

Under Alternative C, four SRMAs (928,550 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Managing the Dirty Devil/Robbers Roost SRMA (375,800 acres) for dispersed recreation in a primitive setting would indirectly maintain or reduce the potential for surface disturbance from recreation. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural recreation experience and the development of facilities would have site-specific impacts including soil compaction, changes in surface hydrology, and increased runoff. Managing the Henry Mountains SRMA (533,900 acres) for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for soil disturbance. Managing the Sevier Canyon SRMA (7,500 acres) for scenic values would indirectly maintain and protect vegetation and soil resources that contribute to the scenic qualities of Sevier Canyon.

This alternative, which establishes more areas as SRMAs than either Alternatives N, A or B but less than Alternative D, would therefore provide more protection to soils as a result of recreation decisions than either Alternatives N, A or B and less than Alternative D.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative B. However, this alternative designates no areas as open to motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,445,000 acres (68%) of the RFO; and 683,000 acres (32%) would be closed to motorized and mechanized vehicle use. The lack of open areas

would eliminate impacts to soil from vehicle use in those areas. Limiting motorized/mechanized use to designated routes – the public would have access to 3,192 miles of unpaved routes – would generally limit soils impacts to areas in the immediate vicinity of the designated route. Under this alternative, 1,188 miles of routes would be closed, allowing these areas to revegetate, which would benefit soils by reducing compaction, reducing runoff, increasing infiltration, and reducing erosion.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty management would be similar to those described under Alternative N, although impacts to soils could occur over a much smaller area due to more acres proposed for withdrawal (331,100 acres under Alternative C) and more right-of-way avoidance areas (735,100 acres closed to oil and gas leasing or open with no surface occupancy, 12 suitable WSR segments, and 16 ACECs). Thus, impacts to soils from surface disturbing activities (such as compaction and vegetation removal, which could lead to erosion) would be less under this alternative as compared to Alternative N.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy management would be similar to those described under Alternative N. Development of oil and gas resources could affect soils due to the surface disturbances associated with such development. However, adherence to best management practices outlined in mining laws, plans of operation, pertinent restrictions, standard terms and conditions, etc., would help minimize impacts to soils. Closing or withdrawing areas from mineral operations would prevent impacts to soils within those areas (see Lands and Realty section for a discussion on withdrawals). This alternative proposes more acres of mineral withdrawals (331,100 acres), as compared to Alternatives N, A or B, which would preclude mineral and energy development in those areas and thus provide more protection to soils.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable wild and scenic rivers would help protect soil by preventing ground disturbing activities in the river corridors. All twelve suitable segments (135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would benefit soils by limiting ground disturbance in these areas.

Areas of Critical Environmental Concern

Alternative C designates 16 ACECs (886,810 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (such as closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; designating as VRM Class II; making them unavailable for livestock grazing; and acquiring inholdings) would reduce surface disturbing activities within those areas, protecting soil resources.

Alternative D

Impacts from Air Quality, Soil Resources and Water Resources

Impacts would be the same as described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as described under Alternative C.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N, although these impacts would occur over a much smaller area due to differences in VRM class designations between the two alternatives. Under Alternative D, 1,129,600 acres (53% of the lands managed by the RFO) would be designated as VRM Class I; 66,700 acres (3%) would be designated as VRM Class II; 355,100 (17%) would be designated as VRM Class III; and 576,600 (27%) would be designated as VRM Class IV. Just over half of the RFO would be designated as VRM Class I or II, meaning that the existing character of the landscape must be preserved or retained. Thus, surface disturbing activities would generally not be allowed in these areas, resulting in reduced potential for wind and water erosion and sedimentation to streams and less potential impacts to soils as compared to Alternatives N, A, B or C.

Impacts from Special Status Species

Impacts would be the same as described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as described under Alternative C.

Impacts from Wild Horses and Burros

Impacts would be the same as described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, 682,600 acres would be managed to maintain wilderness characteristics. Management actions to achieve this objective include: closing to oil and gas leasing; closing to OHV use; and designating as VRM Class I. The emphasis on naturalness and a lack of surface disturbing activities within these areas would minimize impacts to soils from surface disturbing activities (such as compaction and vegetation removal, which could lead to erosion). This alternative would therefore be most beneficial to soils of all the alternatives.

Impacts from Forestry and Woodland Products

Impacts would be similar to those described for Alternative C except that no commercial or non-commercial forest and woodland products resource use would be allowed within the 682,600 acres of non-WSA lands with wilderness characteristics. Thus, localized surface disturbance, soil compaction, and changes in vegetation community composition and structure would be greatly reduced under this alternative as compared to all of the other alternatives.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative C.

Impacts from Recreation

Under Alternative D, seven SRMAs (1,358,200 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Managing these SRMAs for dispersed recreation in a primitive or semi-primitive setting would indirectly maintain or reduce the potential for surface disturbance from recreation. Associated management actions (closing or limiting OHV use, and precluding development of facilities) would have minimize the

potential for site-specific impacts including soil compaction, changes in surface hydrology, and increased runoff, which would indirectly maintain and protect soil resources.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. However, this alternative designates 972,800 acres (46% of the RFO) as limited to designated routes and 1,155,200 acres (54%) as closed to motorized and mechanized vehicle use. The lack of open areas would eliminate impacts to soil from vehicle use in those areas. Limiting motorized/mechanized use to designated routes – the public would have access to 3,043 miles of unpaved routes – would generally limit soils impacts to areas in the immediate vicinity of the designated route. Under this alternative, 1,242 miles of routes would be closed, allowing these areas to revegetate, which would benefit soils by reducing compaction, reducing runoff, increasing infiltration, and reducing erosion.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty would be similar to those described under Alternative N, although impacts to soils could occur over a much smaller area due to more acres recommended for withdrawal (903,900 acres under Alternative D) and more right-of-way avoidance areas (1,203,800 acres closed to oil and gas leasing or open with no surface occupancy, 12 suitable WSR segments, and 16 ACECs). Thus, impacts to soils from surface disturbing activities (such as compaction and vegetation removal, which could lead to erosion) would be much less under this alternative as compared to all the other alternatives.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N, although impacts to soils could occur over a much smaller area due to more acres recommended for withdrawal (903,900 acres under Alternative D) and more areas closed to oil and gas leasing or open with no surface occupancy (1,203,800 acres). Closing or withdrawing areas from mineral operations would prevent impacts to soils within those areas. Thus, impacts to soils from mining-related surface disturbing activities (such as compaction and vegetation removal, which could lead to erosion) would be much less under this alternative as compared to all the other alternatives.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as described under Alternative C.

4.3.3 Water Resources

This section presents potential impacts to water resources from management actions for other resource programs. Existing conditions for water resources are described in Chapter 3. The discussion of impacts to water resources is limited to the effects of surface disturbing activities on water quality and watershed health. Activities that disturb the land surface, decrease vegetation cover, or otherwise alter land surface cover would potentially affect water quality and watershed health.

Water quality within the planning area is influenced by both natural and human factors. Water quality problems created by natural geologic conditions are almost impossible to control. Water quality is generally good in the upper reaches of streams. As water flows downstream, the chemical and biological quality of the water deteriorates as salts accumulate, ground cover diminishes, water temperatures increase, fecal coliform from livestock and wildlife increases, and sediments accumulate. Most of the sediment discharge by streams in arid and semi-arid regions is transported during short periods, usually as a result of thunderstorms. Water quality relative to sediment content is best during periods of low flow; water quality relative to chemical content is best during high flow. The State Division of Water Quality (DWQ) is responsible for adopting, enforcing, and administering state and Federal water quality regulations.

Compared to other natural and human-caused factors affecting water quality within the planning area, proposed resource management plan decisions would have minor impacts on water quality.

Methods and Assumptions

The analysis is based on the following assumptions:

- Substantial surface disturbance to soil, including compaction of soil or loss of vegetative cover, could increase water runoff and downstream sediment loads, thereby degrading water quality, altering channel structure, and affecting overall watershed health.
- The degree of impact attributed to any one disturbance or series of disturbances would be influenced by several factors, including location within the watershed, time and degree of disturbance, existing vegetation, soil type, and precipitation.
- Restrictions on surface disturbing activities should help protect and maintain current water quality, and minimize erosion and sedimentation.
- An increase of pollutants in surface waters could affect other beneficial uses (e.g., stock-watering, irrigation, fisheries/aquatic life, recreation, and/or drinking water supplies).
- Proposed decisions allowing surface disturbing activities impacting soils could also adversely impact water quality.
- Increased erosion does not necessarily result in increased sedimentation to a perennial stream.
- Some surface disturbing actions, such as vegetation management projects, could cause short-term adverse impacts to water quality immediately following treatments, but benefit water quality in the long-term as vegetation becomes reestablished.
- Proposed decisions limiting surface disturbing activities or protecting or restoring soil, water and vegetation resources could protect or improve water quality.

Environmental Consequences

Impacts to water resources would likely result from actions proposed under the following resource programs:

- Soil Resources and Water Resources
- Vegetation
- Fish and Wildlife
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation

- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on water resources.

Alternative N: No Action

Impacts from Soil Resources and Water Resources

Specific stipulations and permit requirements, including reclamation plans, to protect water resources during and after surface disturbing activities in the RFO would minimize impacts. These include restrictions that all surface disturbing activities be the minimum necessary to complete the task; requiring reclamation plans for road upgrades and/or realignments; requiring specific soil stability measures for all surface disturbing activities and saline soils; closing and reclaiming temporary roads, facilities, and improvements that are unnecessary; and maintaining a 500-foot buffer zone of no surface disturbance or surface occupancy around all springs to protect water quality. Impacts would be minor RFO-wide, but potentially moderate at specific sites. In the long-term, these actions would reduce soil compaction, soil erosion, and surface runoff, which would protect water resources and maintain or improve water quality.

Impacts from Vegetation

Under Alternative N, vegetation treatments would be conducted in accordance with the Fundamentals of Rangeland Health which requires that water quality be protected. Initially, vegetation treatments change the vegetation structure and increase local erosion and sedimentation rates which could adversely affect water quality. However, in the long-term, vegetation treatments improve cover and increase plant diversity, thereby stabilizing soil, improving overall watershed function and condition, and allowing greater infiltration and soil moisture storage, which help protect water quality.

Impacts from Fish and Wildlife

Under this alternative, proposed decisions that recommend avoiding habitat fragmentation, reducing road densities, and mitigating surface disturbances would have beneficial impacts on water quality by reducing the potential for erosion and sedimentation of streams.

Impacts from Fire and Fuels Management

This alternative allows for the full range of fire and fuels management actions to achieve ecosystem sustainability. This alternative also allows for treatment of vegetation (including mechanical, wildland fire use and/or prescribed fire, and chemical methods). This would move vegetation communities more in line with the historic range of variability. This protects the soil better and increases water quality over the long-term as more acres are treated.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under this alternative, resulting in no additional protection for water resources.

Impacts from Forestry and Woodland Products

Under this alternative, the timber harvest acreage and quantities of woodland products harvested (including fuelwood, fence posts, Christmas trees, and seed collection) would be small so the overall effects on water quality would be negligible. There are over 2 million acres of public land in the RFO with the current average annual harvest of timber near zero board feet and other woodland product permits (averaging about 2 cords each) numbering in the hundreds. Additionally, all permits issued for

forest and woodland products contain stipulations for the use of best management practices to minimize or eliminate impacts to all resources, including water.

Impacts from Livestock Grazing

Grazing has the potential to accelerate erosion rates and nutrient loads to surface water. As a result contaminants, such as nutrients and bacteria, can wash directly into receiving waters from surface water runoff in grazed areas. Livestock grazing in areas of low rainfall (less than eight inches per year) generally does not contribute a significant amount of nutrients to surface water due to the aridity of the area, distance from perennial streams, plant uptake, and soil mineralization.

Livestock grazing in the RFO would be managed in keeping with applicable laws and regulations and with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration. Adhering to these statewide standards and guidelines would minimize impacts from livestock grazing by maintaining plant vigor and increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, and productivity, and riparian-wetland function. This would minimize impacts to water resources within the planning area.

Impacts from Recreation

Under this alternative, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified that would affect water resources. Thus, intensively used recreation sites (such as near Otter Creek, Big Rock, Factory Butte, Dirty Devil/Robbers Roost) could experience impacts to water quality from off-road vehicle use and use by large numbers of visitors in a limited space. These activities result in loss of vegetation cover and soil compaction, leading to increased wind and water erosion. These impacts to water resources would continue under this alternative, or even increase as visitor use increases.

Impacts from Travel Management

Off-highway vehicle use has the potential to affect water quality by causing surface disturbance, channeling surface runoff, changing vegetation structure, and reducing riparian-wetland function. Roads and OHV routes can be primary sources of sediment and salinity delivery to rivers and streams. Of special concern are routes with a clay-based native surface, and routes and cross-country vehicle use within riparian zones and Mancos shale areas. The magnitude and extent of motorized recreation has a greater effect on soil and water resources than non-motorized recreation. OHV recreation use during periods of high soil moisture conditions could accelerate localized erosion and damage vegetation.

Acreage open to cross-country OHV use under this alternative would be 1,636,400 acres (77% of the RFO). Alternative N would therefore allow the greatest ground disturbance from cross-country OHV use, and the greatest potential impacts to water quality from cross-country use. However, actual impacts would be dependent on where and when vehicles traveled. Generally, the more miles of open routes, the greater the possibility of adverse impacts to water quality, although the location of routes (e.g., crossing streams or within riparian areas) is more important than sheer miles. Stream crossings by motorized vehicles could remove riparian vegetation, increase the amount of bare soil, increase localized soil erosion, change surface hydrology, and reduce infiltration, all of which can impact water quality. As shown in Table 4-1, Alternative N would designate routes with the greatest number of stream crossings, which would result in the most potential impacts to water resources of all the alternatives

Table 4-1. Off-Highway Route Designations and Stream Crossings

	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Miles of designated routes	4,315	4,312	4,176	3,192	3,043
Number of stream crossings	539	443	400	273	266

A specific water quality issue raised during scoping was the effect of cross-country OHV use in the Factory Butte area on water quality in the Fremont River. The lower Fremont River was listed on the State of Utah's 303(d) list as impaired for its agricultural beneficial use due to high concentrations of total dissolved solids (TDS). In 2002, a Total Maximum Daily Load (TMDL) plan was approved and the river was removed from the 303(d) list. The water quality goals for the lower Fremont River and tributaries were to reduce salt loading by improving the efficiency of irrigation systems (and thereby reducing return flows), restoring stream channel stability, and eliminating TDS loading from the two artesian wells in Caineville Wash. BLM capped the two wells in 2004, fulfilling one of the three major goals.

The primary source of TDS in this watershed originates from the saline Mancos shale formation east of Capitol Reef National Park. Water flowing over, through and under these shale badlands dissolves and transports salts to the Fremont River. Swingarm City, north of Caineville, is an area of concentrated OHV use within the Mancos shale badlands. Erosion rates usually increase in areas heavily used by OHVs. However, increased erosion does not immediately result in the delivery of eroded solid particles and solutes to a perennial stream, especially in an arid environment. Swingarm City drains into a broad alluvial fan before reaching the Fremont River. The compacted soils/bedrock and dispersed drainage minimize the potential for sediment and TDS to enter the Fremont River as a result of OHV activity. The lower Fremont is not listed as being impaired by sediment or selenium. Water quality standards and criteria adjacent to and downstream of Factory Butte are violated at very low flows when there is no upland runoff. This has persisted for a long period of time, predating the use of OHVs in the area.

Closing Swingarm City to OHV use would not result in a significant improvement in downstream water quality. If concentrated OHV use expanded north into Neilson Wash, there would be a greater likelihood for increased sediment loading into the Fremont River because previously undisturbed areas would be impacted by OHVs, increasing the soil erosion potential. Alternative N would allow OHV use to expand into Neilson Wash, possibly impacting water quality.

Impacts from Lands and Realty

Under Alternative N, 280 acres of public land are identified for Federal Land Policy and Management Act (FLPMA) land sales. Loss of these acres would have no effect on water quality. These lands are currently managed to meet state water quality standards as per the Standards for Rangeland Health. After disposal, use of these lands would be beyond the control of BLM management but it is assumed that any development that may occur would be regulated by the State and that state water quality standards would continue to be met.

Withdrawals protect land and other resources from mineral development or appropriation. Existing withdrawals shown in Chapter 3 (154,700 acres) would continue, with an additional 14,780 acres (developed recreation sites) recommended for withdrawal from mineral entry. Withdrawing developed

recreation sites from mineral entry would not change water quality assuming that no locatable mineral resource is located in these areas.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Development of oil and gas resources could affect water quality due to the surface disturbances associated with such development, although the permitting process would require potential impacts to water quality to be mitigated. Alternative N would have the most acres open under standard lease terms and 22,600 more acres than Alternative A closed to surface occupancy. However, mitigation at the time of leasing would preclude significant impacts to water quality. An estimated 8,180 acres would be disturbed over the next fifteen years.

Leasable Minerals - Coal

Live water is protected by a buffer of 500 feet. Floodplains, alluvial valley floors, municipal watersheds and other important water bodies would be protected under the unsuitability criteria. Water resources would be protected by mitigation to stabilize soil, to prevent unnecessary erosion, to revegetate disturbed surfaces, and to disallow any dumping of waste materials that would affect water quality.

Locatable Minerals

Exploration and development of locatable minerals creates surface disturbances that could adversely impact water quality through soil erosion and sedimentation. However, plan of operations level development would be addressed in site-specific environmental analysis while notice level activity would be regulated to prevent undue and unnecessary degradation. Withdrawals (discussed under Lands and Realty, above) would reduce the amount of land open to disturbance.

Salable Minerals

Proposed operations for salable minerals would be subject to a 500-foot buffer for live water. Water resources would be protected by mitigation to stabilize soil, to prevent unnecessary erosion, to revegetate disturbed surfaces, and to disallow any dumping of waste materials that would affect water quality.

Impacts from Special Designations

Wilderness Study Areas

Managing wilderness study areas under non-impairment standards would prevent most ground disturbing activities. This would result in protection for water resources.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible wild and scenic rivers would help protect water quality by preventing ground disturbing activities in the river corridors. All eligible segments (12 segments – 135 miles) would be protected under Alternative N, which would help protect water quality on those rivers.

Areas of Critical Environmental Concern

Protecting the relevant and important values of the potential ACECs would maintain and/or improve water quality in areas where management prescriptions limit surface disturbance. In Alternative N, there are four existing ACECS comprising 14,780 acres. Protection for the relevant and important values includes travel restrictions (closed to OHV), recommended for withdrawal from mineral entry, unavailable for livestock grazing, and managed as open to oil and gas leasing with no surface occupancy. These restrictions on surface disturbing activities would provide protection for water resources in these areas.

Alternative A

Impacts from Soil Resources and Water Resources

Impacts would be similar to those described for Alternative N except that the buffer zone of no surface disturbance or surface occupancy around all springs to protect water quality would be 330 feet (rather than 500 feet). Thus, the protected area would be less (8 acres around all springs in Alternative A versus 18 acres in Alternative N), although the area immediately surrounding the springs would still be protected.

Impacts from Vegetation

Impacts would be the same as described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the same as described under Alternative N.

Impacts from Fire and Fuels Management

Under Alternative A, appropriate management response (AMR) would be implemented (as in Alternative N), but fewer acres would be treated by people. Over time, vegetation communities would be less in line with the historic range of variability, resulting in a reduced level of protection for soil and lowering water quality. Hazardous fuels reductions projects could have short-term adverse impacts on water quality. Depending on the timing and intensity of rainfall there is potential for increased runoff and soil erosion originating from treated areas. However, in the long-term, prescribed fire and other fuel treatments have been shown to decrease runoff and erosion through the rejuvenation of native grasses. The potential short-term impacts of prescribed fire and other fire treatments can be minimized by limiting their use on steep slopes and near riparian areas.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under this alternative, resulting in no additional protection for water resources.

Impacts from Forestry and Woodland Products

This alternative allows for harvesting of forest and woodland products across most of the RFO (all areas, outside of WSAs) where sustainable and compatible with restoring, maintaining, or improving forest health. Harvest of commercial and non-commercial forest and woodland products based on sustainability and compatible with forest and woodland health would have no impact on water quality. Permitted activities under this alternative would incorporate best management practices into the stipulations to minimize or totally eliminate any impacts created. These stipulations have been developed over time with site-specific experience. This, coupled with the projected limited amount of activity in the forestry and woodland program in the RFO, would support the determination of no impact to water resources.

Impacts from Livestock Grazing

Impacts to water resources would be similar to those described for Alternative N except that an additional 36,950 acres would be available to livestock grazing under Alternative A. However, since livestock grazing within the RFO would be managed in keeping with applicable laws and regulations, with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration, and with BLM's riparian policy, impacts to water resources from livestock grazing would still be minimal.

Impacts from Recreation

Recreational activities can have site-specific impacts to water quality due to surface water runoff near frequent and high-use areas such as campgrounds, parking lots, trailheads, and other recreation-related

use areas. There are five SRMAs proposed for Alternative A, comprising 516,400 acres. Limiting OHV use in the Otter Creek Reservoir SRMA to designated routes would maintain existing soil, water, and riparian resource conditions by concentrating impacts to already disturbed areas and reducing the extent of soil compaction. Maintaining the existing condition of riparian-wetland areas would reduce soil erosion. Reducing the extent of soil compaction would indirectly maintain existing infiltration and soil-water distribution patterns, reducing sedimentation into surface waters.

The construction of recreation facilities in the Big Rock SRMA could have localized adverse impacts from removal of vegetation in those areas; long-term impacts would be beneficial by concentrating use areas and thus limiting the extent of vegetation disturbance. Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for vegetation disturbance from recreation. Limiting OHV recreation use in the Dirty Devil/Robbers Roost SRMA to designated routes would reduce potential surface disturbance and localized removal of vegetation. Managing the Sahara Sands SRMA (12,300 acres) for a roaded natural recreational opportunity and the development of facilities would have site-specific impacts, including soil compaction, changes in surface hydrology, and increased runoff. Managing the Factory Butte SRMA (199,700 acres) for a motorized recreational opportunity and allowing moderate to extensive landscape modification would have potentially major impacts on water resources by eliminating vegetation or altering plant communities (reducing species diversity and/or increasing the potential for introduction and spread of invasive species) over a relatively large area.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, this alternative designates 449,000 acres (21% of the RFO) as open to motorized and mechanized vehicle use; motor vehicles would be limited to designated routes on 1,679,000 acres. Actual impacts would be dependent on where and when vehicles traveled. Alternative A would designate approximately the same miles of routes but with 22% less stream crossings (443, as compared to 539 for Alternative N). Thus, Alternative A should have less adverse impacts on water quality.

Impacts from Lands and Realty

Under Alternative A, 13,460 acres of public land are identified as available for FLPMA Section 203 sales (the same as in Alternative B). Loss of these acres would have no effect on water quality – these lands are currently managed to meet state water quality standards as per the Standards for Grazing Administration. After disposal, use of these lands would be beyond the control of BLM management but it is assumed that any development that may occur would be regulated by the State, and that State water quality standards would continue to be met.

Land withdrawals protect land and other resources from mineral development or appropriation. Alternative A proposes no new withdrawals (only the 154,700 acres currently withdrawn). Exploration and development of locatable minerals creates surface disturbances that could adversely impact water quality through soil erosion and sedimentation. Since Alternative A would include the least acres withdrawn from mineral entry, impacts to water resources would be expected to be the greatest under this alternative.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Development of oil and gas resources could affect water quality due to the surface disturbances associated with such development, although the permitting process would require potential impacts to water quality to be mitigated. Alternative A would have 375,900 fewer acres than Alternative N open under standard

lease terms and the least amount of acres closed to surface occupancy. However, mitigation at the time of leasing would preclude significant impacts to water quality. Over the next fifteen years, an estimated 8,180 acres would be disturbed.

Leasable Minerals - Coal

Impacts to water resources are the same as Alternative N, except the buffer around live water and springs would be 330 feet.

Locatable Minerals

Exploration and development of locatable minerals creates surface disturbances that could adversely impact water quality through soil erosion and sedimentation. However, plan of operations level development would be addressed in site-specific environmental analysis while notice level activity would be regulated to prevent undue and unnecessary degradation. Withdrawals (discussed under Lands and Realty, above) would reduce the amount of land open to disturbance.

Salable Minerals

Proposed operations for salable minerals are subject to the oil and gas leasing restrictions. Live water and springs would be protected by a buffer of 330 feet, subject to an appropriate exception when there are no practical alternatives and impacts can be fully mitigated. Water resources would be protected by mitigation to stabilize soil, to prevent unnecessary erosion, to revegetate disturbed surfaces, and to disallow any dumping of waste materials that would affect water quality.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible wild and scenic rivers would help protect water quality by preventing ground disturbing activities in the river corridors. No eligible segments would be recommended as suitable under this alternative, resulting in no additional protection for water resources. However, most of the eligible river segments (98 of the 135 total miles) are also within WSAs, which would provide protection for water resources due to lack of surface disturbing activities within WSAs.

Areas of Critical Environmental Concern

Protecting the relevant and important values of the potential ACECs would maintain and/or improve water quality in areas where management prescriptions limit surface disturbance. In Alternative A, there are no potential ACECs and the four existing ACEC'S comprising 14,780 acres of land would be eliminated. Thus, there would be no protection of relevant and important values from irreparable damage in these areas, which could pose a threat to water resources from various surface disturbing activities such as open OHV use and mineral development.

Alternative B: Preferred Alternative

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative A.

Impacts from Vegetation

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the same as those described for Alternative N.

Impacts from Fire and Fuels Management

Impacts would be similar to those described for Alternative A, except that more acres would potentially be treated, moving vegetation communities more in line with the historic range of variability, protecting the soil more and increasing water quality.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under this alternative, resulting in no additional protection for water resources.

Impacts from Forestry and Woodland Products

Impacts would be similar to those described for Alternative A except that more lands would be closed to this type of use under Alternative B (2 WSR segments – 59 miles, as compared to zero segments under Alternative A, and the Old Woman Front ACEC – 330 acres). Areas where forest and woodland products harvest would occur would incorporate best management practices into permit stipulations to minimize or totally eliminate any impacts to water resources.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

The types of impacts to water quality would be similar to those described for Alternative A except that Alternative B proposes five SRMAs, comprising 838,700 acres. Recreation activities on these five SRMAs include motorized activities at Big Rocks and Factory Butte which are open OHV areas (2,865 acres). The rest of the area varies from semi-primitive motorized to primitive recreation with many protective measures for coincident WSA, WSR and ACEC areas. Impacts from recreation management actions are considered negligible for this alternative and would not affect water quality beyond the natural "background" level of contaminants from erosion and runoff.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, this alternative designates only 8,400 acres (<1% of the RFO) open to cross-country OHV use. Alternative B closes 210,400 acres and limits motorized/mechanized use to designated routes on 1,909,200 acres. Routes designated under this alternative would include 400 stream crossings, which is less than Alternatives N and A, but more than Alternatives C and D.

Impacts from Lands and Realty

Under Alternative B, 13,460 acres of public land are identified as available for FLPMA Section 203 sales. As described for Alternative A, loss of these acres would have no effect on water quality.

Land withdrawals protect land and other resources from mineral development. Alternative B proposes 21,500 acres of new withdrawals and continuation of existing withdrawals (154,700 acres). Exploration and development of locatable minerals creates surface disturbances that could adversely impact water quality through soil erosion and sedimentation. Thus, withdrawing these lands from mineral entry could slightly reduce the potential impacts to water resources over Alternatives N and A.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Development of oil and gas resources could affect water quality due to the surface disturbances associated with such development, although the permitting process would require potential impacts to water quality to be mitigated. Alternative B would have 545,000 acres open under standard lease terms and 110,900 under no surface occupancy while Alternative A has zero no surface occupancy acres and Alternative N has 22,600 acres closed to surface occupancy. However, mitigation at the time of leasing would preclude significant impacts to water quality. Over the next fifteen years, an estimated 8,180 acres would be disturbed.

Leasable Minerals - Coal

Impacts would be the same as those described for Alternative A.

Locatable Minerals

Exploration and development of locatable minerals creates surface disturbances that could adversely impact water quality through soil erosion and sedimentation. However, plan of operations level development would be addressed in site-specific environmental analysis while notice level activity would be regulated to prevent undue and unnecessary degradation. Withdrawals (discussed under Lands, above) would reduce the amount of land open to disturbance, thereby helping to protect water resources.

Salable Minerals

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible wild and scenic rivers would help protect water quality by preventing ground disturbing activities in the river corridors. Under this alternative, two segments (the Dirty Devil and Fremont Gorge – 59 miles) would be recommended as suitable. This would serve to protect water quality on those river segments. Of the remaining segments, 63 miles are within WSAs, leaving 13 miles on which ground disturbing activities could potentially impact water resources. This alternative would provide less protection to water resources from WSR decisions than Alternatives N, C or D but more than Alternative A.

Areas of Critical Environmental Concern

Protecting the relevant and important values of the potential ACECs could improve water quality in areas where management prescriptions limit surface disturbance. Under Alternative B, two ACECS (2,530 acres) would be designated. Protection of the relevant and important values would include actions such as travel restrictions (closed to OHV), recommending for withdrawal from mineral entry, making them unavailable for livestock grazing, and managing them as open to oil and gas leasing with no surface occupancy. These restrictions on surface disturbing activities would provide protection for water resources in these areas.

Alternative C

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative A.

Impacts from Vegetation

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the same as described for Alternative N.

Impacts from Fire and Fuels Management

Impacts would be similar to those described for Alternative A, except that fewer acres would be treated.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under this alternative, resulting in no additional protection for water resources.

Impacts from Forestry and Woodland Products

Impacts would be similar to those described for Alternative B except that more lands would be closed to this type of use under Alternative C (12 WSR segments – 135 miles, as compared to zero segments under Alternative A). Areas where forest and woodland products harvest would occur would incorporate best management practices into permit stipulations to minimize or totally eliminate any impacts to water resources.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Recreational activities can have site-specific impacts to water quality due to surface water runoff near frequent and high-use areas such as campgrounds, parking lots, trailheads, and other recreation-related use areas. There are four SRMAs proposed for Alternative C, comprising 928,550 acres. Recreation activities on these four SRMAs include dispersed recreation emphasizing semi primitive to primitive recreation activities as opposed to motorized activities. These areas have many coincident protective measures for overlapping WSA, WSR and ACEC areas. Impacts from recreation management actions are considered negligible and would not affect water quality beyond the natural "background" level of contaminants from erosion and runoff.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N, except that this alternative designates no areas as open to cross-country OHV use, designates 683,000 acres as closed to OHV use, and designates 1,445,000 acres where motorized/mechanized use would be limited to designated routes. Routes designated under this alternative would include 273 stream crossings, which is less than Alternatives N, A and B but slightly more than Alternative D.

Impacts from Lands and Realty

Under this alternative, no lands are identified for FLPMA Section 203 sales. This would result in the continuation of management of water quality on all Federal lands to meet state water quality standards as per the Standards for Grazing Administration.

This alternative also recommends withdrawing 331,100 acres from mineral entry. Potential surface disturbance due to mineral entry would therefore be reduced over Alternatives N, A and B which would provide protection for water resources by minimizing erosion and sedimentation to surface waters.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Development of oil and gas resources could affect water quality due to the surface disturbances associated with such development, although the permitting process would require potential impacts to water quality to be mitigated. Alternative C would have 491,900 acres open under standard lease terms and 148,800 under no surface occupancy, while Alternative A has zero and Alternative N has 22,600 acres closed to surface occupancy. However, mitigation at the time of leasing would preclude significant impacts to water quality. Over the next fifteen years, an estimated 8,180 acres would be disturbed.

Leasable Minerals - Coal

Impacts would be the same as those described for Alternative N, except the buffer for live water and springs would be 660 feet.

Locatable Minerals

Exploration and development of locatable minerals creates surface disturbances that could adversely impact water quality through soil erosion and sedimentation. However, plan of operations level development would be addressed in site-specific environmental analysis while notice level activity would be regulated to prevent undue and unnecessary degradation. Withdrawals (discussed under Lands and Realty, above) would reduce the amount of land open to disturbance.

Salable Minerals

Impacts would be the same as Alternative A, except the buffer for live water and springs would be 660 feet.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible wild and scenic rivers would help protect water quality by preventing ground disturbing activities in the river corridors. All 12 eligible segments (135 miles) would be protected under this alternative resulting in protection for water resources.

Areas of Critical Environmental Concern

Protecting the relevant and important values of the potential ACECs would maintain and/or improve water quality in areas where management prescriptions limit surface disturbance. In Alternative C, 16 ACECs (886,810 acres) would be designated. Associated management of these ACECs to protect relevant and important values would include travel restrictions (closed to OHV use), recommending them for withdrawal from mineral entry, making them unavailable for livestock grazing, and managing them as open to oil and gas leasing with no surface occupancy. This alternative (along with Alternative D) would provide the most protection for water quality due to ACEC designations.

Alternative D

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative A.

Impacts from Vegetation

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the same as described for Alternative N.

Impacts from Fire and Fuels Management

Impacts would be similar to those described for Alternative A, except that fewer acres would be treated.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, 682,600 acres would be managed to maintain wilderness characteristics. Management actions to achieve this objective include: closing to oil and gas leasing; closing to OHV use; and designating as VRM Class I. The emphasis on naturalness and a lack of surface disturbing activities within these areas would minimize impacts to water quality from surface disturbing activities (such as stream crossings with OHVs and vegetation removal, which could lead to erosion). This alternative would therefore be most beneficial to water quality of all the alternatives.

Impacts from Forestry and Woodland Products

Impacts would be the same as those described for Alternative C except that no harvest would be allowed on lands with wilderness character. Areas where forest and woodland products harvest would occur would incorporate best management practices into permit stipulations to minimize or totally eliminate any impacts to water resources.

Impacts from Livestock Grazing

Impacts would the same as those described for Alternative A.

Impacts from Recreation

Under this alternative, 7 SRMAs (1,358,200 acres) would be established. Recreation activities on these SRMAs include dispersed recreation emphasizing semi primitive to primitive recreation activities as opposed to motorized activities. These areas have many coincident protective measures for overlapping WSA, WSR and ACEC areas. Impacts from recreation management actions are considered negligible and would not affect water quality beyond the natural “background” level of contaminants from erosion and runoff.

Impacts from Travel Management

The types of impacts would be similar to those described for Alternative C – there are no open OHV areas under this alternative. However, the amount of acres closed to OHV use (1,155,200) is the largest of all alternatives, which would result in this alternative having the least impacts on water resources from travel management.

Impacts from Lands and Realty

Impacts from FLPMA land sales would be the same as those described for Alternative C.

The types of impacts would be similar to those described for Alternative N except that this alternative recommends substantially more acres (903,900 acres, or 42% of the RFO) for withdrawal from mineral entry. As a result, potential surface disturbance due to mineral entry (and associated impacts to water resources) would be greatly reduced over all of the other alternatives.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Development of oil and gas resources could affect water quality due to the surface disturbances associated with such development, although the permitting process would require potential impacts to water quality

to be mitigated. Alternative D would have 290,200 acres open under standard lease terms and 43,300 acres open with no surface occupancy, while Alternative A has zero acres and Alternative N has 22,600 acres with no surface occupancy. However, mitigation at the time of leasing would preclude significant impacts to water quality. Over the next fifteen years, an estimated 8,180 acres would be disturbed.

Leasable Minerals – Coal

Impacts would be the same as those described for Alternative C.

Locatable Minerals

Exploration and development of locatable minerals creates surface disturbances that could adversely impact water quality through soil erosion and sedimentation. However, plan of operations level development would be addressed in site-specific environmental analysis while notice level activity would be regulated to prevent undue and unnecessary degradation. Withdrawals (discussed under Lands and Realty, above) would reduce the amount of land open to disturbance.

Salable Minerals

Impacts would be the same as those described for Alternative C.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described for Alternative C.

4.3.4 Vegetation

Vegetation is a fundamental and vitally important component of the biological resources in the RFO. The effects on vegetation resulting from implementing any of the alternatives under consideration would also affect other resources. Impacts to the vegetation resource could result in reduced biological productivity, weed invasion, and unwanted changes in the composition, function and structure of vegetation communities. These changes, in turn, could influence forage availability for wildlife and livestock. Where actions result in loss or reduction of vegetative cover and/or soil erosion or compaction, archaeological, paleontological, historic, wildlife, water, soil, and air resources could be impacted.

The effects of management actions on vegetative communities may vary widely, depending on a variety of factors such as the type of soils, moisture, topography, and plant reproductive characteristics. Impacts on vegetation resources also vary depending on the seral stage and composition of vegetation communities, as discussed in Chapter 3. The composition of a plant community changes over time as a result of interactions with factors, such as climate, resource uses, and disturbance. Surface disturbance can result in the most immediate direct impact to an area by removing existing vegetation and increasing opportunities for establishment of noxious weeds and invasive species. This could in turn reduce vegetation diversity, production, desirable plant cover, and overall ecological health of vegetation communities. Decreased ecological health would make vegetation communities less resilient to disease, drought, fire, invasive species, and other natural disturbances/stressors. Indirectly, surface disturbance could increase erosion rates, modify soil composition, and alter water flow patterns across the landscape.

On the contrary, implementing vegetation treatments (mechanical, fire, biological, and chemical), managing vegetation/ecological resources to meet desired vegetation conditions, and limiting or restricting surface disturbances could serve to generally improve vegetation/ecological conditions. Although short-term losses of vegetation cover would occur, over the long-term these actions would help remove undesirable species, increase species and age class diversity, improve vegetation composition and structure, and increase vegetation cover and improve ecological condition. This would result in healthier vegetation communities that are more capable of retaining moisture and nutrients and resisting disease, invasive species, drought, and other natural disturbances/stressors.

Methods and Assumptions

This analysis was based on the following assumptions:

- Adequate vegetative ground cover and species composition for site stabilization could typically occur within 5 to 10 years in sagebrush/grass communities depending on climate, soil, and site potential.
- Plant communities would be managed toward achieving a mix of species composition, cover, and age classes.
- The degree of impact attributed to any one disturbance or series of disturbances would be influenced by several factors, including location within the watershed, the type, time and degree of disturbance, existing vegetation, and precipitation.
- Noxious and invasive weeds would continue to try and invade and spread as a result of surface disturbing activities, vehicle traffic, recreational activities, and wildlife and livestock grazing and natural causes.
- Weed and pest control would be carried out in coordination with the appropriate county, public, and private interests.
- Climatic fluctuation would continue to influence the health and productivity of plant communities on an annual basis.
- Table 2-12a establishes estimated annual vegetation treatment acres for Alternatives A-D to achieve the overall treatment acres for those alternatives over the life of the plan. Actual annual treatment acreage would vary depending on conditions, staffing, etc. These acreage figures include all vegetation and fire and fuels treatments.

The analysis of vegetation, which includes structure, productivity, vigor, percent cover, density, and species composition, was based on likely changes relative to movement toward or away from desired vegetation conditions. In the absence of quantitative data, professional judgment was used, and impacts are sometimes described using ranges of potential impacts or in qualitative terms, if appropriate. Particular focus was placed on vegetation communities with the greatest sensitivity to changes in structure and species composition, and most at-risk from potentially severe mortality events such as drought, insects, and disease infestation.

Environmental Consequences

Impacts to vegetation would likely result from actions proposed under the following resource management programs:

- Soil Resources
- Vegetation and Fire and Fuels Management
- Visual Resources
- Special Status Species

- Fish and Wildlife
- Wild Horses and Burros
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on vegetation.

Alternative N: No Action

Impacts from Soil Resources

Implementing BMPs to minimize detrimental impacts to soils and water quality from ground-disturbing activities and maintaining and/or enhancing riparian areas through project design features and/or stipulations would help to reduce soil erosion, surface runoff, and sedimentation of streams. This would help to maintain or improve upland vegetation and riparian and wetland communities. Making necessary management adjustments to meet watershed and riparian objectives (e.g., *Standards for Grazing Administration* and *Utah Riparian Policy*) would generally maintain or improve upland vegetation and riparian and wetland communities and reduce trampling and/or removal of understory vegetation in key watershed areas.

Impacts from Vegetation and Fire and Fuels Management

Restoration and Vegetation Treatments

Impacts would vary by the method used to accomplish the treatment, whether manual, mechanical, chemical, biological, or fire. Vegetation treatments are designed to move plant communities towards desired future conditions (DFCs). Not implementing these treatments would inhibit or prevent attainment of ecological objectives and DFCs. Where fuel loads are excessive, failure to conduct vegetation treatments would increase the risk of catastrophic fire, which would put tens of thousands of acres at risk of vegetation loss. Catastrophic fire would also cause major, long-term indirect impacts in terms of wildlife habitat loss and long-term or permanent reduction in biomass productivity from erosion.

Vegetation treatments are designed to change vegetative composition and diversity from one state to another. As a result, most treatment methods initially remove some or all of the surface vegetation. This results in reduction of ground cover and increased erosion. Depending upon the method used, there may also be varying levels of surface disturbance, particularly with mechanical treatment methods. Since germination is highest where seeds are covered by soil and protected from erosion, and where moisture is held, treatment methods that disturb soils often have higher success rates compared to those methods that do not disturb soils. Successful treatments would increase ground cover and vegetative diversity, which would provide soil stability, reduce soil surface temperatures, increase water holding capability, and increase food and cover for wildlife.

The greatest level of environmental impact occurs when a vegetation treatment fails. A vegetation treatment is considered a failure when the existing vegetation is not removed and/or the target vegetative community does not become established. When the existing vegetation remains at the site, the environmental consequences to soil are minimal. However, when the treatment is successful in removing

existing vegetation, but the desired future vegetative community does not become established, a variety of consequences can result. In such cases, mechanical and other surface disturbing treatment methods can lead to increased erosion as effective ground cover would be greatly reduced. Increased invasion of noxious weeds and other exotic weed species, decreased water availability, and long-term changes in habitat and species composition could occur. The duration of these effects would vary by treatment method, habitat and community type, availability of appropriate seed, and amount and timing of precipitation. Most such failed treatments would eventually be revegetated by either the former plant community or some new and perhaps less desirable community.

Because of the dynamic nature of vegetative communities, even those areas where seedings are unsuccessful would eventually become filled in with vegetation. Treatment areas change over time as vegetation is re-established. Some areas treated early in the planning cycle would become completely re-vegetated and could conceivably require treatment maintenance prior to the next planning cycle. Failed treatments would not be considered permanently "lost" from the system unless the site became re-established with a highly stable, non-target plant community. Treatment methods that proved to be unsuccessful at achieving the desired results would be modified or discontinued. Since most treatments require at least two growing seasons to determine success, it is unlikely that unsuccessful methods would be used for more than two consecutive years. As a result, the potential for failed treatments to occur on the maximum number of acres available for treatment is considered negligible. Use of adaptive management should reduce or eliminate the potential for permanent loss of desired vegetation communities from treatments.

Manual Vegetation Treatments

Compared to other methods, manual treatments would have minimal effects to sensitive vegetative communities by avoiding destruction of non-target species, and therefore would result in a lower likelihood of erosion, soil instability, sedimentation, or increased surface temperatures.

Mechanical Vegetation Treatments

Use of mechanical tools would reduce canopy cover, increase plant diversity on the forest floor, increase soil moisture due to the reduction of evapotranspiration, and change habitat type. These impacts would be direct, both short- and long-term, and positively affect some species while adversely affecting others. Long-term, indirect impacts would result from changes in habitat type resulting from the changes in forest density, canopy cover, structure, and the protection and maintenance of forest habitats. Mechanical treatment methods could also result in localized, short-term impacts to air quality from fugitive dust, equipment emission/exhaust, and chemical fumes, which, in turn, could lead to reduced plant vigor and fitness, or mortality among individuals or species.

Biological Vegetation Treatments

Target species would experience direct, short-term impacts due to biological vegetation treatments. Depending upon the biological control agent, a variety of other direct and indirect effects could occur, including mortality of non-target species. As with other vegetation treatment methods, indirect effects would include reduced soil infiltration, increased erosion and sedimentation, increased soil surface temperatures, and short- or long-term changes in species composition and/or community structure

Chemical Vegetation Treatments

Target and some non-target species would experience direct, short-term impacts, depending upon the chemical used and the application rate. Indirect effects would include reduced soil infiltration, increased erosion and sedimentation, increased soil surface temperatures, and short- or long-term changes in species composition and/or community structure. Direct and indirect effects from the use and application of

specific chemicals is described in detail in the FEIS for Vegetation Treatment on BLM Lands in Thirteen Western States (BLM 1991a), as well as the draft revision of the document (BLM 2005).

Prescribed Fire, Fire Use, and Management

The intensity of impacts from prescribed fire and fire use depends on the size and severity of the fire, as well as fuel type and quantity. Impacts from fires that cause injury or loss of individual plants and an increase in soil moisture due to the reduction of evapotranspiration would be short-term and minor. Impacts from fires that change species composition, plant density, and vegetative structure, and increase the abundance of non-native invasive, fire-adapted plant species would be direct, major, and both short and long-term. Reduction in biomass productivity due to accelerated erosion resulting from the reduction in effective ground cover, as well as reduced habitat suitability for seed dispersers, would represent indirect, major impacts. However, these projects are designed to minimize erosion and increase habitat suitability. If these major impacts cannot be mitigated, the project is not approved or implemented.

Fire Suppression

Direct impacts from the removal of vegetation from hand-line construction would be short-term and minor. Impacts from using aerially-applied retardant as an alternative to hand-line construction would be negligible. Most impacts from fire suppression activities would be minor, short-term, and localized, particularly if activities in sensitive habitats are mitigated or avoided. Impacts in the arid desert-scrub communities may be longer term since these vegetation communities do not recover as readily.

Control of Noxious Weeds and Invasive Species

Impacts depend upon the method used. This alternative would allow a full range of treatments for controlling noxious weeds that would help ensure a high degree of success. Direct impacts to the target species from manual techniques and herbicide applications would range from minor to moderate, with some non-targets experiencing impacts in the short-term. Eradication of noxious weeds and invasive species and improved species composition for the remaining community would occur over the long-term. Controlling noxious and invasive species would also benefit riparian habitat by reducing competition with native species and allowing natural ecosystems to reestablish.

Collection and Use of Native Seed/Use of Non-native Plants

Under this alternative, collection and use of native seed could be authorized with a permit. Collection of native seed could result in localized, minor short-term impacts to vegetation from trampling, loss of individuals, reduction in seed availability at the collection site, and potential reduction in plant vigor. The availability of local native seed would result in moderate indirect long-term impacts, which include improved ability to achieve DFCs by improving the species composition in areas needing vegetation treatments.

Assuming criteria described in Chapter 2 are met, non-native plant species could be used in treatment/restoration efforts. The major short-term direct impact from the use of nonnative plant species is the stabilization of soils following disturbance when native species are ineffective, cannot be established, or are not available. The major short and long-term indirect impacts from use of nonnative plant species for re-seeding would be an undesirable change in species composition, resulting from introducing species that could out-compete natives and/or increase the frequency or intensity of wildfire.

Impacts from Visual Resources

Implementing VRM guidelines would increase the difficulty of accomplishing vegetation management actions and limit the extent and/or effectiveness of the restoration efforts. Vegetation treatment projects would generally not occur in VRM Class I areas; however, under this alternative, none of the lands managed by the RFO are classified as VRM Class I. Vegetation treatment, restoration, and weed

treatment projects on 529,500 acres (25% of the RFO) within VRM Class II areas could be redesigned, moved, or otherwise restricted. Managing for VRM Classes III and IV would allow the greatest flexibility for vegetation treatments. Since 569,000 acres would be managed as VRM Class III and 1,029,500 acres would managed as Class IV, there would be various locations where proposed projects could be relocated. These projects could assist in achieving DFCs. See discussion on restoration and vegetation treatments in the Impacts from Vegetation and Fire and Fuels Management section above for a discussion of impacts.

Impacts from Special Status Species

This alternative (along with all the other alternatives) prohibits actions that destroy, adversely modify, or fragment Federally-listed species habitat; proposes habitat improvements for special status species; and considers special status species habitat in all wildland fire suppression efforts. Restrictions on vegetation treatments in special status species habitats would reduce or eliminate potential impacts to vegetation from treatment projects. Impacts would vary with the type of treatment proposed and the nature and extent of the restrictions. Failure to implement vegetation treatments in these habitats could result in direct and indirect, long-term impacts to vegetation, especially treatments to control noxious weeds.

Restricting authorized uses for special status species would reduce or eliminate disturbances that would otherwise have affected vegetation. All of these actions would have beneficial impacts on soils by helping to maintain soil productivity and limit erosion.

Impacts from Fish and Wildlife

Proposed decisions for fish and wildlife, such as avoiding habitat fragmentation, reducing road densities, and restricting surface disturbance or surface occupancy within 500 feet of riparian areas, would reduce or eliminate potential impacts to vegetation from treatment projects. Closing routes would increase plant vigor and reduce mortality alongside the road by reducing dust on individual plants. Compaction would also be eliminated along the closed route, which would increase infiltration, reduce erosion, and ultimately improve ground cover, causing a further reduction in erosion, increase in biomass productivity and vegetative structure, and an improvement in wildlife habitat attributes.

This alternative proposes habitat treatments to meet terrestrial, aquatic and riparian habitat objectives. Implementation of these vegetation treatments would involve removing individual plants and altering species composition and vegetation structure. Impacts would vary by treatment method used (see discussion above on Impacts from Vegetation Resources) and would initially change the vegetation structure and increase local erosion and sedimentation rates. However, in the long-term, vegetation treatments would improve cover and increase plant diversity, thereby stabilizing soil, improving overall watershed and riparian function and condition, and allowing greater infiltration and soil moisture storage. Therefore, impacts to vegetation from proposed decisions for fish and wildlife would be beneficial overall.

Grazing by wildlife can alter vegetation communities by removing portions of plants, depending on the extent of the removal and climatic conditions. Grazing animals can trample plants and compact soils, as well as remove seedlings and provide opportunities for noxious weeds and invasive species establishment. Transplanting big game species would increase the number of grazing animals; however, wildlife tends to disperse across a large area. Thus, impacts from these newly transplanted big game animals should be minor.

Impacts from Wild Horses and Burros

In general, the greater the number of burros, the greater the possibility of adverse impacts on vegetation due to grazing, trampling, compaction, and reduced vegetation cover. Under this alternative, 100 AUMs are allocated to burros in the Canyonlands HMA, although no AML is established. These numbers would

be the same as Alternative A, but less than Alternatives B, C, or D (which establish a herd size of between 120 to 200 animals). Thus, impacts to vegetation under Alternative N would be minimal due to the small herd size managed for.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for vegetation.

Impacts from Forestry and Woodland Products

Proposed decisions for managing forest and woodland products, based on the Healthy Forest Restoration Act, would generally improve the structure, composition, health, and vigor of forest and woodland vegetation. This alternative allows for harvesting of forest and woodland products across most of the RFO (all areas, outside of WSAs, on a case-by-case basis). Harvesting of forest and woodland products would have localized, minor to moderate impacts on soils from vehicle use to access the harvesting site and from loss of vegetative cover. Indirect effects would include reduced soil infiltration, increased erosion and sedimentation, increased soil surface temperatures, and short or long-term changes in species composition and/or community structure. However, removal of pinyon and juniper trees from areas where they have invaded or areas where canopy densities have increased results in reduced amounts of bare ground and increased litter at the soil surface. Since pinyon pine and juniper vigorously compete with other plants for available soil water, their removal allows for regrowth of grasses and shrubs in the understory vegetation. This would result in an improved ecological health for this plant community.

Impacts from Livestock Grazing

Livestock grazing can directly affect vegetation by reducing plant vigor, decreasing or eliminating desirable forage species, increasing soil instability and erosion, reducing water quantity and quality, and causing loss of, or injury to, individual plants from trampling, particularly near water developments. Impacts would be both short and long-term and range from minor to major, depending upon the grazing intensity, duration, and season of use, and local climatic conditions. Long-term changes in vegetation may result if livestock use consistently exceeds established allocations, or drought or other environmental factors reduce range carrying capacity. Improper grazing practices may lead to soil compaction, reduced infiltration rates, increased runoff and erosion, and declines in watershed condition. Livestock grazing may also increase the opportunity for exotic plant species and noxious weed infestations. Season of use adjustments may lessen the effects of grazing, particularly if grazing occurs during the non-growing season.

Under this alternative, 1,989,048 acres would be available for livestock grazing while 138,952 acres would be unavailable for livestock grazing. Livestock grazing can increase soil compaction in trailing, watering, and mineral supplement areas, and indirectly impact riparian-wetland areas and riparian functioning condition. However, livestock grazing within the RFO would be managed in keeping with applicable laws and regulations, with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration, and with BLM's riparian policy. Adhering to these statewide standards, guidelines, and policy would minimize impacts from livestock grazing by maintaining plant vigor and increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, productivity, and riparian-wetland function. This would ensure that upland soils would exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform and that riparian areas achieve and/or maintain proper functioning condition (PFC). Impacts would therefore be minor area-wide, but potentially moderate in specific areas such as riparian areas.

Construction of new range water developments would permanently remove vegetation within the footprint of the structures. Surrounding vegetation could be damaged temporarily, but would likely recover except in the immediate vicinity of the development. Water developments concentrate livestock use and reduce or eliminate vegetation in the immediate vicinity and increase compaction and erosion, which would lead to decreased biological productivity. Increased use of the area by livestock would increase foraging pressure on desirable species. This could result in increased or decreased vigor to the plants depending upon the species and their phenology. Allotment scale impacts from properly planned water developments include better distribution of livestock and wildlife grazing use on the allotment resulting in overall improvement in range conditions, increased vigor of vegetation, improved cover to soils, improved livestock performance and reduced operational costs to permit holders. Maintenance of existing water developments would result in minor disturbance impacts to vegetation resources similar in scope and nature to those described for new developments.

Impacts from Recreation

Recreational activities have site-specific impacts to vegetation near frequent and high-use areas such as campgrounds, parking lots, trailheads, and other recreation-related use areas. Long duration trail use (e.g., walking, equestrian, OHV, and mountain biking), especially during wet periods, could result in loss of vegetation cover. Large group recreation events and camping could compact soils, which could lead to changes in plant vigor. These impacts would be site-specific and localized.

Visitor use is expected to increase throughout the RFO. Under this alternative, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified that would limit or control recreational activities. Thus, intensively used recreation sites (such as near Otter Creek, Big Rock, Factory Butte, Dirty Devil/Robbers Roost) would experience impacts to vegetation. Impacts to vegetation in these areas occur from off-road vehicle use and use by large numbers of visitors in a limited space. These activities result in loss of vegetation cover and soil compaction, as well as a decrease in riparian ecological condition. These impacts to vegetation would continue under this alternative, or even increase as visitor use increases.

Impacts from Travel Management

Generally, the more area that is open to OHV use, the greater the potential for adverse impacts to vegetation from crushing of vegetation. Limiting travel to designated routes confines the impacts to areas already disturbed and/or hardened for vehicle use. Under this alternative, 1,636,400 acres (77%) of the RFO would be open to motorized and mechanized vehicles, allowing potential impacts to vegetation over a large portion of the RFO. Vehicle use in riparian areas could affect riparian functioning condition by crushing vegetation, compacting soils, eroding stream banks, increasing sediment in streams, and spreading invasive species. Motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO; and 214,000 acres (10%) of the RFO would be closed to motorized and mechanized vehicle use.

Vehicles traveling on roads in the transportation system would deposit dust on individual plants. This could lead to decreased plant vigor and increased mortality alongside the road. Dust settling on vegetation adjacent to roads would also reduce habitat suitability. Under this alternative, 4,315 miles of unpaved routes in the RFO would be open to motorized use.

Routes within riparian areas remove and destroy riparian vegetation, increase the amount of bare soil, increase localized soil erosion, change surface hydrology, and reduce infiltration. As shown in Table 4-1 (in Section 4.3.3, Water Resources), Alternative N would designate routes with the greatest number of stream crossings, which would result in the most impacts to riparian vegetation of all the alternatives.

Impacts from Lands and Realty

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws would preclude future mineral location, and provide protection to vegetation from impacts resulting from future mining location and development that could cause soil compaction and erosion. This would reduce the potential for mining disturbance and associated impacts to vegetation in these areas. However, the identified withdrawals, if established, would be subject to valid existing rights. Therefore exploration and development impacts related to the exercise of valid existing mineral locations could occur in these areas. This alternative proposes a total of 169,480 acres of withdrawals.

Land tenure adjustments (acquiring or disposing of lands) can result in sensitive vegetative communities entering or leaving Federal ownership. High quality riparian areas are identified in the Land Tenure Adjustment Criteria as areas the BLM would retain or acquire, which would result in increased ownership of riparian areas.

Impacts to vegetation resources could result from disposal of Federal lands. Impacts associated with land disposals would depend upon the use of those lands by future owners. In the worst-case scenario, all vegetation would be removed from a parcel of land and the site would be paved or otherwise permanently altered so as to prevent future vegetation growth. This represents minor to moderate long-term impacts depending upon the size and location of the parcel. Parcels that include listed threatened, endangered, or proposed species would not be identified for disposal. Identifying 280 acres as available for sale would make these lands susceptible to increased impacts to soils compared with retaining the land in Federal ownership, since the BLM would implement best management practices for the protection of soils in any actions it authorizes.

Impacts to vegetation resources could result from issuance of land use authorizations (ROWs, permits, leases, easements, etc.). Impacts from issuance of these authorizations would vary based upon the nature and purpose of the authorization. Impacts to vegetation would generally be minor to moderate and would be addressed in site-specific NEPA analysis. Under this alternative, all ACECs (14,780 acres), eligible WSR corridors (12 segments – 135 miles), areas closed to oil and gas leasing (459,700 acres), and areas open to oil and gas leasing with no surface occupancy (22,600 acres) would be managed as right-of-way avoidance areas (with exceptions granted only if the proposed authorization would not create substantial surface disturbance or would create only temporary impacts). Thus, impacts to vegetation in these avoidance areas would be negligible to minor and localized.

Impacts from Minerals and Energy

Impacts to vegetation resources could result from locatable mineral development, oil and gas development, and/or mineral material sales/disposal. Impacts associated with these actions would include loss or injury of plants due to excavation or trampling, burial under piles of waste material, toxic responses from use of chemicals in mineral extraction or waste pits, and increased exposure to dust and other contaminants associated with construction and use of access roads. In addition, disturbance of reclamation-limited soils could increase the opportunity for exotic plant species and noxious weed infestations. In the worst-case scenario, all vegetation would be removed from a parcel of land and the site would be permanently altered so as to prevent future vegetation growth.

The acreage in each leasing category (e.g., standard conditions, controlled surface use and/or timing limitations, no surface occupancy, and closed, listed from greatest to least amount of surface disturbance) would quantify impacts to vegetation in terms of acres of surface disturbance. Generally, areas that are closed to development or subject to no surface occupancy would experience little or no surface disturbance due to minerals development; thus, negligible or no adverse impacts to vegetation would occur. Areas subject to standard conditions or conditions of controlled surface use and/or timing

limitations would experience short- and long-term impacts to vegetation from surface disturbance associated with minerals development as described above.

Leasable Minerals

Under Alternative N, 459,700 acres would be closed to leasing, 22,600 acres would be open to leasing with no surface occupancy, and 1,645,700 acres would be open to leasing subject to standard conditions or conditions of controlled surface use and/or timing limitations. Closing or withdrawing areas from mineral operations would prevent impacts to vegetation within those areas (see Lands and Realty section for a discussion on withdrawals). In addition, adherence to best management practices outlined in mining laws, plans of operation, pertinent restrictions, standard terms and conditions, etc., would help minimize impacts to vegetation.

Exploration and development of oil and gas resources could impact vegetation, particularly in the Sevier and Sanpete valleys where most of the development is expected. However, only a small amount of land would be disturbed (about 8,200 acres total from geophysical and oil and gas exploration and development activities over the next 15 to 20 years), representing less than one-half of 1% of the land in the RFO. Additionally, permit requirements to revegetate disturbed sites, and requirements for a 500-foot buffer around riparian areas would mitigate the impacts.

Locatable Minerals

Exploration and development of locatable minerals creates surface disturbances that could adversely impact vegetation (including riparian resources) through soil erosion and sedimentation. However, plan of operations level development would be addressed in a site-specific environmental analysis while notice level activity would be regulated to prevent undue and unnecessary degradation. Withdrawals would reduce the amount of land open to disturbance.

Salable Minerals

Under this alternative, 459,700 acres would be closed to disposal of mineral materials and 169,480 would be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to vegetation within those areas.

Managing riparian areas to preclude surface disturbance within 500 feet of all riparian areas would minimize the potential for impacts from surface disturbance associated with disposal of mineral materials to riparian and wetland communities.

Impacts from Special Designations

Wilderness Study Areas

Managing WSAs under the IMP would prevent most ground disturbing activities. This would result in protection for vegetation resources. However, opportunities for vegetation treatments could be limited, which would inhibit or prevent attainment of ecological objectives and DFCs in these areas.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible wild and scenic rivers would help protect riparian vegetation by preventing ground disturbing activities in the river corridors. All eligible segments (12 segments – 135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would benefit riparian vegetation by limiting ground disturbance in these areas. However, opportunities for vegetation treatments could be limited, which would inhibit or prevent attainment of ecological objectives and DFCs in the river corridors.

Areas of Critical Environmental Concern

Although ACEC designation alone does not necessarily provide protection, management actions included in ACECs are often more restrictive, which indirectly provides protection for vegetation. Protections associated with ACEC designation that would affect vegetation include managing oil and gas leasing as closed or open with no surface occupancy; more restrictive VRM designations; restricting livestock grazing; and travel limitations. Alternative N continues the designation of four ACECs (14,780 acres). Vegetation was specifically identified as a relevant and important value in the North and South Caineville Mesa ACECs. Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; unavailable for livestock grazing in three of the four ACECs; and acquisition of inholdings) would reduce surface disturbing activities within those areas and protect vegetation resources. However, opportunities for vegetation treatments could be limited, which would inhibit or prevent attainment of ecological objectives and DFCs in these areas.

Alternative A

Impacts from Soil Resources

Impacts would be the same as described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N, although under Alternative A, maximum treatment acreage limits would be set (averaging 73,600 annually for all treatments). No target (maximum or minimum) treatment acreage limits would be set under Alternative N. It is therefore likely that in some years, fewer acres would be treated under that alternative; however, in other years (when there are numerous wildland fires) more acres could be treated because the 2005 Land Use Plan Amendment for Fire and Fuels Management allows the full range of fire and fuels management actions to achieve ecosystem sustainability. Alternative A allows for the treatment of vegetation using a full range of treatment types (including mechanical, wildland fire use and/or prescribed fire, and chemical methods). Additionally, full suppression of wildland fires is not mandated under Alternative A; this decision would reduce pinyon-juniper encroachment and decrease the risk of large or intense wildfires. Thus, impacts to vegetation under Alternative A would likely result in increased short-term impacts (altered vegetation structure) as compared to Alternative N, but decreased long-term impacts (improved vegetative cover and increased plant diversity, thereby stabilizing soil, improving overall watershed function and condition, and allowing greater infiltration and soil moisture storage).

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management would be similar to those described under Alternative N. Under Alternative A, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 0 acres would be designated as VRM Class II; 392,800 acres (18%) would be designated as VRM Class III; and 1,288,300 acres (61%) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate to major modifications in the existing character of the landscape and allow the greatest flexibility for vegetation treatments. This would allow for increased short-term impacts to vegetation, but also long-term improvement in ecological condition of treated areas.

Impacts from Special Status Species

The types of impacts experienced as a result of special status species management would be similar to those described under Alternative N. However, this alternative includes additional strategies to avoid or reduce fragmenting habitat (including employing directional drilling for oil and gas; closing and

reclaiming roads; mitigating the effects of proposed projects that have the potential of causing long-term or permanent impacts or losses of habitat; and using species-specific buffers for surface-disturbing activities). All of these actions would have beneficial impacts on vegetation by reducing surface disturbance and reducing the potential for invasion and spread of invasive species.

Impacts from Fish and Wildlife

The types of impacts experienced as a result of fish and wildlife management would be similar to those described under Alternative N. However, this alternative proposes restricting surface disturbance or surface occupancy within 330 feet of riparian areas (versus 500 feet for Alternative N), and includes less restrictions on OHV use in crucial wildlife habitats. These management actions would increase the potential for degradation of riparian and upland habitats, as well as the potential for spread of invasive species under Alternative A.

Impacts from Wild Horses and Burros

Impacts would be the same as described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for vegetation.

Impacts from Forestry and Woodland Products

This alternative allows for harvesting of forest and woodland products across most of the RFO (all areas, outside of WSAs) where sustainable and compatible with restoring, maintaining, or improving forest health. While impacts would be similar to those described for Alternative N, this alternative includes objectives to emphasize woodland health. Harvesting of forest and woodland products would have localized, minor to moderate impacts on vegetation from vehicle use to access the harvesting site and from loss of vegetative cover. Indirect effects could include short or long-term changes in species composition and/or community structure. However, removal of pinyon and juniper trees from areas where they have invaded or areas where canopy densities have increased results in reduced amounts of bare ground and increased litter at the soil surface. Since pinyon pine and juniper vigorously compete with other plants for available soil water, their removal allows for regrowth of grasses and shrubs in the understory vegetation. This acts as a protective vegetative cover for the soil surface, resulting in decreased erosion and improved ecological condition of the plant community. Thus, management of forestry and woodland products under Alternative A would have beneficial impacts to vegetation as compared to Alternative N.

Improvement in ecological condition of forests and woodlands could also improve riparian-wetland function by improving soil stability, reducing excessive runoff, and increasing infiltration of water into root systems that could indirectly benefit riparian resources. However, because areas where forest and woodland products tend to be harvested from are generally not riparian areas, the overall effects of forestry and woodlands decisions on riparian resources would be negligible.

Impacts from Livestock Grazing

The types of impacts experienced as a result of livestock grazing management would be similar to those described under Alternative N. Under this alternative, 102,002 acres would be unavailable to livestock grazing, while 2,025,998 acres would be available for grazing. Although livestock grazing can increase soil compaction in trailing, watering, and mineral supplement areas, and indirectly impact riparian-wetland areas and riparian functioning condition, grazing within the RFO would be managed in keeping with applicable laws and regulations, and with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration, and BLM's Utah Riparian Policy. Adhering to these statewide

standards, guidelines, and policy would minimize impacts from livestock grazing by maintaining plant vigor and increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, productivity, and riparian-wetland function. This would ensure that upland soils would exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform and that riparian areas achieve and/or maintain proper functioning condition. Impacts would therefore be minor area-wide, but potentially moderate in specific areas such as riparian areas.

Impacts from Recreation

Under Alternative A, five SRMAs (516,400 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Limiting OHV use in the Otter Creek Reservoir SRMA to designated routes would maintain existing soil, water, and riparian resource conditions by concentrating impacts to already disturbed areas and reducing the extent of soil compaction. Maintaining the existing condition of riparian-wetland areas would reduce soil erosion. Reducing the extent of soil compaction would indirectly maintain existing infiltration and soil-water distribution patterns.

The construction of recreation facilities in the Big Rock SRMA could have localized adverse short-term impacts from removal of vegetation in those areas; however, long-term impacts would be beneficial by concentrating use areas and thus limiting the extent of vegetation disturbance. Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for vegetation disturbance from recreation. Limiting OHV recreation use in the Dirty Devil/Robbers Roost SRMA to designated routes would reduce potential surface disturbance and localized removal of vegetation. Managing the Sahara Sands SRMA (12,300 acres) for a roaded natural recreational opportunity and the development of facilities would have site-specific impacts, including soil compaction, changes in surface hydrology, and increased runoff. Managing the Factory Butte SRMA (199,700 acres) for a motorized recreational opportunity and allowing moderate to extensive landscape modification would have potentially major impacts by eliminating vegetation or altering plant communities (reducing species diversity and/or increasing the potential for introduction and spread of invasive species) over a relatively large area.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, Alternative A designates 449,000 acres (21%) of the RFO as open to motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,679,000 acres (79%) of the RFO; and 0 acres would be closed to motorized and mechanized vehicle use. The amount of open areas, although greatly reduced as compared to Alternative N, would still result in impacts to vegetation from vehicle use in those areas.

The remainder of the RFO would be have motorized/mechanized use limited to designated routes, which would limit potential impacts to vegetation occurring in the immediate vicinity of the route. The public would have access to 4,312 miles of unpaved routes (essentially the same as Alternative N); 68 miles of routes would be closed, allowing these areas to revegetate. No areas would be closed to motorized/mechanized use, with no accompanying benefits to vegetation.

Vehicle use in riparian areas could affect riparian functioning condition by crushing vegetation, compacting soils, eroding stream banks, increasing sediment in streams, and spreading invasive species. As shown in Table 4-1, this alternative would designate routes with 443 stream crossings, which is the second most of all the alternatives.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty would be similar to those described under Alternative N, although impacts to vegetation could occur over a larger area due to fewer acres proposed for withdrawal (154,700 acres under Alternative A), more acres proposed for disposal (13,400 acres), and fewer right-of-way avoidance areas (446,900 acres closed to oil and gas leasing). Thus, impacts to vegetation from surface disturbing activities would be greater under this alternative as compared to Alternative N.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N. Development of oil and gas resources could affect vegetation due to the surface disturbances associated with such development. However, adherence to best management practices outlined in mining laws, plans of operation, pertinent restrictions, standard terms and conditions, etc., would help minimize impacts to impacts. Closing or withdrawing areas from mineral operations would prevent impacts to soils within those areas (see Lands and Realty section for a discussion on withdrawals). This alternative proposes fewer acres of mineral withdrawals (154,700 acres), fewer areas closed to oil and gas leasing and disposal of mineral materials (446,900 acres), and fewer areas open to oil and gas leasing with no surface occupancy (0 acres), which would provide less protection to vegetation by precluding surface disturbing activities.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Under this alternative, no eligible river segments would be recommended as suitable. No special management to protect the outstandingly remarkable values of these rivers would be provided so riparian vegetation within these corridors would not be protected from ground disturbing activities in the river corridors from WSR designation. Opportunities for vegetation treatments would not be restricted, which could assist in attaining ecological objectives and DFCs in the river corridors. However, most of the eligible river segments (98 of the 135 miles total) are also within WSAs. Consequently, none of the above-described ground disturbing activities would occur in those river corridors.

Areas of Critical Environmental Concern

Alternative A designates no ACECs, so no special management to protect vegetation (including vegetation in the North and South Caineville Mesa potential ACECs which was specifically identified as a relevant and important value in those areas) is proposed. Allowing uses that would cause irreparable damage to the relevant and important values in these areas could result in surface disturbing activities within those areas that could impact vegetation resources. However, opportunities for vegetation treatments would not be limited, which would assist in attaining ecological objectives and DFCs in these areas.

Alternative B: Preferred Alternative

Impacts from Soil Resources

Impacts would be the same as described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as described under Alternative A.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N. Under Alternative B, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 209,000 acres (10%) would be managed as VRM Class II; 410,800 (19%) would be managed as VRM Class III; and 1,061,300 (50%) would be managed as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate to major modifications in the existing character of the landscape, and allow the greatest flexibility for vegetation treatments. However, less of the RFO would be designated in these VRM classes than in Alternatives N or A, resulting in less potential short-term impacts to vegetation and less long-term improvement in ecological condition of degraded areas as compared to those alternatives.

Impacts from Special Status Species

Impacts would be the same as described under Alternative A.

Impacts from Fish and Wildlife

Impacts to vegetation under this alternative would be similar to those described for Alternative A. However, this alternative also proposes temporal (winter and/or spring, depending on species) restrictions on surface disturbing activities (to protect wildlife during critical life stages) and restricts OHV use in crucial habitats. These management actions would also benefit vegetation by limiting activities during wet seasons (which would reduce soil compaction and could reduce plant vigor) and restricting activities that could result in vegetation loss.

Impacts from Wild Horses and Burros

Under this alternative, 600 AUMs are allocated to burros in the Canyonlands HMA to meet an AML upper limit of 100. These numbers are greater than either Alternative N or A, but less than C or D (which establish a herd size of between 120 to 200 head). Since more burros result in a greater possibility of adverse impacts to vegetation due to trampling and reduced vegetation cover, this alternative would potentially impact vegetation more than Alternative N or A, but less than C or D.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for vegetation.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forestry and woodlands management would be similar to Alternative A, although more lands would be closed to this type of use under Alternative B (2 WSR segments – 59 miles, as compared to zero segments under Alternative A). Thus, localized disturbance to vegetation and changes in vegetation community composition and structure would be reduced under this alternative as compared to Alternative A.

Impacts from Livestock Grazing

The types of impacts experienced as a result of livestock grazing decisions would be similar to Alternative A, although less land would be available for grazing under this alternative (1,989,048 acres as compared to 2,025,998 acres under Alternative A). Since livestock grazing would be managed in keeping with applicable laws and regulations, and with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration and BLM's Utah Riparian Policy, impacts from livestock grazing would be minimized by maintaining plant vigor and increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, productivity, and

riparian-wetland function. Impacts would therefore be minor area-wide, but potentially moderate in specific areas such as riparian areas, although the difference between alternatives is negligible.

Impacts from Recreation

Under Alternative B, five SRMAs (838,700 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Limiting OHV use to designated routes would maintain existing soil, water, and riparian resource conditions by concentrating impacts to already disturbed areas and reducing the extent of soil compaction. Maintaining the existing condition of riparian-wetland areas would reduce soil erosion. Reducing the extent of soil compaction would indirectly maintain existing infiltration and soil-water distribution patterns.

Establishing a Factory Butte SRMA would limit the impacts of cross-country off-highway vehicle use on vegetation to a 2,600-acre area. Construction of facilities in the Big Rock SRMA would have localized adverse impacts from removal of vegetation in those areas; long-term impacts would be beneficial by concentrating use areas and thus limiting the extent of vegetation disturbance. Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would reduce the potential for surface disturbance and localized removal of vegetation from recreation. Closing canyons within the Dirty Devil/Robbers Roost SRMA to OHV recreation use and limiting OHV recreation use to designated routes would reduce potential impacts to vegetation. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural recreation experience and the development of facilities would have localized adverse impacts from removal of vegetation in those areas; long-term impacts would be beneficial by concentrating use areas and thus limiting the extent of vegetation disturbance. Managing the Henry Mountains SRMA for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for soil disturbance.

This alternative, which establishes more areas as SRMAs than either Alternative N or A but less than Alternative C or D, would therefore provide more protection to vegetation as a result of recreation decisions than either Alternative N or A and less than Alternative C or D.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, this alternative designates only 8,400 acres (<1% of the RFO) as open to motorized and mechanized vehicles, which would minimize direct impacts to vegetation from vehicles trampling plants. The amount of open areas, although greatly reduced as compared to Alternative N, would result in impacts to vegetation (both direct and indirect) from vehicle use in those areas. The absence of vehicle use in riparian areas would benefit riparian functioning condition by eliminating vehicles crushing vegetation, compacting soils, eroding stream banks, increasing sediment in streams, and spreading invasive species.

This alternative would close 210,400 acres (10% of the RFO) to motorized use, which would eliminate all impacts to vegetation from vehicles driving over plants and from dust depositing on individual plants. This would allow for revegetation and increased plant vigor in closed areas that had previously been open or limited.

The remainder of the RFO (1,909,200 acres) would have motorized/mechanized use limited to designated routes, which would limit potential impacts to vegetation occurring in the immediate vicinity of the route. The public would have access to 4,176 miles of unpaved routes (slightly less than Alternative N); 204 miles of routes would be closed (more than double the amount closed in Alternative N), allowing these areas to revegetate.

Vehicle use in riparian areas could affect riparian functioning condition by crushing vegetation, compacting soils, eroding stream banks, increasing sediment in streams, and spreading invasive species. As shown in Table 4-1, this alternative would designate routes with 400 stream crossings, which is less than Alternatives N and A but more than Alternatives C or D.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty would be similar to those described under Alternative N, although impacts to vegetation could occur over a smaller area due to more acres proposed for withdrawal (176,200 acres under Alternative B) and more right-of-way avoidance areas (561,400 acres closed to oil and gas leasing or open with no surface occupancy, 2 suitable WSR segments – 59 miles, and 2 ACECs – 2,530 acres). Thus, impacts to vegetation from surface disturbing activities would be less under this alternative as compared to Alternative N.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy decisions would be similar to those described under Alternative N. However, this alternative proposes more acres of mineral withdrawals (176,200 acres) as compared to Alternatives N or A, which would preclude mineral and energy development in those areas and thus allow less disturbance to vegetation.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable wild and scenic rivers would help protect vegetation by preventing ground disturbing activities in the river corridors. Two suitable segments (59 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would benefit riparian vegetation by limiting ground disturbance in these areas, although opportunities for vegetation treatments could be limited, which could inhibit or prevent attainment of ecological objectives and DFCs in these river corridors.

Of the remaining segments, 63 miles are within WSAs, leaving 13 miles on which ground disturbing activities could potentially impact vegetation. This alternative would provide less protection to vegetation from WSR decisions than Alternatives N, C or D but more than Alternative A.

Areas of Critical Environmental Concern

Alternative B designates two ACECs (2,530 acres). Vegetation was specifically identified as a relevant and important value in the North Caineville Mesa ACEC. Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; making them unavailable for livestock grazing; and acquiring inholdings) would reduce surface disturbing activities within those areas, thereby protecting vegetation. However, opportunities for vegetation treatments could be limited, which could inhibit or prevent attainment of ecological objectives and DFCs in these areas.

Alternative C

Impacts from Soil Resources

Impacts would be the same as described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative A, although under Alternative C fewer acres would be treated annually (averaging 26,000 annually for all treatments). In addition, this alternative proposes using only treatment methods that mimic natural processes to manage vegetation, which could be less effective than conventional vegetation treatments and would not be effective in all vegetation communities. This could result in the loss of existing vegetation cover, indirectly decreasing ecological condition of the treated area. It could also make control of some invasive species difficult because of lack of suitable substitute treatments (using fire as a control tool for invasive species including tamarisk could increase the growth and spread of these species), possibly allowing the spread of invasive species and displacement of desirable vegetation. Thus, impacts to vegetation under Alternative C would likely result in reduced short-term impacts (altered vegetation structure) as compared to Alternative A, but increased long-term impacts (reduced vegetative cover and plant diversity).

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N. Under Alternative C, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 230,600 acres (11%) would be designated as VRM Class II; 509,100 (24%) would be designated as VRM Class III; and 941,400 (44%) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate to major modifications in the existing character of the landscape, and allow greater flexibility for vegetation treatments. However, less of the RFO would be designated in these VRM classes than in Alternatives N, A or B, resulting in less potential short-term impacts to vegetation and less long-term improvement in ecological condition of degraded areas as compared to those alternatives.

Impacts from Special Status Species

Impacts would be the same as described under Alternative A.

Impacts from Fish and Wildlife

The types of impacts experienced as a result of fish and wildlife management would be similar to those described under Alternative A. However, this alternative proposes restricting surface disturbance or surface occupancy within 660 feet of riparian areas (versus 330 feet for Alternative A), includes more restrictions on OHV use in crucial wildlife habitats, and designates an ACEC in the Henry Mountains (288,200 acres) for the protection of wildlife values. These additional management actions would decrease the potential for impacts to vegetation and increase protection for riparian vegetation under this alternative.

Impacts from Wild Horses and Burros

Under this alternative, 1,200 AUMs are allocated to burros in the Canyonlands HMA to meet an AML upper limit of 200. These numbers are greater than Alternatives N, A, or B. Since more burros result in a greater possibility of adverse impacts on vegetation due to trampling, compaction, and reduced vegetation cover, this alternative would potentially impact vegetation more than Alternatives N, A or B.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for vegetation.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forestry and woodlands management would be similar to Alternative B, although more lands would be closed to this type of use under Alternative C (12 WSR segments – 135 miles). Thus, localized disturbance to vegetation and changes in vegetation community composition and structure would be reduced under this alternative as compared to Alternative B.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative B.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described under Alternative B. Under Alternative C, four SRMAs (928,550 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. No SRMAs would be established for OHV recreation, which would eliminate impacts to vegetation from cross-country OHV use. All SRMAs established would be to provide for primitive or semi-primitive recreation opportunities. OHV use would be limited to designated routes, and facilities would either not be provided or would be the minimal necessary. These management prescriptions would reduce the potential for surface disturbance and localized removal of vegetation from recreation, as well as benefiting riparian functioning condition by eliminating vehicles crushing vegetation, compacting soils, eroding stream banks, increasing sediment in streams, and spreading invasive species.

This alternative, which establishes more areas as SRMAs than either Alternatives N, A or B but less than Alternative D, would therefore provide more protection to vegetation as a result of recreation decisions than either Alternatives N, A or B and less than Alternative D.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative B. However, this alternative designates no areas as open to motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,445,000 acres (68%) of the RFO; and 683,000 acres (32%) would be closed to motorized and mechanized vehicle use. The lack of open areas would eliminate impacts to vegetation from vehicle use in those areas.

Limiting motorized/mechanized use to designated routes – the public would have access to 3,192 miles of unpaved routes – this would limit impacts to vegetation to areas in the immediate vicinity of the designated route; 1,188 miles of routes would be closed, allowing these areas to revegetate. Prohibiting construction of new routes in riparian areas would provide additional protection for riparian resources by precluding new disturbance (crushing of vegetation, soil compaction, erosion of stream banks, increasing sediment in streams, and spreading invasive species) in these areas.

Vehicle use in riparian areas could affect riparian functioning condition by crushing vegetation, compacting soils, eroding stream banks, increasing sediment in streams, and spreading invasive species. As shown in Table 4-1, this alternative would designate routes with 273 stream crossings, which is the second most of all the alternatives, only slightly more than Alternative D.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty decisions would be similar to those described under Alternative N, although impacts to vegetation could occur over a much smaller area due to more acres proposed for withdrawal (331,100 acres under Alternative C) and more right-of-way avoidance areas (735,100 acres closed to oil and gas leasing or open with no surface occupancy, 12

suitable WSR segments, and 16 ACECs). Thus, impacts to vegetation from surface disturbing activities would be less under this alternative as compared to Alternative N.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy decisions would be similar to those described under Alternative N. However, this alternative proposes more acres of mineral withdrawals (331,100 acres), as compared to Alternatives N, A or B, which would preclude mineral and energy development in those areas and thus allow less disturbance to vegetation.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable wild and scenic rivers would help protect vegetation by preventing ground disturbing activities in the river corridors. Twelve suitable segments (135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would benefit riparian vegetation by limiting ground disturbance in these areas. However, opportunities for vegetation treatments could be limited, which could inhibit or prevent attainment of ecological objectives and DFCs in these river corridors.

Areas of Critical Environmental Concern

Alternative C designates 16 ACECs (886,810 acres). Vegetation was specifically identified as a relevant and important value in the North and South Caineville Mesa ACECs, and vegetation management was identified as a management prescription in the Henry Mountains ACEC to provide improved habitat for bison and mule deer, both identified as relevant and important values. Allowing no uses (in all ACECs except for the Henry Mountains) that would cause irreparable damage to the relevant and important values in these areas (such as closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; designating as VRM Class II; making them unavailable for livestock grazing or fencing riparian areas in ACECs where grazing occurs; and acquiring inholdings) would reduce surface disturbing activities within those areas, protecting vegetation and improving ecological condition of riparian areas. However, opportunities for vegetation treatments could be limited, which could inhibit or prevent attainment of ecological objectives and DFCs in these areas.

Alternative D

Impacts from Soil Resources

Impacts would be the same as described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as described under Alternative C.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N, although these impacts would occur over a much smaller area due to differences in VRM class designations between the two alternatives. Under Alternative D, 1,129,600 acres (53% of the lands managed by the RFO) would be designated as VRM Class I; 66,700 acres (3%) would be designated as VRM Class II; 355,100 (17%) would be designated as VRM Class III; and 576,600 (27%) would be designated as VRM Class IV. Just over half of the RFO would be designated as VRM Class I or II, meaning that the existing character of the landscape must be preserved or retained.

Thus, surface disturbing activities would generally not be allowed in these areas, resulting in restrictions on treating vegetation even in areas where ecological condition has been degraded. This alternative would therefore result in less potential for wind and water erosion and sedimentation to streams, as well as less potential short-term impacts to vegetation and less long-term improvement in ecological condition of degraded areas as compared to Alternatives N, A, B or C.

Impacts from Special Status Species

Impacts would be the same as described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as described under Alternative C.

Impacts from Wild Horses and Burros

Impacts would be the same as described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, 682,600 acres would be managed to maintain wilderness characteristics. Management actions to achieve this include: closing to oil and gas leasing; closing to OHV use; and designating as VRM Class I. The emphasis on naturalness and a lack of surface disturbing activities within these areas would minimize direct impacts to vegetation from surface disturbing activities. It could also limit options of managing vegetation which could result in less long-term improvement in ecological condition of degraded areas as compared to Alternatives N, A, B or C, since opportunities to perform vegetation treatments would be very limited in their methods. This would be especially true in the Kingston Ridge, Limestone Cliffs, and Wildcat Mesa non-WSA areas where vegetation manipulations could be needed to improve deer and elk habitat, as well as in the Ragged Mountain, Mount Pennell, Mount Ellen/Blue Hills, Pole Canyon, Mount Hillers, and Bull Mountain non-WSA lands where vegetation treatments could be needed to improve buffalo habitat. Vegetation treatments could only be completed using fire or biological treatment methods, which may not obtain the results being sought for habitat manipulation in a timely manner.

Impacts from Forestry and Woodland Products

Impacts would be similar to those described for Alternative C except that no commercial or non-commercial forest and woodland products would be allowed within the 682,600 acres of non-WSA lands with wilderness characteristics. Thus, localized surface disturbance and changes in vegetation community composition and structure would be greatly reduced under this alternative as compared to all of the other alternatives.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative C.

Impacts from Recreation

Under Alternative D, seven SRMAs (1,358,200 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Managing these SRMAs for dispersed recreation in a primitive or semi-primitive setting would indirectly maintain or reduce the potential for surface disturbance from recreation. Associated management actions (closing or limiting OHV use, and precluding development of facilities) would minimize the potential for surface disturbance and localized removal of vegetation from recreation, as well as benefiting riparian functioning condition by eliminating vehicles crushing vegetation, compacting soils, eroding stream banks, increasing sediment in streams, and spreading invasive species.

This alternative, which establishes more areas as SRMAs than any other alternatives, would provide the most protection to vegetation and riparian/wetland areas.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. However, this alternative designates 972,800 acres (46% of the RFO) as limited to designated routes and 1,155,200 acres (54%) as closed to motorized and mechanized vehicle use. The lack of open areas would eliminate impacts to vegetation from vehicle use in those areas. Limiting motorized/mechanized use to designated routes – the public would have access to 3,043 miles of unpaved routes – would generally limit impacts to vegetation to areas in the immediate vicinity of the designated route; 1,242 miles of routes would be closed (the most of any alternative), allowing these areas to revegetate.

Vehicle use in riparian areas could affect riparian functioning condition by crushing vegetation, compacting soils, eroding stream banks, increasing sediment in streams, and spreading invasive species. As shown in Table 4-1, this alternative would designate routes with 266 stream crossings, which is the least of all the alternatives.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty would be similar to those described under Alternative N, although impacts to vegetation would occur over a much smaller area due to more acres proposed for withdrawal (903,900 acres under Alternative D) and more right-of-way avoidance areas (1,203,800 acres closed to oil and gas leasing or open with no surface occupancy, 12 suitable WSR segments, and 16 ACECs). Thus, impacts to vegetation from surface disturbing activities would be much less under this alternative as compared to all the other alternatives.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N, although impacts to vegetation would occur over a much smaller area due to more acres proposed for withdrawal (903,900 acres under Alternative D) and more areas closed to oil and gas leasing or open with no surface occupancy (1,203,800 acres). Closing or withdrawing areas from mineral operations would prevent impacts to vegetation within those areas. Thus, impacts to vegetation from mining-related surface disturbing activities would be much less under this alternative as compared to all the other alternatives.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as described under Alternative C.

4.3.5 Cultural Resources

This section presents potential impacts of the alternatives on cultural resources, specifically archaeological, historical, and resources of importance to American Indians, as determined through

changes in the resources or access to them. The locations of most cultural resource sites in the Planning Area are not known. See Chapter 3 for a discussion of cultural resources in the RFO.

Archaeological and historical resources may be impacted by unauthorized collection and excavation, vandalism, erosion, trampling, OHV use off-road, fire, soil compaction, and mechanized surface disturbance. Indirect impacts may cause surface disturbance that allows subsequent soil erosion and undermining of sites and structures. Indirect impacts may also allow access or lack of access for vandalism. In addition, resources of importance to American Indians may be impacted by unauthorized collection, vandalism, erosion, trampling, OHV use off-road, fire, mechanized surface disturbance, and loss of access to sacred or traditional use areas. These impacts affect the artifacts, features and architecture that make up these sites in ways that reduce their integrity, scramble their context, alter their connection to traditional values, decrease their research potential, and ultimately affect a site's eligibility for placement on the National Register of Historic Places (NRHP). Archaeological data consist of both "objects" (artifacts, features, and architecture), and the spatial relationships between these objects. The ability to interpret and understand the past is based on both of these things. Surface and subsurface disturbances can destroy both the "objects" as well as their spatial relationships (context) and therefore any interpretation and understanding that derives from them. Impacts from surface disturbance can not only affect the setting and physical integrity of sites and areas, but diminish the interpretive value of them as well. In general, impacts on cultural resources from surface disturbance are long-term in nature; once a site has been impacted, the effect typically cannot be reversed.

Current BLM policy is to categorize cultural resources according to their potential or best use. The six use categories outlined in the BLM 8110 manual recognize a greater degree of uses different kinds of sites may be put to or objectives they may serve. The six categories are:

- Scientific Use
- Conservation for Future Use
- Traditional Use
- Public Use
- Experimental Use
- Discharged from Management

In addition to providing clear management direction for specific classes of sites, allocation of cultural resources to these use categories also allows land managers to address the values of cultural resources before they are threatened by an undertaking. See Table 2-6a (in Chapter 2) for cultural resource site use allocation by alternative.

4.3.5.1 Native American Religious Concerns

This section also discusses impacts to Native American religious concerns from actions either implemented or authorized by BLM. There are two major issues relating to Americans Indians that all Federal agencies must consider: 1) traditional cultural properties and, 2) sacred sites.

A traditional cultural property (TCP) is a property possessing traditional cultural significance that is derived from the role the property plays in a group's historically rooted beliefs, customs, and practices. There are various types of TCPs but those of concern to Native American coordination efforts are typically 1) locations associated with the traditional beliefs of a American Indian group about its origins, its cultural history, the nature of the world, or 2) locations where American Indian religious practitioners have historically gone, and may still go, to perform traditional ceremonial activities. A TCP is a property that is eligible for inclusion in the National Register of Historic Places because of its association with

cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community.

Sacred sites are defined in Executive Order 13007, Indian Sacred Sites, as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." This appears to be a very limiting definition, but sacred sites can and do consist of a variety of places and landscapes (e.g., springs, mountains, caves, archaeological sites, etc). Some of the better known sites are the Sweetgrass Hills in Montana, the San Francisco Peaks in Arizona and the Medicine Wheel in the Bighorn Mountains of Wyoming.

The Executive Order requires that sacred sites must be identified as such either by an Indian tribe or by an Indian individual whom the tribe has named as the appropriately authoritative representative of its religion. The important point here is that the Federal government has no role in the identification or validation of sacred sites. The sovereign-government-to-sovereign-government nature of consultation between Indian tribes and the Federal government dictates that the determination of sacred sites is a Native American role. The tribes may or may not choose to disclose the qualities that contribute to the sacred nature of a site but, regardless of their choice, there is no review of such determinations by a Federal agency.

Sacred sites generally fall under a completely different set of criteria than TCPs. A big difference between TCPs and sacred sites is that TCPs are a Section 106 issue with protection afforded by compliance with that section of the National Historic Preservation Act (NHPA). Section 106 compliance involves detailed review by the State Historic Preservation Officer and, if need be, the Advisory Council on Historic Preservation. Sacred sites are not subject to such review. Sacred sites are a National Environmental Policy Act issue and have to be treated carefully in any land use planning and decision making. However, even this distinction can be blurred in the case of the sacred site that meets certain National Register eligibility criteria and also qualifies as a TCP. In such cases, sacred sites are subject to Section 106 compliance.

In addition to the NEPA requirements, Executive Order (EO) 13007 requires Federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by American Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. It also requires agencies to develop procedures for reasonable notification of proposed actions or land management policies that may restrict access to or ceremonial use of, or adversely affect, sacred sites.

Impacts and Mitigation

Mitigation of impacts to Native American religious concerns is an entirely different matter than the treatment of threatened cultural resources. From the perspective of traditional religious practitioners, a particular area could be regarded as a hallowed place, perhaps devoted to or having been the scene of special religious rites and ceremonies. Practitioners and believers might perceive any secular use or development in such a place to be injurious to its exceptional sacred qualities or a sacrilege and, therefore, unacceptable from their view. Because the BLM manager might be put in the position of having to weigh a proposal for a legally and politically supported use, such as mineral development, in an area regarded as sacred and inviolate, the participation of tribes in the environmental analysis process is both encouraged and invited so that these concerns might be made known. Mitigation strategies designed to reduce or eliminate impacts of proposed undertakings generally follow models related to NEPA and NHPA and their implementing regulations. In the case of the NHPA, these mitigation strategies generally consist of resource avoidance, project redesign, or recovering the data that makes the historic resource important

before it succumbs to project implementation. However, these conventional methods of mitigation generally do not appropriately address the consequences to Native American cultural and religious concerns.

It is possible that some of the traditional mitigation strategies used by Federal agencies could work with American Indian issues if those issues are tangible in nature. For example, a BLM proposal might be modified to allow for continuing traditional resource use by American Indians, or that traditional use might even be moved outside the area affected by the project if the use by American Indians is flexible. Access to a sacred site, as well as the site itself, may be closed to everyone but American Indians for a certain time. Accommodating ceremonial use may mean assuring privacy. Both sides can be flexible in such cases. In contrast, the abstract, non-resource issues surrounding belief and practice are a much different matter. There is no appropriate mitigation that could be applied to something as intangible as a belief system.

Any protection afforded these special places requires that the Federal land manager know where they are so protective measures can be implemented. This knowledge often becomes an issue in itself because the relationship between Indian Tribes and the Federal government has never caused American Indians to want to reveal or entrust sacred concerns to Federal officials. Since almost any action taken by this agency could potentially affect both tangible and intangible Native American concerns in some way, it becomes BLM's responsibility to identify those concerns and deal with them appropriately. That situation would remain the same regardless of the management alternative chosen. A Memorandum of Understanding (MOU) between the BLM and the Paiute Indian Tribe of Utah was signed in 1998 dealing with coordination between the two entities and outlining the coordination process, the tribal area of interest, types of projects the tribe is interested in, and the resolution of any issues that may arise during consultation. This MOU marks substantial progress towards the identification and resolution of these sensitive issues. The BLM proposes to enter into agreements, formally or informally, with all tribes interested in dealing with the RFO. This should make consultation efforts for the RFO both meaningful and productive. Any agreements which are developed could affect future management as Native American concerns are addressed.

There are only two areas in the RFO that have been identified to date that have special significance to American Indian tribes: Quitchupah Canyon in Sevier and Emery Counties (held sacred by the Paiute Indian Tribe of Utah) and the Henry Mountains of Wayne and Garfield Counties (sacred to the Navajo Nation). Other concerns to date have been restricted to smaller areas and individual cultural resource sites discovered during the normal field inventory process. All of these sites would be considered carefully in future project planning. Tribes would continue to be consulted about these resources and how they should be managed in order to eliminate or mitigate impacts.

Methods and Assumptions

To analyze the potential effects of the alternatives on archaeological and historical resources, information was gathered from inventories and excavations in and adjacent to the Planning Area; however, less than 1% of the RFO has been inventoried and only a handful of excavations have been conducted. The analysis is also based on professional expertise of BLM specialists at the RFO, a review of the relevant scientific literature, and consultation with tribal governments and individual tribal members.

Effects are quantified where possible. In absence of quantitative data, best professional judgment was used. Impacts are sometimes described using ranges of potential impacts or in qualitative terms, if appropriate. The intensities of impacts are also described, where possible.

This analysis was based on the following assumptions:

- All laws for the management and protection of cultural resources would be followed, to the extent allowed by budget and available personnel.
- Section 106 inventories and mitigation would be conducted for all proposed projects, as required by NHPA, under each alternative.
- Cultural resources would continue to be discovered throughout the RFO.
- Some proactive Section 110 inventory, research, stabilization, or preservation would be accomplished in the Planning Area each year.
- NRHP listed and some NRHP eligible sites as well as the cultural resources in the ACECs would be monitored for vandalism and protected or stabilized, as necessary.
- All surface disturbing activities include mitigation to reduce impacts to cultural resources. Analysis of impacts includes all mitigation.
- The demand for use of cultural resources, public use, scientific use, and traditional use, would remain at current levels or increase slightly.
- As access to an area increases, incidental damage of cultural resources adjacent to the access route(s) would increase. Impacts from incidental damage would be reduced as distance from the access route increases.

Environmental Consequences

Impacts to cultural resources could result from actions proposed under the following resource management programs:

- Vegetation and Fire and Fuels Management
- Cultural Resources
- Visual Resources
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on cultural resources.

Alternative N: No Action

Impacts from Vegetation and Fire and Fuels Management

Restoration activities under this alternative would continue to be implemented using a variety of treatment methods; impacts to cultural resources would vary by treatment method. Eradication of noxious weeds may involve surface disturbance, which also could impact cultural sites. Sites eligible for listing on the NRHP in these areas would continue to be avoided by any surface disturbing activity. Mitigation of some impacts would be provided by following Section 106 procedures.

Wildland fire itself does not affect cultural resources in the same manner as surface disturbing activities. Impacts from fire vary based on the type of material that composes the cultural resources as well as the temperature and duration of exposure to fire. As a general rule, fire does not affect buried cultural materials. Studies show that even a few inches of soil cover (four inches) are sufficient to protect cultural

materials (Oster no date). Fires that burn hot and fast through a site may have less effect on certain types of cultural materials than fires that smolder in the duff or burn for a long period of time, allowing heat from the fire to penetrate the surface. Determining temporal context is an important part of archaeology. Fire has the potential to adversely impact the dating potential of archaeological data obtained from both organic and inorganic material (Deal no date, Buenger 2003, Lloyd *et al.* 2002, Shackley *et al.* 2002, Solomon 2002). The high heat from fire can and often does destroy the usefulness of datable deposits.

Prehistoric and historic resources potentially affected by fire may be inorganic (lithic, ceramics, cans, glass, rock art) or organic (basketry, wooden structures, dendroglyphs). Generally speaking organic materials are more at risk as they tend to burn or alter at lower temperatures than inorganic items. Fire impacts to inorganic cultural resources include fracturing, shattering, and changes in color and internal luster, which might reduce an artifact's ability to render information about the past. As a general rule, hotter temperatures and longer exposure to fire are more likely to affect lithic materials. When these materials are likely to be present, it may be necessary to take protective measures. Historic earthworks such as trails, roads, irrigation ditches, and canals are less sensitive to fire. Wildland fire could also impact rock art. Fire effects include soot smudging and discoloration from smoke, which obscure the rock art images; degradation of the rock surface from spalling, exfoliation, and increased weathering; changes in organic paints due to heat; and damage to rock varnish which could destroy its potential to date the art (Tratebas 2004, Kelly and McCarthy 2001).

Emergency suppression activities often are underway before any resource protection efforts are organized. Because of this, cultural resources may be inadvertently damaged. Fire suppression activities may require use of heavy equipment that can directly impact cultural resources through surface disturbance. Wildland fires may destroy or alter cultural sites susceptible to damage from fire, heat, or smoke. Fire suppression activities overall would help to stop wildland fire and ultimately protect cultural resources that might be destroyed or damaged by fire. Therefore, impacts from fire and fuels management would be minor to moderate, considerably less in intensity than wildfires that would destroy wooden features and structures and damage rock art and surface features.

Emergency stabilization and rehabilitation (ESR) of burned areas would be subject to intensive cultural resource inventories and Section 106 review. Significant cultural sites would be protected by these measures. The only unmitigated impacts would be to sites that do not meet the National Register eligibility criteria.

Prescribed fires would be allowed across sites not vulnerable to destruction by fire, such as areas that have already burned in the past. Areas excluded from fire treatment would be rock art, wooden structures or features, and any area vulnerable to the indirect effects of subsequent erosion.

Mechanical treatments require the use of heavy equipment. As described above, use of heavy equipment that can directly impact cultural resources through surface disturbance and direct destruction of artifacts and features. Biological treatments would have no direct impacts on cultural resources since the biological agent targets the vegetation species treated. Manual treatments would have minimal effects on cultural resources since all treatment is done by hand, with no use of heavy equipment.

Riparian invasive and exotic species removal could occur in some riparian areas and may directly impact archaeological and historical resources. However, treatment efforts would help to stop root damage and erosion of deposits and structures from invasive species and help to keep archaeological and historical resources intact. Mitigation associated with compliance with NEPA and NHPA would help to redesign projects so that sites are avoided or measures are taken to protect these resources.

Vegetation treatments would have indirect impacts on cultural resources from increased erosion and displacement and destruction of surface artifacts and, in some cases, destruction of surface and buried structures and features. Overall impacts from vegetation management would result in direct and indirect impacts to cultural resources, which could be partially mitigated during compliance with NEPA and Section 106 of the NHPA. Projects would be redesigned to avoid historic properties or those eligible for or listed on the NRHP, thus mitigating some of the direct and indirect impacts.

The above impacts to cultural resources would also apply to resources of importance to American Indians, with the addition that restoration, including fire and fuels management, could increase some native vegetation important to American Indians. Historically, American Indians burned areas in the RFO prior to Euro-Americans arrival to encourage growth of native plants, as well as for other reasons. Restoration efforts benefit some types of native vegetation and provide additional locations for American Indians to collect such vegetation. Impacts from all vegetation treatments, including fire and fuels management, on resources of importance to American Indians would be moderate. Traditional uses of and access to resources would continue and would be sustainable.

Impacts from Cultural Resources

Under Alternative N, present management would continue and there would be no site use allocation and no priority areas for new field inventories. Cultural resources would be managed in compliance with laws and regulations, and their management would usually be addressed only if and when a given site was threatened by a surface disturbing activity. Cultural inventories, documentation, research, protective measures, and monitoring would continue to provide information about the past in the RFO and to protect cultural resource sites.

Impacts from Visual Resources

VRM Classes I and II would help protect cultural resource sites and landscapes from visual intrusions and surface disturbance; however, such categories could also limit research excavations. Under Alternative N, none of the lands managed by the RFO are classified as VRM Class I; 529,500 acres (25%) would be managed as VRM Class II. Major modifications to the visual landscape could be allowed on 1,029,500 acres (48% of the RFO) managed as VRM Class IV. These impacts may also apply to Traditional Cultural Properties and the landscapes associated with them, although any impacts are subject to Section 106 compliance.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for cultural resources.

Impacts from Forestry and Woodland Products

This alternative allows for harvesting of forest and woodland products across most of the RFO (all areas, outside of WSAs, on a case-by-case basis). Forest and woodland harvest could have potential inadvertent impacts to cultural resources from the cross-country driving and surface disturbance associated with woodcutting and timber harvest activities. Commercial timber harvesting would only be allowed on a case-by-case basis west of Capitol Reef National Park subject to compliance with NEPA and Section 106 of the NHPA. Projects would be redesigned to avoid historic properties or those eligible for or listed on the NRHP, thus mitigating some of the direct and indirect impacts. It is important to note that not all areas open to woodland products use contain actual woodlands that would be targeted for use. As such, the actual acres on which this activity would occur is expected to be much less than the total amount of lands open for this use, which could result in localized areas where impacts to cultural resources would occur but minor impacts overall. Woodland harvest would also result in long-term benefits to traditional cultural practices of American Indians in the RFO.

Impacts from Livestock Grazing

Under this alternative, 138,952 acres would continue to be unavailable to livestock grazing, while 1,989,048 acres would continue to be available to grazing. The dispersed nature of livestock grazing causes potential disturbance by livestock spread lightly over large areas, in most cases. In areas where livestock congregate and trail, cultural resource sites could be impacted by short-term removal of protective vegetation cover, increased soil compaction, and some mixing of artifacts and contextual relationships. These types of impacts would be site-specific and localized. Adherence to Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration would result in mitigation of these possible impacts and a decrease in potential erosion and trampling. Impacts on specific areas would be identified and mitigated through the grazing permit administration process. With mitigation these impacts would likely be relatively minimal. Changes to grazing management could be subject to adherence of Section 106 of the NHPA, which would mitigate impacts to cultural resources and resources of importance to American Indians.

Impacts from Recreation

Visitor use is expected to increase throughout the RFO. Under this alternative, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified. Off-road vehicle use in particular could lead to inadvertent damage to cultural sites, as well as collection of artifacts and vandalism of sites due to ease of access across a large portion of the RFO.

Development of recreation facilities would increase the potential for the identification of cultural resources during inventories before development. In addition, providing developed sites in a few areas of high recreation use would reduce the potential for unmitigated impacts from dispersed recreation. However, there would be a potential for significant cultural resource impacts at non-developed recreation sites. Although use would be dispersed over a larger area, reducing the magnitude of impact, non-developed recreation sites usually do not have cultural resource inventories and clearances before being established.

Impacts from non-developed recreation would be mitigated on a case-by-case basis when discovered. Cultural sites adjacent to developed recreation sites could be impacted due to inadvertent damage from uninformed or unaware recreationists. The use of signs, trails, and facilities would reduce inadvertent damage to cultural resources. Limited management at popular dispersed use areas would continue to result in concentrated recreation use which could increase the potential for inadvertent damage of cultural sites.

More public land users and more intense recreational use on public lands near the communities would result in direct and indirect impacts to cultural resources. Impacts in some specific areas near communities or on some types of archaeological sites, such as caves, rock shelters, or rock art, could be moderate or major for specific targeted sites. Visitors conducting activities under special recreation permits would be educated about the provisions of the Archaeological Resources Protection Act (ARPA) and Native American Graves Protection and Repatriation Act (NAGPRA), which would help protect cultural resource sites.

These same impacts would also apply to resources of importance to American Indians, with the exception that additional recreational use could interfere with traditional uses in some areas.

Impacts from Travel Management

Impacts to cultural resources primarily stem from management actions that restrict or increase access. Increased access to cultural sites could increase contact by visitors who could intentionally damage sites by collecting surface artifacts, vandalizing, illegally digging, or otherwise excavating the sites. Visitors can also unintentionally damage sites by camping or driving across them. Reducing such access by closing roads or restricting travel could thus protect cultural resources. On the other hand, increased access can allow for the increased presence of law enforcement, cultural resource personnel, and site stewards for purposes of monitoring sites and areas. Increasing access could also increase the amount of cultural resource inventories and research as it would decrease the cost of excavation, inventory, or recording. Finally, increased access would allow for the increased presence of the public, which can also deter vandalism. This is suggested by recent ARPA cases in southern Utah showing that pothunters in the area tend to select isolated sites in order to excavate without getting caught. As a result, more and more pothunters in the area are using OHVs or 4-wheel drive vehicles to access and vandalize sites in roadless areas.

Under this alternative, 1,636,400 acres (77%) of the RFO would be open to motorized and mechanized vehicles, allowing unlimited access to the majority of the RFO. Allowing cross-country OHV use could generally impact surface features, break artifacts, and otherwise disturb cultural resources at the surface. It could also result in the pioneering of new routes, increasing motorized access throughout these acres and increasing incidental damage to cultural sites. Unlike other permitted uses, cultural resource inventories and mitigation strategies would not be implemented before designating these large areas open to cross-country OHV use. Mitigation of cultural resource impacts would be implemented on a case-by-case basis after the impact has occurred. Mitigation would occur only in situations where impacted properties retain qualities that make them eligible for inclusion in the National Register.

This alternative would limit motorized and mechanized vehicles to existing, designated, and maintained routes on 277,600 acres (13% of the RFO); and 214,000 acres (10% of the RFO) would be closed to motorized and mechanized vehicle use, which would limit direct and indirect impacts associated with vehicle use on or near sites. The public would have access to 4,315 miles of unpaved routes in the RFO, which could allow continued access for vandalism of cultural resources.

Among the alternatives, Alternative N would have the greatest adverse impacts to cultural resources due to the large amount of lands open to cross-country motorized and mechanized use.

Impacts from Lands and Realty

Land disposals would impact cultural resources because the disposed lands and associated resources would lose the protection provided by Federal laws. Impacts would be direct and long-term, depending on the location of the lands to be disposed and the nature of the cultural resources on them. Retaining significant cultural sites in Federal ownership, and acquiring non-Federal lands with significant cultural sites, would provide protection to these sites.

Any new land use authorizations (ROWs, permits, leases, easements, etc.) would cause direct and indirect long-term impacts to cultural resources and would be mitigated under NEPA and Section 106 of NHPA. Under this alternative, all ACECs (14,780 acres), eligible WSR corridors (12 segments – 135 miles), areas closed to oil and gas leasing (459,700 acres), and areas open to oil and gas leasing with no surface occupancy (22,600 acres) would be managed as right-of-way avoidance areas (with exceptions granted only if the proposed authorization would not create substantial surface disturbance or would create only temporary impacts). Thus, impacts to cultural resources in these avoidance areas would be negligible.

Impacts from Minerals and Energy

Cultural resource values on 1,236,500 acres (58% of the RFO) open to oil and gas leasing subject to the standard terms and conditions on the lease form and on 409,200 acres (19% of the RFO) open to leasing subject to moderate constraints could be impacted by oil and gas leasing. Cultural site densities throughout the RFO, while varying in different areas, are low enough to provide for the identification and avoidance of cultural sites when lessees exercise initial development rights associated with oil and gas leases. Based on the Reasonably Foreseeable Development (RFD), oil and gas developments within these areas could impact 8,180 acres over the next 15 years (Appendix 12). Development on these acres would typically be subject to Class III cultural resource inventories and evaluation on a project-by-project basis prior to allowing disturbance. This would likely result in the identification of cultural sites in these areas. Site densities throughout the RFO would generally result in the identification and avoidance of cultural sites during development. However, development in areas of very high cultural site density could result in the identification of sites that are unavoidable to mineral development. Sites that are unavoidable would be mitigated, resulting in the physical alteration or elimination of sites as they are mitigated through data recovery or other on-site means.

Managing 1,668,300 acres (78% of the RFO) as open to oil and gas leasing (open to oil and gas leasing subject to the standard terms and conditions on the lease form, open to leasing subject to moderate constraints, and open to oil and gas leasing subject to major constraints [NSO]) could result in surface disturbance from seismic operations supporting oil and gas leases. This would likely result in the identification of cultural sites in these areas. Upon identification, seismic operations should be able to avoid all the identified sites.

This alternative allows sale of mineral materials (salable minerals) on 1,668,300 acres (78% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted – any cultural resources present have likely been significantly altered or destroyed, resulting in loss of information. However, new sites would be subject to Section 106 procedures, which would either protect the site through avoidance or result in mitigation (scientific data recovery methods such as recordation, surface collection, subsurface testing, and excavation).

Under this alternative, 459,700 acres would be closed to oil and leasing and closed to disposal of salable minerals; 169,480 acres would continue to be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to cultural resources from these types of activities.

Impacts from Special Designations

Wilderness Study Areas

Wilderness study areas (WSAs) are managed under the IMP criteria until Congress either designates an area as wilderness or releases it from further consideration. This effectively adds another layer of protection to the cultural resources in those areas by limiting motorized access and just about all of the activities that could adversely affect archaeological and historic sites. However, this also affects research proposals and activities at sites within WSAs. Anything that would not comply with the IMP (e.g., would impair the suitability of such areas for preservation as wilderness) would not be authorized.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible wild and scenic rivers would help protect cultural resources by preventing ground disturbing activities in the river corridors. All eligible segments (12 segments – 135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would benefit cultural resources by limiting ground disturbance in these areas.

Areas of Critical Environmental Concern

Although ACEC designation alone does not necessarily provide protection, management actions included in ACECs are often more restrictive, which indirectly provides protection for cultural resources. Protections associated with ACEC designation that would affect cultural resources include managing oil and gas leasing as closed or open with no surface occupancy; more restrictive VRM designations; restricting livestock grazing; and travel limitations. Alternative N continues the designation of four ACECs (14,780 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; unavailable for livestock grazing in three of the four ACECs; and acquisition of inholdings) would reduce surface disturbing activities within those areas, protecting cultural resources.

Alternative A

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N, although under Alternative A maximum treatment acreage limits would be set (averaging 73,600 annually for all treatments). While no maximum treatment acreage limits would be set under Alternative N, it is likely that more acres would actually be treated under that alternative because the 2005 Land Use Plan Amendment for Fire and Fuels Management allows for the full range of fire and fuels management actions to achieve ecosystem sustainability. Alternative N allows for treatment of vegetation (including mechanical, wildland fire use and/or prescribed fire, and chemical methods). Alternative A incorporates more mechanical treatment that either N or B. Mechanical treatments require the use of heavy equipment. As described above, use of heavy equipment can directly impact cultural resources through surface disturbance and direct destruction of artifacts and features.

Impacts from Cultural Resources

Allocating and managing cultural resource sites to one of six uses (scientific, conservation, traditional, public, experimental, or discharged from management) would result in sites being proactively managed compared to Alternative N, considering cultural resource sites' varied values (see Table 2-6 in Chapter 2). Most cultural sites in Alternative A would be managed for public use, which would provide opportunities to educate the public about past human activities within the RFO. This type of site management would require extensive inventories and other research so that the sites could be interpreted for the public. However, designated Public Use sites could also lead to damage and vandalism at the sites or sites near them.

Monitoring of identified cultural sites with known impacts, as well as sites that are sensitive to incidental impacts, would indicate if management actions are needed to protect the sites, decreasing the potential for losing cultural values due to deterioration and impact. The prioritization for new non-Section 106 inventories in the Horseshoe Canyon South area would result in the identification of cultural resources and sites which would increase the knowledge base on the Archaic period occupation of Utah while providing for improved management of these resources.

Impacts to cultural landscapes eligible for the National Register would be considered through adherence to Federal regulations. This could protect the cultural characteristics of the landscapes; however, activities could be permitted that could result in the degradation or loss of landscape characteristics.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management would be similar to those described under Alternative N. Under Alternative A, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 0 acres would be designated as VRM Class II; 392,800

(18%) would be designated as VRM Class III; and 1,288,300 (61%) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate to major modifications in the existing character of the landscape, with accompanying surface disturbance and potential inadvertent damage to cultural resources. These areas would still be subject to Section 106 procedures prior to the surface disturbing activity, which would increase discovery of sites and provide protection (through site avoidance) or increased knowledge through data recovery.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for cultural resources.

Impacts from Forestry and Woodland Products

Impacts from harvesting of forest and woodland products would be the same as those described for Alternative N except that this alternative allows for harvesting of forest and woodland products across more of the RFO (all areas, outside of WSAs, where sustainable and compatible with restoring, maintaining, or improving forest health). Thus, forest and woodland products harvest would be subject to compliance with NEPA and Section 106 of the NHPA. Projects would be redesigned to avoid historic properties or those eligible for or listed on the NRHP, thus mitigating some of the direct and indirect impacts. It is important to note that not all areas open to woodland products use contain actual woodlands that would be targeted for use. As such, the actual acres on which this activity would occur is expected to be much less than the total amount of lands open for this use, which could result in localized areas where impacts to cultural resources would occur but minor impacts overall. Woodland harvest would also result in long-term benefits to traditional cultural practices of American Indians in the RFO.

Impacts from Livestock Grazing

Impacts from livestock grazing would be the same as those described for Alternative N except that under this alternative an additional 36,950 acres would be available for grazing. Thus, impacts to cultural resources could occur over a slightly larger area under Alternative A.

Impacts from Recreation

The establishment of and management associated with SRMAs would provide for management at popular recreation use areas. Management of these areas would decrease the potential for inadvertent damage of cultural sites compared to Alternative N.

Under Alternative A, five SRMAs (516,400 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. This would decrease the potential for inadvertent damage of cultural sites compared to Alternative N. Limiting OHV use in the Otter Creek Reservoir SRMA to designated routes would limit the extent of potential impacts to cultural resources.

The construction of recreation facilities in the Big Rock SRMA and the Sahara Sands SRMA would focus recreation use, minimizing long-term impacts. This would also decrease the potential for inadvertent damage of cultural sites compared to Alternative N Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would reduce the potential for damage to cultural resources by limiting OHV recreation use to designated routes. Managing the Factory Butte SRMA (199,700 acres) for a motorized recreational opportunity and allowing moderate to extensive landscape modification would have potentially major impacts and result in continued impacts to cultural resources. However, this area is receiving heavy motorized use currently, so sites are likely already damaged.

This alternative allows vehicles to pull off designated routes (outside WSAs) 100 feet either side of centerline for the purposes of parking/staging, and 300 feet either side of centerline for the purposes of camping. This could result in vehicles generally impacting surface features, breaking artifacts, and otherwise disturbing cultural resources at the surface.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N except that this alternative designates substantially fewer areas (449,000 acres, or 21% of the RFO) as open to motorized and mechanized vehicles. Motor vehicles would be limited to designated routes on 1,679,000 acres (79%) of the RFO, and 0 acres would be closed to motorized and mechanized vehicle use. The amount of open areas, although greatly reduced as compared to Alternative N, would still result in impacts to cultural resources from vehicle use in those areas. However, the potential for new impacts to cultural resources is low since these areas have been subject to disturbance from cross-country use over recent years, and continued use of OHVs would not be expected to cause additional adverse impacts.

The remainder of the RFO would be have motorized/mechanized use limited to designated routes – the public would have access to 4,312 miles of unpaved routes (slightly more than Alternative N), resulting in the potential for inadvertent damage to cultural resources along those routes; there would be 68 miles of routes closed, resulting in less potential for damage to cultural resources in those areas. No areas would be closed to motorized/mechanized use, with no accompanying benefits to cultural resources.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described for Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that fewer acres would be recommended for withdrawal (154,700 acres under Alternative A). Thus, unavoidable impacts to cultural resources from minerals activities would be greater under this alternative as compared to Alternative N, although sites that are unavoidable would be mitigated.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that under this alternative there are fewer right-of-way avoidance areas. However, since Section 106 of the NHPA would need to be adhered to for all actions undertaken by the BLM, impacts to cultural resources would be negligible.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N. Managing 1,681,100 acres (79% of the RFO) as open to oil and gas leasing (open to oil and gas leasing subject to the standard terms and conditions on the lease form, open to leasing subject to moderate constraints, and open to oil and gas leasing subject to major constraints [NSO]) could result in surface disturbance from seismic operations supporting oil and gas leases. This would likely result in the identification of cultural sites in these areas. Upon identification, seismic operations should be able to avoid all the identified sites.

This alternative allows sale of mineral materials (salable minerals) on 1,681,100 acres (79% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted – any cultural resources present have likely been significantly altered or destroyed, resulting in loss of information. However, new sites would be subject to Section 106 procedures, which would either protect the site

through avoidance or result in mitigation (scientific data recovery methods such as recordation, surface collection, subsurface testing, and excavation).

Under this alternative, 446,900 acres would be closed to oil and leasing and closed to disposal of salable minerals; 154,700 acres would continue to be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to cultural resources from these types of activities.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Under this alternative, no eligible river segments would be recommended as suitable, and no special management to protect the outstandingly remarkable values of these rivers would be provided. Thus, the potential for inadvertent damage to cultural resources from surface disturbing activities would be greatest under this alternative. However, most of the eligible river segments (98 of the 135 miles total) are also within WSAs, which would provide protection for cultural resources by limiting surface disturbance in those areas.

Areas of Critical Environmental Concern

Under this alternative, no areas would be designated as ACECs. Providing no special management prescriptions would allow surface disturbing activities within those areas that could result in inadvertent damage to cultural resources

Alternative B: Preferred Alternative

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as described under Alternative N.

Impacts from Cultural Resources

Impacts would be similar to those described for Alternative A except that fewer sites would be allocated to public use under Alternative B and more would be managed for their information potential and scientific use and be made available for scientific study. This scientific use category would be applied almost exclusively to prehistoric archaeological sites while most historic sites with ranching/homestead structures would remain in the public use category. The amount of new field inventory necessary under this alternative would be far lower than under Alternative A as many more site types would be managed for scientific use. The majority of sites would be preserved for scientific study, which would decrease public access to cultural sites and decrease the likelihood of inadvertent damage and/or vandalism to these resources. In addition, the prioritization for new field inventories in the Horseshoe Canyon, Trough Hollow, Bull Creek, and other areas of special cultural significance would increase the cultural knowledge base in these areas while providing for improved management of these resources.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N. Under Alternative B, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 209,000 acres (10%) would be designated as VRM Class II; 410,800 (19%) would be designated as VRM Class III; and 1,061,300 (50%) would be designated as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV (which could result in large areas of moderate to major modifications in the existing character of the landscape, with accompanying surface disturbance and potential inadvertent damage to cultural resources), less of

the RFO would be designated in these VRM classes than in Alternatives N or A, resulting in less potential impacts to cultural resources as compared to those alternatives.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for cultural resources.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forest and woodlands management would be similar to Alternative A, although more lands would be closed to this type of use under Alternative B (2 WSR segments – 59 miles as compared to zero segments under Alternative N), resulting in less potential impacts to cultural resources.

Traditional cultural practices would not be affected because American Indian collection of woodland products in riparian areas (outside of WSAs) for traditional purposes would be allowed.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative A except that Alternative B would establish five SRMAs (838,700 acres) to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. This alternative proposes only 2,600 acres at Factory Butte and 265 acres at Big Rocks as OHV SRMAs, which would decrease the potential for inadvertent damage of cultural sites as compared to Alternative A.

This alternative allows vehicles to pull off designated routes (outside WSAs) 50 feet either side of centerline for the purposes of parking/staging, and 150 feet either side of centerline for the purposes of camping. While this could result in vehicles generally impacting surface features, breaking artifacts, and otherwise disturbing cultural resources at the surface, the area of potential impact would be less than that under either Alternative N or A.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, this alternative designates only 8,400 acres (<1% of the RFO) as open to motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,909,200 acres (90%) of the RFO; and 210,400 acres (10%) would be closed to motorized and mechanized vehicle use. OHV use in open areas, although greatly reduced as compared to Alternative N, would still result in impacts to cultural resources from vehicle use in those areas. The remainder of the RFO would have motorized/mechanized use limited to designated routes. The public would have access to 4,176 miles of unpaved routes, and 204 miles of routes would be closed, resulting in less potential for damage to cultural resources in those areas.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described for Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that more acres would be recommended for withdrawal (176,200 acres under

Alternative B). Thus, unavoidable impacts to cultural resources from minerals activities would be less under this alternative as compared to Alternative N.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that fewer right-of-way avoidance areas are proposed under Alternative B. Since Section 106 of the NHPA would need to be adhered to for all actions undertaken by the BLM, impacts to cultural resources would be negligible.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N since a similar acreage (1,677,500 acres, or 79% of the RFO) would be open to oil and gas leasing (open to oil and gas leasing subject to the standard terms and conditions on the lease form, open to leasing subject to moderate constraints, and open to oil and gas leasing subject to major constraints [NSO]) could result in surface disturbance from seismic operations supporting oil and gas leases. This would likely result in the identification of cultural sites in these areas. Upon identification, seismic operations should be able to avoid all the identified sites.

This alternative also allows the sale of mineral materials (salable minerals) on 1,677,500 acres (79% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted – any cultural resources present have likely been significantly altered or destroyed, resulting in loss of information. However, new sites would be subject to Section 106 procedures, which would either protect the site through avoidance or result in mitigation (scientific data recovery methods such as recordation, surface collection, subsurface testing, and excavation).

Under this alternative, 450,500 acres would be closed to oil and leasing and closed to disposal of salable minerals; 176,200 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to cultural resources from these types of activities.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable wild and scenic rivers would help protect soil by preventing ground disturbing activities in the river corridors. Two suitable segments (59 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would protect cultural resources from inadvertent damage by limiting ground disturbance in these areas. This alternative recommends more river segments as suitable than Alternative A but less than Alternatives C or D. Of the remaining segments, 63 miles are within WSAs, leaving 13 miles on which ground disturbing activities could inadvertently impact cultural resources. This alternative would provide less protection to cultural resources from WSR decisions than Alternatives N, C, or D but more than Alternative A.

Areas of Critical Environmental Concern

Alternative B designates two ACECs (2,530 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; unavailable for livestock grazing; and acquiring inholdings) would reduce surface disturbing activities within those areas, thereby providing protection to cultural resources from inadvertent damage.

Alternative C

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative A, although under Alternative C fewer acres would be treated annually (averaging 26,000 annually for all treatments). In addition, this alternative proposes using only methods that mimic natural processes (fire and biological treatment methods) to manage vegetation, which could be less effective than conventional vegetation treatments and would not be effective in all vegetation communities. This could result in the loss of existing vegetation cover, indirectly increasing erosion. Thus, impacts to soils under Alternative C would likely result in reduced short-term impacts (altered vegetation structure and increased local erosion and sedimentation rates) as compared to Alternative B, as well as reduced long-term impacts (improved vegetative cover and increased plant diversity, thereby stabilizing soil, improving overall watershed function and condition, and allowing greater infiltration and soil moisture storage).

Impacts from Cultural Resources

Impacts would be similar to those described for Alternative B, except that under Alternative C most site types would be allocated to conservation use, resulting in a decrease in opportunities for research as well as a decrease in the level of management involvement. Allocating most site types to conservation use would preserve the sites in the long-term making them available for future use. In addition, the prioritization for new field inventories in the Horseshoe Canyon, Trough Hollow, Bull Creek, and other areas of special cultural significance would increase the cultural knowledge base in these areas while providing for improved management of these resources.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N. Under Alternative C, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 230,600 acres (11%) would be designated as VRM Class II; 509,100 (24%) would be designated as VRM Class III; and 941,400 (44%) would be managed as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV, less of the RFO would be designated in VRM Class IV (which allows major modifications to the existing character of the landscape) than in Alternatives N, A or B, resulting in less potential for inadvertent damage to cultural resources.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for cultural resources.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forestry and woodlands management would be similar to Alternative B, although more lands would be closed to this type of use under Alternative C (12 WSR segments – 135 miles). Thus, the potential for localized surface disturbance to cultural resources would be reduced under this alternative as compared to Alternative B.

Traditional cultural practices would not be affected because American Indian collection of woodland products in riparian areas (outside of WSAs) for traditional purposes would be allowed.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative N.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative A, except that four SRMAs (928,550 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. No SRMAs would be established for OHV use under Alternative C, which would decrease the potential for damage to cultural resources from this type of use.

Managing the Dirty Devil/Robbers Roost SRMA (375,800 acres) for dispersed recreation in a primitive setting would indirectly reduce the potential for surface disturbance (and associated damage to cultural resources) from recreation. Managing the Henry Mountains SRMA (533,900 acres) for primitive and semi-primitive recreation and managing the Sevier Canyon SRMA (7,500 acres) for scenic values would indirectly maintain or reduce the potential for disturbance and damage to cultural resources. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural recreation experience and the development of facilities could have localized site-specific impacts although Section 106 procedures would be adhered to prior to construction of any facilities.

This alternative allows vehicles to pull off designated routes (outside WSAs) 25 feet either side of centerline for the purposes of parking/staging; camping would be allowed only in designated campsites, with travel between campsites only allowed on designated routes. Together, this would minimize disturbance to cultural resources and would result in less disturbance to these resources than Alternatives N, A or B.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative B. However, this alternative designates no areas as open to motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,445,000 acres (68%) of the RFO; and 683,000 acres (32%) would be closed to motorized and mechanized vehicle use. The lack of open areas would eliminate impacts to cultural resources (breaking artifacts and disturbing/damaging surface features) from vehicle use in those areas. Limiting motorized/mechanized use to designated routes – the public would have access to 3,192 miles of unpaved routes – would generally limit cultural resource impacts to areas in the immediate vicinity of the designated route; 1,188 miles of routes would be closed, resulting in less potential for damage to cultural resources in those areas.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described for Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that more acres would be recommended for withdrawal (331,100 acres under Alternative C). Thus, unavoidable impacts to cultural resources from minerals activities would be less under this alternative as compared to Alternative N.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more right-of-way avoidance areas are proposed under Alternative C (735,100 acres closed to oil and gas leasing or open with no surface occupancy, 12 suitable WSR segments, and 16 ACECs). Since Section 106 of the NHPA would need to be adhered to for all actions undertaken by the BLM, impacts to cultural resources would be negligible.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N since a similar number of acres (1,541,700 acres, or 72% of the RFO) would be open

to oil and gas leasing (open to oil and gas leasing subject to the standard terms and conditions on the lease form, open to leasing subject to moderate constraints, and open to oil and gas leasing subject to major constraints [NSO]). This could result in surface disturbance from seismic operations supporting oil and gas leases, which would likely result in the identification of cultural sites in these areas. Upon identification, seismic operations should be able to avoid all the identified sites.

This alternative allows sale of mineral materials (salable minerals) on 1,541,700 acres (72% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted – any cultural resources present have likely been significantly altered or destroyed, resulting in loss of information. However, new sites would be subject to Section 106 procedures, which would either protect the site through avoidance or result in mitigation (scientific data recovery methods such as recordation, surface collection, subsurface testing, and excavation).

Under this alternative, 586,300 acres would be closed to oil and leasing and closed to disposal of salable minerals; 331,100 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to cultural resources from these types of activities. This alternative proposes more acres of mineral withdrawals and more areas closed to oil and gas leasing/disposal of salable minerals as compared to Alternatives N, A or B which would preclude mineral and energy development in those areas and thus provide more protection to cultural resources.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable wild and scenic rivers would help protect cultural resources by preventing ground disturbing activities in the river corridors. All twelve suitable segments (135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would protect cultural resources from inadvertent damage by limiting ground disturbance in these areas.

Areas of Critical Environmental Concern

Alternative C designates 16 ACECs (886,810 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (such as closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; designating as VRM Class II; making them unavailable for livestock grazing; and acquiring inholdings) would reduce surface disturbing activities within those areas, thereby providing protection to cultural resources from inadvertent damage.

Alternative D

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as described under Alternative C.

Impacts from Cultural Resources

Impacts would be the same as described under Alternative C.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N, although these impacts would occur over a much smaller area due to

differences in VRM class designations between the two alternatives. Under Alternative D, 1,129,600 acres (53% of the lands managed by the RFO) would be designated as VRM Class I; 66,700 acres (3%) would be managed as VRM Class II; 355,100 (17%) would be managed as VRM Class III; and 576,600 (27%) would be managed as VRM Class IV. Just over half of the RFO would be designated as VRM Class I or II, meaning that the existing character of the landscape must be preserved or retained. Thus, surface disturbing activities would generally not be allowed in these areas, resulting in reduced potential for damage to cultural resources as compared to Alternatives N, A, B or C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, 682,600 acres would be managed to maintain wilderness characteristics. Management actions to achieve this include minimizing or avoiding surface disturbing activities such as closing these lands to oil and gas leasing, closing them to OHV use, and designating them as VRM Class I. The emphasis on naturalness and a lack of surface disturbing activities within these areas would minimize impacts to cultural resources because there would be no vehicular activity or other forms of disturbance that could affect cultural sites. However, protection of wilderness characteristics lands could also preclude archaeological site excavations or research activities where surface disturbing activities would occur. Resource inventories would not be precluded, however, and information gathered from these inventories would increase knowledge of cultural resources, especially in the Wildcat Mesa and Mount Ellen/Blue Hills non-WSA areas. Management actions under this alternative would also close off vehicle access to known cultural sites that are visited as a recreational activity within these non-WSA areas. This alternative would provide the most protection to cultural resources of all the alternatives.

Impacts from Forestry and Woodland Products

Impacts would be similar to those described for Alternative C except that no commercial or non-commercial harvest of forest and woodland products would be allowed within the 682,600 acres of non-WSA lands with wilderness characteristics. Thus, the potential for localized surface disturbance to cultural resources would be greatly reduced under this alternative as compared to all of the other alternatives.

Traditional cultural practices would not be affected because American Indian collection of woodland products in riparian areas (outside of WSAs) for traditional purposes would be allowed.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative N.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative C except that seven SRMAs (1,358,200 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. No SRMAs would be established for OHV use, which would decrease the potential for damage to cultural resources from this type of use. As described under Alternative C, the development of facilities could have localized site-specific impacts although Section 106 procedures would be adhered to prior to construction of any facilities.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. However, this alternative designates 972,800 acres (46% of the RFO) as motorized/mechanized use limited to designated routes, and 1,155,200 acres (54%) as closed to motorized and mechanized vehicle use. The lack of open areas would eliminate impacts to cultural resources from vehicle use in those areas. Limiting motorized/mechanized use limited to designated routes – the public

would have access to 3,043 miles of unpaved routes – would generally limit soils impacts to areas in the immediate vicinity of the designated route; 1,242 miles of routes would be closed, allowing protection of cultural resources in those areas.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described for Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that more acres would be recommended for withdrawal (903,900 acres under Alternative D). Thus, unavoidable impacts to cultural resources from minerals activities would be significantly less under this alternative as compared to Alternative N.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more right-of-way avoidance areas are proposed under Alternative D (1,203,800 acres closed to oil and gas leasing or open with no surface occupancy, 12 suitable WSR segments, and 16 ACECs). Since Section 106 of the NHPA would need to be adhered to for all actions undertaken by the BLM, impacts to cultural resources would be negligible.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N although these potential impacts would occur over a substantially smaller area – 967,500 acres, or 45% of the RFO, would be open to oil and gas leasing under Alternative D (open to oil and gas leasing subject to the standard terms and conditions on the lease form, open to leasing subject to moderate constraints, and open to oil and gas leasing subject to major constraints [NSO]) could result in surface disturbance from seismic operations supporting oil and gas leases. This would likely result in the identification of cultural sites in these areas. Upon identification, seismic operations should be able to avoid all the identified sites.

This alternative allows sale of mineral materials (salable minerals) on 967,500 acres (45% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted – any cultural resources present have likely been significantly altered or destroyed, resulting in loss of information. However, new sites would be subject to Section 106 procedures, which would either protect the site through avoidance or result in mitigation (scientific data recovery methods such as recordation, surface collection, subsurface testing, and excavation).

Under this alternative, 1,160,500 acres would be closed to oil and leasing and closed to disposal of salable minerals; 903,900 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to cultural resources from these types of activities. This alternative proposes more acres of mineral withdrawals and more areas closed to oil and gas leasing/disposal of salable minerals as compared to all of the other alternatives.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as described for Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as described for Alternative C.

4.3.6 Paleontological Resources

This section presents potential impacts of the alternatives on paleontological resources. A comprehensive paleontological resource inventory of the RFO has not been conducted, and the occurrences of most paleontological resources are not known, although a review of paleontological research on formations contained within the RFO has identified the types of fossil resources known to be present. See Chapter 3 for a discussion of the paleontological resources in the RFO.

Impacts on paleontological resources occur from natural weathering and erosion, surface disturbing activities, excavation, and theft or vandalism. In general, fossil resources are physically destroyed through such agents or activities, or, in the case of illegal theft and vandalism, important contextual data is also irretrievably lost. Unlike cultural resources, which exist largely at or near the land surface, paleontological resources are found both at the surface and throughout the subsurface environment. As a result, actions that may destroy a fossil presently at the surface (e.g., coal mining or road construction), may at the same time expose new resources that were deeply buried in rock strata. In this same manner, erosion is continually bringing new fossils to the surface even as it destroys what is presently exposed. For management purposes, impacts must be set against the context of the rarity of individual fossil specimens. As erosion brings a particular fossil specimen to the surface, if it is a relatively common and well understood fossil species or a non-diagnostic portion of a potentially rare form, impacts on that resource, up to and including its complete physical destruction are not significant. By definition, all vertebrate fossils are considered rare by BLM and impacts to these types of fossils are of greatest concern.

BLM paleontological resource management policy is to identify, evaluate, and, where appropriate, protect scientifically significant paleontological resources, ensuring that proposed land uses, initiated or authorized by BLM, do not inadvertently damage or destroy these resources (BLM Manual 8270, *Paleontological Resource Management*). BLM policy also requires the facilitation of appropriate scientific, educational, and recreational uses of paleontological resources, such as research and interpretation. Surface disturbing actions are required to mitigate damage to paleontological resources. Mitigation measures include project relocation or redesign (avoidance), or scientific data recovery methods. Avoidance is BLM's preferred mitigation measure for surface disturbing activities. Standard assessment/inventory and avoidance procedures conducted in conjunction with surface disturbing actions would protect most paleontological resources from significant impacts. If mitigation measures are implemented, these newly exposed fossils become available for salvage, data recovery, scientific analysis, and preservation into perpetuity at a public museum (beneficial impact). The beneficial effects of mitigation include advances in scientific knowledge by both permitted field researchers and paleontologists who study fossils in museum collections, contributions to public education and interpretation, and community involvement and partnerships. In general, impacts on paleontological resources from ground disturbance are long-term in nature. Although natural erosion, exposure, and deterioration of paleontological localities may be slowed or halted, damage to fossils and localities cannot typically be reversed.

Methods and Assumptions

This analysis was based on the following assumptions:

- Paleontological resources will continue to be discovered throughout the RFO.
- Recovery and curation in paleontological resources by permitted specialists results in resource protection and preservation of paleontological values as well as educational opportunities.
- Paleontological resources identified during assessments and inventories would be protected through data collection and mitigation.

- The number of localities that could be impacted by various actions would be directly correlated with the degree, nature, and quantity of surface disturbing activities within the RFO.
- Surface disturbing activities could expose, dislodge or damage paleontological resources and features that were not visible prior to surface disturbance.

The analysis of potential impacts to paleontological resources is based on the expertise of BLM resource specialists at the RFO and the Utah State Office. The impact analysis is also based on review of existing literature, geologic maps, field trips, site visits, and information provided by non-planning team experts in the BLM, USGS, and other agencies.

Paleontological resources are associated with specific geologic formations. Table 3-13 (in Chapter 3) is a summary table of the fossil assemblages associated with each geologic group, formation, and member in the RFO. No vertebrate fossil remains have been documented in the RFO. However, vertebrate fossil remains are found adjacent to the RFO (such as in Grand Staircase-Escalante National Monument) within many of the same geologic formations present in the RFO.

All surface disturbing activities include mitigation to reduce impacts to paleontological resources. Analysis of impacts includes all mitigation measures in place. Effects are quantified where possible. In absence of quantitative data, best professional judgment was used.

Environmental Consequences

Impacts to paleontological resources would result from actions proposed under the following resource management programs:

- Vegetation and Fire and Fuels Management
- Paleontological Resources
- Visual Resources
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on paleontological resources.

Alternative N: No Action

Impacts from Vegetation and Fire and Fuels Management

This alternative allows for limited treatment of vegetation (including mechanical, wildland and/or prescribed fire, and chemical methods). Wildland fire use and prescribed fire could cause direct and indirect impacts to paleontological resources. Fire could cause the direct destruction of organic fossil remains; the removal of vegetative cover by fire would accelerate erosion in the short-term, creating indirect impacts. However, these impacts would be negligible compared with similar impacts that occur by natural processes.

Fire suppression that involves the use of heavy equipment, road construction, and building of fire lines could damage or destroy surface fossils. In these areas, paleontological mitigation would reduce potential adverse impacts to below the level of significance. Potential long-term adverse impacts would result from the construction of new fire roads, which would increase access to BLM lands that were previously less

accessible to the public, thus increasing the potential for unauthorized fossil collecting and vandalism. The recovery and preservation of fossils as the result of paleontological mitigation would be a beneficial impact because it would permanently preserve paleontological resources which may have otherwise never been discovered, and make them available for scientific research, education and display.

Impacts from Paleontological Resources

Monitoring scientifically significant paleontological localities would document the rate of deterioration and provide baseline data for possible site protection, restoration, or data retrieval. Not excavating and curating scientifically significant sites could result in the natural deterioration of the sites and the loss of the associated paleontological information. Not monitoring scientifically significant sites could result in the natural deterioration and/or incidental damage of the sites and the loss of the associated paleontological information.

Paleontological inventory data for the RFO is crucial for sound resource protection decisions. Annual compilations of all new paleontological localities should be updated into a single comprehensive GIS database that is accessible to local resource specialists. This would ultimately lead to better resource protection as decision makers are empowered with emerging patterns for the spatial and temporal distribution of paleontological resources. Not requiring assessments or inventories in areas with a medium potential for paleontological resources could result in damage to fossils after surface disturbance commences, resulting in the loss of scientifically significant paleontological resources.

Providing interpretive opportunities could provide more paleontological resource sites for public use and education because inventories would be required to recover scientifically important data prior to allowing public use of the sites. Increased paleontological interpretation could also increase public appreciation for the decision area's paleontological values. Increased public appreciation could lead to increased user stewardship. Impacts associated with stewardship attitudes include: increased protection of paleontological sites, decreased inadvertent damage to or disturbance of paleontological sites, decreased vandalism and looting, and preserving the integrity of paleontological resources.

Allowing surface collection of common invertebrate and botanical paleontological resources throughout the RFO could result in the incidental collection of scientifically significant resources.

Impacts from Visual Resources

In general, VRM class management actions would limit or allow surface disturbing activities in certain areas, thereby affecting paleontological resources. VRM Classes I and II would be aimed at greater retention of existing landscape character than Classes III or IV. Under Alternative N, none of the lands managed by the RFO are classified as VRM Class I; 529,500 acres (25%) would be managed as VRM Class II; 569,000 (27%) would be managed as VRM Class III; and 1,029,500 (48%) would be managed as VRM Class IV. Restrictions on visually obtrusive developments in VRM Class II areas would limit development; while not a restriction on surface disturbance, management to preserve and maintain the landscape could reduce disturbance that could impact paleontological resources. This long-term impact would generally protect paleontological resources in place. Areas managed as VRM Class III or IV (75% of the RFO under this alternative) would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which drastically increases the potential for wind and water erosion and the potential for adverse impacts to paleontological resources.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for paleontological resources.

Impacts from Recreation

Recreational activities could have direct and indirect impacts on paleontological resources if these activities occur in areas containing occurrences of scientifically significant surface fossils. Motorized use has the greatest potential to adversely affect paleontological resources due to surface disturbance and associated accelerated erosion. Active management of recreational use within the RFO should minimize these impacts by limiting use in sensitive areas that are more likely to contain scientifically significant surface fossils.

Unlike permitted activities (e.g., mineral development or ROW development) that are subject to site-specific evaluations and monitoring, dispersed recreation activities are not under the same degree of scrutiny prior to use. Because of their widespread occurrence and generally unsupervised nature, casual recreational use would likely result in unmitigated impacts on surface exposed paleontological resources. Most of this impact would result from unauthorized collecting and vandalism, however unmitigated impacts could also result from any surface disturbing aspect of recreation. Dispersed recreation occurs throughout the RFO.

Under this alternative, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified that would limit use in areas containing occurrences of scientifically significant surface fossils. Thus, recreational use within the RFO could result in direct impacts to paleontological resources from unauthorized fossil collecting and vandalism, as well as indirect impacts from increased erosion caused by loss of vegetation cover and soil compaction.

Impacts from Travel Management

Generally, the more area open to OHV use, the greater the potential for adverse impacts to paleontological resources from surface disturbance and trampling of vegetation, which leads to accelerated erosion. Under this alternative, 1,636,400 acres (77%) of the RFO would be open to motorized and mechanized vehicles, allowing potential impacts to paleontological resources over a large portion of the RFO. This would decrease vegetation density, increase erosion, and could generally break, spread, and otherwise disturb paleontological resources at the surface. The significance of this impact would depend on the scientific significance of the fossils that could be affected. Mitigation of paleontological resource damage would be accomplished through data recovery efforts implemented on a case-by-case basis when the damage is discovered.

Motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13% of the RFO). Limiting OHV use to 4,315 miles of designated routes could result in similar impacts. In these areas, impacts from vehicle use off the route would be eliminated, but sites adjacent to routes could be damaged. Designating existing routes that already receive OHV use as open for continued use would not, by the act of designation, result in increased impacts. Because the designated routes currently exist and receive use, additional impacts on and/or adjacent to them would be minimal. There would be no impacts from OHV use in areas away from the designated routes in areas where OHV use is limited to designated routes.

Alternative N would have the greatest potential impacts to paleontological resources due to the large amount of lands open to cross-country motorized and mechanized use, the most miles of roads (4,315) open to motorized and mechanized travel, and the fewest miles of roads (65) closed to motorized and mechanized travel. Road closures, which would reduce erosion, trampling, vandalism, and other surface disturbing impacts that damage paleontological resources could also affect research by limiting access.

Impacts from Lands and Realty

Lands and realty actions could result in the acquisition of surface and subsurface estate, which would bring the estate under the Federal protection and benefit paleontological resources. Identifying 280 acres as available for sale would make these lands susceptible to long-term indirect and cumulative adverse impacts on paleontological resources by removing scientifically significant fossils from the public domain, thus rendering them permanently unavailable for scientific research and education.

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws would provide protection to paleontological resources from the impacts of mining exploration and development which could damage these resources. This alternative proposes a total of 169,480 acres of withdrawals. Mining disturbance and associated impacts to paleontological resources would therefore not occur in these areas.

Any new land use authorizations (ROWs, permits, leases, easements, etc.) could impact paleontological resources through surface disturbance (which could directly damage the resource) or through soil compaction and vegetation removal, which could lead to soil erosion and indirect impacts. Under this alternative, all ACECs (14,780 acres), eligible WSR corridors (12 segments – 135 miles), areas closed to oil and gas leasing (459,700 acres), and areas open to oil and gas leasing with no surface occupancy (22,600 acres) would be managed as right-of-way avoidance areas (with exceptions granted only if the proposed authorization would not create substantial surface disturbance or would create only temporary impacts). Thus, impacts to paleontological resources in these avoidance areas would be negligible to minor and localized.

Impacts from Minerals and Energy

Development of oil and gas resources could affect paleontological resources due to the surface disturbances associated with such development. Oil and gas would be to open leasing subject to standard terms and conditions and open to leasing subject to moderate constraints on 1,645,700 acres (77% of the RFO). Based on the RFD, oil and gas development could impact up to 8,180 acres over the life of this plan (Appendix 12). In these areas, paleontological resources could be identified prior to oil and gas development, if an assessment or inventory were performed. However, neither is required under this alternative. Thus, the potential for significant impacts exists due to the lack of required inventories prior to surface disturbance. Vertebrate or other scientifically significant fossils could be inadvertently damaged from disturbance if they were not identified and avoided.

Surface disturbance associated with the development of salable materials and locatable minerals could impact paleontological resources in a similar manner to the impacts noted for oil and gas development. Under this alternative, 1,668,300 acres would be open to disposal of salable minerals; 1,958,520 would be potentially available for mineral location. Paleontological localities could be identified prior to surface disturbance if an assessment or inventory were completed. However, neither is required under this alternative. Thus, the potential exists for significant impacts if vertebrate or other scientifically significant fossils were inadvertently damaged if they were not identified and avoided.

Paleontological resources in areas that are open to oil and gas leasing subject to major constraints (NSO) (22,600 acres), closed to leasing (459,700 acres), and closed to disposal of salable minerals (459,700 acres) would be protected from oil and gas development. In addition, paleontological resources in areas withdrawn from minerals entry (169,480 acres) would also be protected from potential impacts associated with the extraction of those minerals (see Lands and Realty section for a discussion on withdrawals).

Impacts from Special Designations

Wilderness Study Areas

WSAs are managed under non-impairment criteria until Congress either designates an area as wilderness or releases it from further consideration. This effectively adds another layer of protection to the paleontological resources in those areas by limiting motorized access and most of the activities that could adversely affect these sites. However, this also affects research proposals and activities at sites within WSAs – such restrictions on surface disturbance could make paleontological resource studies more difficult. Any activities conducted within a WSA must meet the Interim Management Policy for Lands Under Wilderness Review non-impairment criteria. Anything that would not comply with this (e.g., would impair the suitability of such areas for preservation as wilderness) would not be authorized.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible wild and scenic rivers would help protect cultural resources by preventing ground disturbing activities in the river corridors. All eligible segments (12 segments – 135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would benefit paleontological resources by limiting ground disturbance in these areas.

Areas of Critical Environmental Concern

Although ACEC designation alone does not necessarily provide protection, management actions included in ACECs are often more restrictive, which indirectly provides protection for paleontological resources. Protections associated with ACEC designation that would affect paleontological resources include managing oil and gas leasing as closed or open with no surface occupancy; more restrictive VRM designations; and travel limitations. Alternative N continues the designation of four ACECs (14,780 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; and acquisition of inholdings) would reduce surface disturbing activities within those areas, protecting paleontological resources.

Alternative A

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N, although under Alternative A maximum acreage limits would be set (averaging 73,600 annually for all treatments). While no maximum treatment acreage limits would be set under Alternative N, it is likely that more acres would actually be treated under that alternative because it allows for the full range of fire and fuels management actions to achieve ecosystem sustainability. Alternative N allows for treatment of vegetation (including mechanical, wildland fire use and/or prescribed fire, and chemical methods). Alternative A incorporates more mechanical treatment that either N or B.

Impacts from Paleontological Resources

Requiring paleontological assessments prior to permitting surface disturbing activities in areas with a high potential for paleontological resources would identify new paleontological localities. Proposed land uses would include actions such as mineral exploration and development (including oil and gas development), development/construction within rights-of-way, recreation site development, some vegetation treatment projects, some forest/woodland product harvest, or construction of some range improvements. Based on the findings of the assessment, mitigation would be implemented at all phases of development. While assessments would minimize the potential for unmitigated impacts to known paleontological resources, they would not require an on-the-ground inventory prior to all disturbances. This could result in the

inadvertent damage of paleontological resources that were not identified prior to surface disturbance. Inadvertent damage to vertebrate fossils or other scientifically significant paleontological resources would generally be a significant impact, although mitigation could reduce the magnitude of damage through data recovery.

Targeting fossil sites with high scientific value for excavation and curation would ensure that fossil sites with high scientific value are protected either through excavation and data recovery or through increased monitoring. In addition, monitoring high significance (scientific or interpretive) sites with fossil resources that are not feasible/desirable to excavate/collect would ensure that fossil sites important to science and the public protected from inadvertent damage or natural deterioration.

Allowing collection of common invertebrate and botanical paleontological resources throughout the RFO (except for scientifically significant resources) could result in the incidental collection of significant resources. However, identifying and closing to casual collection areas with rare and significant fossils could reduce impacts from incidental collection compared to Alternative N.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management would be similar to those described under Alternative N. Under Alternative A, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 0 acres would be designated as VRM Class II; 392,800 (18%) would be designated as VRM Class III; and 1,288,300 (61%) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate to major modifications in the existing character of the landscape, with accompanying surface disturbance and potential inadvertent damage to paleontological resources.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for paleontological resources.

Impacts from Recreation

The establishment of and management associated with SRMAs would provide for management at popular recreation use areas. Management of these areas would decrease the potential for inadvertent damage of paleontological resources compared to Alternative N.

Under Alternative A, five SRMAs (516,400 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. This would decrease the potential for inadvertent damage of paleontological resources compared to Alternative N. Managing the Factory Butte, Big Rock, and Sahara Sands SRMAs for a motorized recreational opportunity and allowing moderate to extensive landscape modification would have potentially major impacts and result in continued impacts to paleontological resources. However, these areas are receiving heavy motorized use currently, so sites are likely already damaged. Limiting OHV use in the Otter Creek Reservoir and Dirty Devil/Robbers Roost SRMAs to designated routes would limit the extent of potential impacts to paleontological resources.

This alternative allows vehicles to pull off designated routes (outside WSAs) up to 100 feet of either side of the centerline for the purposes of parking/staging, and 300 feet of either side of the centerline for the purposes of camping. This could result in vehicles generally disturbing paleontological resources at the surface.

Impacts from Travel Management

The types of impacts experienced as a result of travel management decisions under this alternative would be similar to those described under Alternative N. Limiting OHV use to designated routes on 1,679,000 acres (79% of the RFO) would provide increased protection to paleontological resources compared to Alternative N. The change from managing most of the RFO as open to cross-country OHV use under Alternative N to limiting OHV use to designated routes would decrease impacts. Paleontological resources away from designated routes would be protected from OHV impacts. Rather than the potential for increased disturbance and incidental damage associated with pioneered routes in areas open to cross-country use, impacts on paleontological resources from OHV use on designated routes, as discussed under Alternative N, would be limited to 4,312 miles of designated routes (which is virtually identical to the number designated in Alternative N). In addition, reducing the number of routes open for motorized use would further reduce the accessibility of remote paleontological localities. While such isolation provides indirect protections from inadvertent damage, it also increases the potential for a locality to be damaged through natural deterioration prior to being identified and recovered. There would be no impacts from OHV use on 68 miles of closed routes.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described for Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that fewer acres would be recommended for withdrawal (154,700 acres under Alternative A). Thus, unavoidable impacts to paleontological resources from minerals activities would be greater under this alternative as compared to Alternative N, although sites that are unavoidable would be mitigated.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that under this alternative there are fewer right-of-way avoidance areas.

Impacts from Minerals and Energy

Under Alternative A, similar amounts of BLM lands would be closed to fluid mineral leasing (446,900 acres), withdrawn from mineral location (154,700 acres), and closed to mineral material disposal (446,900 acres) as proposed under Alternative N, thus resulting in similar impacts.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described for Alternative N.

Wild and Scenic Rivers

Under this alternative, no eligible river segments would be recommended as suitable, and no special management to protect the outstandingly remarkable values of these rivers would be provided. Thus, the potential for inadvertent damage to paleontological resources from surface disturbing activities would be greatest under this alternative. However, most of the eligible river segments (98 of the 135 total miles) are also within WSAs, which would provide protection for these resources.

Areas of Critical Environmental Concern

Under this alternative, no areas would be designated as ACECs. Providing no special management prescriptions would allow surface disturbing activities within those areas that could result in inadvertent damage to paleontological resources.

Alternative B: Preferred Alternative

Impacts from Vegetation and Fire and Fuels Management

Impacts would the same as described under Alternative A.

Impacts from Paleontological Resources

Requiring on-the-ground paleontological inventories prior to permitting surface disturbing activities in areas with a high potential for paleontological resources would result in the identification, evaluation, and protection, where appropriate, of scientifically significant fossil resources. By focusing on areas with a high potential, the formation and facies most likely to contain scientifically significant fossils would be scrutinized. If fossil resources are identified, mitigation measures could be applied to protect the resource. Mitigation measures include project relocation or redesign (avoidance), or various scientific data recovery methods, such as recordation, surface collection, subsurface testing, or excavation. These mitigation actions would prevent significant impacts to paleontological resources, increase the knowledge and understanding of the area's paleontological resources and of the history of life on earth. In addition, projects such as development/construction within rights-of-way, recreation site development or construction of range improvements would be studied prior to implementation.

Requiring assessments in areas with a medium potential for paleontological resources would allow for mitigation needs to be identified and implemented in areas less likely to contain significant fossils. There is a potential for some localities in areas with a medium potential to be damaged after surface disturbance begins if a field inventory were not performed. Based on the findings of the assessment, mitigation would be implemented at all phases of development.

As the number of paleontological inventories and assessments increases compared to Alternative A, knowledge of the area's paleontological resources would increase. More paleontological localities would be identified and there would be an associated reduction in the number of localities that are damaged prior to surface disturbing activity.

The prioritization for new non-Section 106 inventories in these areas would identify paleontological resources and sites, increasing the database of resources. Compared to Alternative A, this would increase the knowledge base in this area while providing for improved management of these resources.

Impacts from collection of common invertebrate and botanical paleontological resources would be the same as those described for Alternative A.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N. Under Alternative B, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 209,000 acres (10%) would be designated as VRM Class II; 410,800 (19%) would be designated as VRM Class III; and 1,061,300 (50%) would be designated as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV (which could result in large areas of moderate to major modifications in the existing character of the landscape, with accompanying surface disturbance and potential inadvertent damage to paleontological resources), less of the RFO would be designated in these VRM classes than in Alternatives N or A, resulting in less potential impacts as compared to those alternatives.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for paleontological resources.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative A except that Alternative B would establish five SRMAs (838,700 acres) to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. This alternative proposes only 2,600 acres at Factory Butte and 265 acres at Big Rocks as OHV SRMAs, which would decrease the potential for inadvertent damage of paleontological resources as compared to Alternative A.

This alternative allows vehicles to pull off designated routes (outside WSAs) 50 feet either side of centerline for the purposes of parking/staging, and 150 feet either side of centerline for the purposes of camping. While this could result in vehicles disturbing paleontological resources at the surface, the area of potential impact would be less than that under either Alternative N or A.

Impacts from Travel Management

The types of impacts experienced as a result of travel management decisions under this alternative would be similar to those described under Alternative N. However, this alternative would allow cross-country OHV use on only 8,400 acres (<1% of the RFO). Paleontological resources would not likely be damaged as the areas being proposed for cross-country use have already been subject to disturbance, either through natural processes or human use and continued disturbance of previously disturbed areas would not result in impacts to paleontological localities.

Limiting OHV use to designated routes on 1,909,200 acres (90% of the RFO) would provide increased protection to paleontological resources compared to Alternatives N or A. Paleontological resources away from designated routes would be protected from OHV impacts. Rather than the potential for increased disturbance and incidental damage associated with pioneered routes in areas open to cross-country use, impacts on paleontological resources from OHV use on designated routes, as discussed under Alternative A, would be limited to 4,176 miles of designated routes. There would be no impacts from OHV use on 210,400 acres (10% of the RFO) closed to OHV use, in areas away from the designated routes, and on 204 miles of closed routes. In addition, reducing temporary roads associated with temporary projects, as well as reclaiming unnecessary facilities and improvements would further reduce access for paleontological resource study, increasing the isolated nature. While such isolation provides indirect protections from inadvertent damage, it also increases the potential for a locality to be damaged through natural deterioration prior to being identified and recovered.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described for Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that more acres would be recommended for withdrawal (176,200 acres under Alternative B). Thus, unavoidable impacts to paleontological resources from minerals activities would be less under this alternative as compared to Alternative N.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more right-of-way avoidance areas are proposed under Alternative C.

Impacts from Minerals and Energy

Under Alternative B, similar amounts of BLM lands would be closed to fluid mineral leasing (450,500 acres), withdrawn from mineral location (176,200 acres), and closed to mineral material disposal (450,500 acres) as proposed under Alternative N, thus resulting in similar impacts.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described for Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable wild and scenic rivers would help protect soil by preventing ground disturbing activities in the river corridors. Two suitable segments (59 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would protect paleontological resources from inadvertent damage by limiting ground disturbance in these areas. This alternative recommends more river segments as suitable than Alternative A but less than Alternatives C or D. Of the remaining segments, 63 miles are within WSAs, leaving 13 miles on which ground disturbing activities could potentially impact paleontological resources. This alternative would provide less protection from WSR decisions than Alternatives N, C or D but more than Alternative A.

Areas of Critical Environmental Concern

Alternative B designates two ACECs (2,530 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; and acquiring inholdings) would reduce surface disturbing activities within those areas, thereby providing protection to paleontological resources from inadvertent damage. This alternative would designate more ACECs than Alternative A but less than Alternatives C or D.

Alternative C

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternatives A and B, although under Alternative C fewer acres would be treated annually (averaging 26,000 annually for all treatments). However, this alternative proposes using only those processes that mimic natural processes (prescribed fire, biological, and hand cutting) to manage vegetation. This would reduce the number of acres treated with methods that directly affect soils, reducing the potential for direct damage to paleontological localities.

Impacts from Paleontological Resources

Requiring paleontological inventories throughout the RFO prior to permitting surface disturbing activities would result in the inventory, identification, and collection of paleontological resources throughout the RFO. Proposed land uses that would require inventories would include actions such as mineral exploration and development (including oil and gas development), development/construction of rights-of-way, recreation site development, some vegetation treatment projects, timber harvest, and construction of some range improvements. This would result in lower potential for incidental damage to paleontological resources than Alternatives N, A or B since no surface disturbance would occur until on an on-the-ground inventory cleared the area to proceed and any paleontological resources were identified and avoided or recovered. In addition, increases in the acres inventoried would result in more paleontological localities identified than the other alternatives. All impacts to identified paleontological sites from surface disturbing actions would be mitigated. Impact mitigation would minimize the potential for adverse effects to identified paleontological sites.

The prioritization for new non-Section 106 inventories in these areas would identify paleontological resources and sites, increasing the database of resources. Compared to Alternatives N, A or B, this would increase the knowledge base in this area while providing for improved management of these resources.

Requiring such inventories annually would ensure that the knowledge and understanding of the decision area's paleontological resources increases. This would improve management of these resources.

Allowing collection of common invertebrate and botanical paleontological resources in specifically designated areas reduce the potential for incidental collection of scientifically significant resources, compared to Alternatives N, A or B. In these areas, non-scientifically significant paleontological resources could be removed. Areas with rare or scientifically significant resources would not be open for personal collection, protecting these resources.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N. Under Alternative C, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 230,600 acres (11%) would be designated as VRM Class II; 509,100 (24%) would be designated as VRM Class III; and 941,400 (44%) would be designated as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV, less of the RFO would be designated in VRM Class IV (which allows major modifications to the existing character of the landscape with accompanying surface disturbance) than in Alternatives N, A or B, resulting in less potential for inadvertent damage to paleontological resources.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for paleontological resources.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative A, except that four SRMAs (928,550 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. No SRMAs would be established for OHV use under Alternative C, which would decrease the potential for damage to paleontological resources from this type of use.

Managing the Dirty Devil/Robbers Roost SRMA (375,800 acres) for dispersed recreation in a primitive setting would indirectly reduce the potential for surface disturbance (and associated damage to paleontological resources) from recreation. Managing the Henry Mountains SRMA (533,900 acres) for primitive and semi-primitive recreation and managing the Sevier Canyon SRMA (7,500 acres) for scenic values would indirectly maintain or reduce the potential for disturbance and damage to paleontological resources. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural recreation experience and the development of facilities could have localized site-specific impacts although paleontological inventories would be required prior to construction of any facilities.

This alternative allows vehicles to pull off designated routes (outside WSAs) 25 feet either side of the centerline for the purposes of parking/staging; camping would be allowed only in designated campsites, with travel between campsites only allowed on designated routes. Together, this would minimize disturbance to paleontological resources and would result in less disturbance to these resources than Alternatives N, A or B.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative B. However, this alternative designates no areas as open to motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,445,000 acres (68%) of the RFO; and 683,000 acres (32%) would be closed to motorized and mechanized vehicle use. The lack of open areas

would eliminate impacts to paleontological resources from vehicle use in those areas. Limiting motorized/mechanized use to designated routes – the public would have access to 3,192 miles of unpaved routes – would generally limit paleontological resource impacts to areas in the immediate vicinity of the designated route; 1,188 miles of routes would be closed, resulting in less potential for damage to paleontological resources in those areas.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described for Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that more acres would be recommended for withdrawal (331,100 acres under Alternative C). Thus, unavoidable impacts to paleontological resources from minerals activities would be less under this alternative as compared to Alternative N.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more right-of-way avoidance areas are proposed under Alternative C (735,100 acres closed to oil and gas leasing or open with no surface occupancy, 12 suitable WSR segments, and 16 ACECs). Since paleontological inventories would be required prior to permitting all surface-disturbing activities, impacts to paleontological resources would be negligible.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N since a similar amount of acres (1,541,700 acres, or 72% of the RFO) would be open to oil and gas leasing (open to oil and gas leasing subject to the standard terms and conditions, open to leasing subject to moderate constraints, and open to oil and gas leasing subject to major constraints [NSO]). This could result in surface disturbance from seismic operations supporting oil and gas leases, which would likely result in the identification of paleontological resources in these areas. Upon identification, seismic operations should be able to avoid all the identified sites.

This alternative allows sale of mineral materials (salable minerals) on 1,541,700 acres (72% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted – any paleontological resources present have likely been significantly altered or destroyed, resulting in loss of information.

Under this alternative, 586,300 acres would be closed to oil and leasing and closed to disposal of salable minerals; 331,100 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to paleontological resources from these types of activities. This alternative proposes more acres of mineral withdrawals and more areas closed to oil and gas leasing/disposal of salable minerals as compared to Alternatives N, A or B which would preclude mineral and energy development in those areas and thus provide more protection to these resources.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described for Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable wild and scenic rivers would help protect soil by preventing ground disturbing activities in the river corridors. All 12 suitable segments (135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative

classification under this alternative. This would protect paleontological resources from inadvertent damage by limiting ground disturbance in these areas.

Areas of Critical Environmental Concern

Alternative C designates 16 ACECs (886,810 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; and acquiring inholdings) would reduce surface disturbing activities within those areas, thereby providing protection to paleontological resources from inadvertent damage. This alternative (along with Alternative D) would designate the most ACECs.

Alternative D

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as described under Alternative C

Impacts from Paleontological Resources

Impacts would be the same as described under Alternative C.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N, although these impacts would occur over a much smaller area due to differences in VRM class designations between the two alternatives. Under Alternative D, 1,129,600 acres (53% of the lands managed by the RFO) would be designated as VRM Class I; 66,700 acres (3%) would be designated as VRM Class II; 355,100 (17%) would be designated as VRM Class III; and 576,600 (27%) would be designated as VRM Class IV. Just over half of the RFO would be designated as VRM Class I or II, meaning that the existing character of the landscape must be preserved or retained. Thus, surface disturbing activities (and potential inadvertent damage to paleontological resources) would generally not be allowed in these areas, resulting in reduced potential for damage to these resources as compared to Alternatives N, A, B or C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, 682,600 acres would be managed to maintain wilderness characteristics. Management actions to achieve this include minimizing or avoiding surface disturbing activities such as closing these lands to oil and gas leasing, closing them to OHV use, and designating them as VRM Class I. The emphasis on naturalness and a lack of surface disturbing activities within these areas would minimize impacts to paleontological resources because there would be no vehicular activity or other forms of disturbance that could affect paleontological sites. However, protection of wilderness characteristics lands could also preclude paleontological site excavations or research activities where surface disturbing activities would occur. Resource inventories would not be precluded, however, and information gathered from these inventories would increase knowledge of paleontological resources. This alternative would also close off-highway vehicle access to known paleontological sites that are visited as a recreational activity within these non-WSA areas. This alternative would provide the most protection for paleontological resources of all the alternatives.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative C except that seven SRMAs (1,358,200 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. No SRMAs would be established for OHV use, which would decrease the potential for

damage to paleontological resources from this type of use. As described under Alternative C, the development of facilities could have localized site-specific impacts although paleontological inventories would be conducted prior to construction of any facilities, which would allow for avoidance of sites or mitigation.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. However, this alternative designates 972,800 acres (46% of the RFO) as limiting motorized/mechanized use to designated routes, and 1,155,200 acres (54%) as closed to motorized and mechanized vehicle use. The lack of open areas would eliminate impacts to paleontological resources from vehicle use in those areas. Limiting motorized/mechanized use limited to designated routes – the public would have access to 3,043 miles of unpaved routes – would generally limit soils impacts to areas in the immediate vicinity of the designated route; 1,242 miles of routes would be closed, allowing protection of paleontological resources in those areas.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described for Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that more acres would be recommended for withdrawal (903,900 acres under Alternative D). Thus, unavoidable impacts to paleontological resources from minerals activities would be significantly less under this alternative as compared to Alternative N.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more right-of-way avoidance/exclusion areas are proposed under Alternative D (1,203,800 acres closed to oil and gas leasing or open with no surface occupancy, 12 suitable WSR segments, and 16 ACECs). These avoidance/exclusion areas would encompass 57% of the RFO, which would provide more protection to paleontological resources (reduction in inadvertent impacts) than any of the other alternatives.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N although these potential impacts would occur over a substantially smaller area – 967,500 acres, or 45% of the RFO, would be open to oil and gas leasing under Alternative D (open to oil and gas leasing subject to the standard terms and conditions on the lease form, open to leasing subject to moderate constraints, and open to oil and gas leasing subject to major constraints [NSO]).

This alternative allows sale of mineral materials (salable minerals) on 967,500 acres (45% of the RFO). Since existing areas of salable mineral disposals have already been substantially impacted, any cultural resources present have likely been significantly altered or destroyed, resulting in loss of information. However, new sites would be subject to paleontological inventories; identified sites would either protect the site through avoidance or result in mitigation (scientific data recovery).

Under this alternative, 1,160,500 acres would be closed to oil and leasing and closed to disposal of salable minerals; 903,900 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to paleontological resources from these types of activities. This alternative proposes more acres of mineral withdrawals and more areas closed to oil and gas leasing/disposal of salable minerals than any of the other alternatives.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as described for Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as described for Alternative N.

4.3.7 Visual Resources

The BLM's VRM class objectives were used in analyzing impacts on visual resources. These objectives provide a baseline for determining how much a proposed management action would affect visual resources/scenic quality, as well as determining the level of disturbance an area can support while still meeting visual resource objectives.

The following BLM VRM class objectives and descriptions are summarized from BLM Manual Handbook H-8431-1 (1986).

- **VRM Class I:** The objective of Class I is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activities. The level of change to the characteristic landscape should be very low and should not attract attention.
- **VRM Class II:** The objective of Class II is to retain the existing character of the landscape. The level of change to the landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes to the landscape must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- **VRM Class III:** The objective of Class III is to partially retain the existing character of the landscape. The level of change to the landscape should be moderate. Management activities may attract the attention of the casual observer, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- **VRM Class IV:** The objective of Class IV is to provide for management activities that require major modifications to the existing character of the landscape. The level of change to the landscape can be high. The management activities may dominate the view and may be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic visual elements of form, line, color, and texture.

Visual resource inventories were completed before each of the planning efforts for the existing land use plans. These inventories were used to generate the existing VRM objectives for the lands managed by the RFO which are shown on Map 2-1. Landscape and the visual resource conditions may have changed since these objectives were set. Currently WSAs are managed under a number of different VRM classes. In accordance with BLM IM-2000-096, all WSAs would be managed as VRM Class I following completion of this RMP.

The criteria for analysis were the number of acres proposed for designation under the VRM classes, and the level of impacts and surface disturbances permitted under each class. Analyses of the impacts on visual resources are discussed in terms of the number of acres in each VRM category because the proposed RMP management actions would be required to comply with (e.g., not exceed) the approved VRM class objectives.

Methods and Assumptions

The following assumptions regarding future management of visual resources are made:

- Activities proposed that would not initially meet VRM objectives for the area would be mitigated to the extent needed to meet the objectives. Those activities proposed that could not be mitigated would not be authorized.
- The greater the size and/or severity of surface disturbance, the greater the impact there would be to scenic quality.
- All actions proposed during the RMP process must consider the importance of the visual values and the effects the project may have on these values.

VRM class designations by alternative are shown in Table 4-2.

Table 4-2. Visual Resource Management Classes, Acres and Percentage of RFO Lands

VRM Class	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Class I	0 acres * (0%)	446,900 acres (21%)	446,900 acres (21%)	446,900 acres (21%)	1,129,500 acres (53%)
Class II	529,500 acres (25%)	0 acres (0%)	209,000 acres (10%)	230,600 acres (11%)	67,100 acres (3%)
Class III	569,000 acres (27%)	392,800 acres (18%)	410,800 acres (19%)	509,100 acres (24%)	356,500 acres (17%)
Class IV	1,029,500 acres (48%)	1,288,300 acres (61%)	1,061,300 acres (50%)	941,100 acres (44%)	574,900 acres (27%)

* By BLM policy, WSAs are managed to meet VRM Class I objectives. The lands within the WSAs were inventoried as VRM Class II, and are represented as such in this table.

Environmental Consequences

Impacts to Visual Resources would result from actions proposed under the following resource management programs:

- Air Quality, Soil Resources, and Water Resources
- Vegetation and Fire and Fuels Management
- Cultural Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Non-WSA Lands with Wilderness Characteristics
- Livestock Grazing
- Recreation
- Travel Management

- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on visual resources.

Alternative N: No Action

Impacts from Air Quality, Soil Resources, and Water Resources

Implementing appropriate BMPs to minimize surface disturbance (see Appendix 14) would reduce visual contrasts created by a variety of resource management projects. Impacts would be localized, both short- and long-term. Actions to improve riparian and watershed condition in areas of moderate to severe erosion would affect visual resources in a manner similar to those described under Impacts from Vegetation and Fire and Fuels Management (Sections 4.3.4 and 4.3.11).

This alternative precludes surface disturbing activities within 500 feet around natural springs for the purpose of protecting water quality. This would also protect visual resources by retaining the existing character of the landscape in those areas.

Requiring the mitigation of impacts from fugitive dust during surface disturbing projects would help maintain visual resource conditions.

Impacts from Vegetation and Fire and Fuels Management

Over the long-term, restoration and vegetative treatments designed to improve ecological conditions could indirectly enhance visual resources on a localized basis. However, in the short-term, methods used to achieve improved ecological conditions could directly create visual changes to landscape form, line, color, and texture. Such impacts would range from minor to moderate, depending on scope and magnitude of treatment and the methods used. Chemical and biological methods would tend to gradually create visual contrasts that mimic natural ecological change, whereas fire and mechanical methods would create such contrasts more suddenly and noticeably. Depending on the VRM class where a particular treatment is conducted, impacts to the landscape could either meet or not meet the visual objective for the class. For example, treatments that create moderate change in VRM Class III areas would likely meet the visual standard, whereas moderate change that attracts attention in a VRM Class I or II area would not. Alternative N allows for a full range of treatment methods (including mechanical, wildland and/or prescribed fire, and chemical methods). Some of the treatments methods proposed (e.g., mechanical and chemical) would result in localized and short-term impacts to visual resources by creating visual contrasts.

Impacts to visual resources from prevention and mitigation programs aimed at reducing unwanted ignitions in wildland fire use and non-wildland fire use areas would be similar to those described above for vegetative treatments. However, actions related to prevention could reduce human-caused ignitions and related visual impacts caused by fire. Post fire rehabilitation methods, such as seed drilling, mulching, netting, or hydroseeding, could directly result in localized visual contrasts. Impacts would be minor to moderate in the short-term, but become negligible in the long-term. Wildland fires and prescribed fires would result in smoke, causing short-term minor to moderate impacts on visual resources. Such fires would also affect visual resources due to increased vehicle traffic, fire lines, and the contrast between burned and unburned areas. The latter could vary in size from a few acres to tens of thousands of acres.

Noxious weeds could affect visual resources to a minor degree by replacing native vegetation and creating changes in existing landscape form, color, or texture. Efforts to control or eliminate noxious weeds would reduce such impacts. Visual impacts created by the localized, small-scale collection or use

of vegetative materials would be negligible; however, any vegetation removal associated with larger-scale research or restoration efforts could produce impacts similar to those described above for mechanical vegetative treatments.

Impacts from Cultural Resources

The protective management of cultural resources would generally complement the maintenance of landscape character and the conservation of visual resources. Where excavation or restoration measures involving surface or vegetation disturbing activities, noticeable contrast or reduced scenic quality ratings could result. Impacts would be direct, localized, and short-term and would depending on the type, scope, and magnitude of excavation/restoration and the amount of change that it would cause to existing landscape form, line, color, or texture. The potential for reducing or restricting public access to cultural resources could reduce public opportunities to view some scenic resources. Such reduced opportunities would depend on the type and location of the restriction and its overlap with known scenic viewing locations.

Impacts from Visual Resources

Alternative N represents the VRM classes currently in place. Per BLM policy, WSAs would be managed as VRM Class I under all action alternatives to preserve their scenic value. Areas managed as VRM Class I would experience little to no change to their landscape character and, thus, their scenic value. Areas managed as VRM Class IV would allow for major modifications of the landscape.

Use of the VRM contrast rating process would continue to provide site-specific visual analysis of proposed surface disturbing activities to ensure that such projects meet visual objectives in project areas through design features and/or mitigation. Both short-term and long-term, indirect effects would accrue over the life of the RMP as management practices are constrained by the contrast rating process to sustain or enhance visual landscapes. Proposals would be required to mitigate impacts to scenic quality through project design (such as requiring new facilities to be painted to blend in with the surrounding landscape) and location and conform to the designated VRM class objectives. Under Alternative N, actions to restore natural conditions or appearance in areas already modified may succeed on a localized basis, reducing some visual contrast in the long-term.

Impacts from Special Status Species

This alternative (along with all the other alternatives) prohibits actions that destroy, adversely modify, or fragment Federally-listed species habitat; proposes habitat improvements for special status species; and considers special status species habitat in all wildland fire suppression efforts.

The protective management prescribed for special status species (including those relating to riparian habitats, ACECs, and non-ACEC habitats) would generally complement the maintenance of landscape character and the conservation of visual resources. Restoration measures that involve surface or vegetation disturbing components, however, would create noticeable contrast or reduce scenic quality ratings. Such impacts would be direct and short-term, and could range from minor to moderate, depending on the type of treatment/restoration and the amount of change that it would cause to existing landscape form, line, color, or texture. Reducing or restricting public access in special status species habitats could reduce public opportunities to view some scenic resources. Impacts would be direct and long-term, and could range from negligible to moderate, depending on the type and location of the restriction and its overlap with known scenic viewing locations.

Impacts from Fish and Wildlife

This alternative (along with all the other alternatives) includes provisions to avoid or reduce habitat fragmentation such as collocating facilities, employing directional drilling, reclaiming redundant roads,

reclaiming roads no longer serving their intended purpose, and using topographic and vegetation screening to reduce the influence of intrusions. These measures would generally complement the maintenance of landscape character and the conservation of visual resources. Restoration measures that involve surface or vegetation disturbing components, however, would create noticeable contrast or reduce scenic quality ratings. Such impacts would be direct and short-term, and could range from minor to moderate, depending on the type of treatment/restoration and the amount of change that it would cause to existing landscape form, line, color, or texture.

Constructing and/or modifying wildlife water developments could create visual contrasts with surrounding landscapes. Impacts would be localized and long-term, depending on the placement, design, and use of native materials and the area's VRM class designation.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for visual resources.

Impacts from Livestock Grazing

Where livestock grazing continues to be authorized (1,989,048 acres of the RFO), the installation of additional fences or livestock improvements (cattle guards, water developments, and roads necessary to access improvement sites) could directly impact visual resources by adding forms, lines, colors, and textures not found in the surrounding landscape. Such impacts would be localized, long-term, and could range from negligible to moderate. Where livestock grazing would not be available on 138,952 acres, the potential for the abovementioned impacts would be eliminated, effectively maintaining visual resource integrity over the long-term. Any removal of livestock facilities in these areas would enhance visual resources in the long-term by bringing the area back into its natural or near-natural condition.

Areas where livestock tend to congregate would create contrasts that would be noticeable to the casual observer. These impacts would typically be long-term, direct, localized. Implementing Utah's Standards for Rangeland Health would increase the potential for directly improving or enhancing visual resources.

Impacts from Recreation

Overall recreation guidance, ERMA management decisions, and the continued issuance of special recreation permits would not affect visual resources. No specific facilities are proposed, but any constructed would be based on needs for resource protection and user demand. New facilities or new types of commercial activities could result in changes to the landscape. However, specific projects are not identified at this time and therefore cannot be analyzed.

SRMAs would likely attract more visitor use to the RFO in the long-term. Increased visitor use could generate localized visual contrasts in the form of dust from traffic, changes to camping areas, and potential impacts from illegal, off-road driving. More intensive management of these areas may enhance public access to scenic views and overlooks. SRMA management decisions could affect scenic resources. Under this alternative, only a portion of the existing Yuba Reservoir SRMA is within the RFO. However, this SRMA is administered by the Fillmore FO and is not analyzed in this RMP.

Recreational activities have site-specific impacts near frequent and high-use areas such as campgrounds, parking lots, trailheads, and other recreation-related use areas. Long duration trail use (e.g., walking, equestrian, OHV, and mountain biking), especially during wet periods, could result in loss of vegetation cover; large group recreation events and camping could compact soils, which could lead to changes in plant vigor. These impacts would change the characteristic landscape and would be site-specific and localized. Dispersed recreation activities would create less impacts to visual resources than these more

intensive, concentrated recreation uses. Closing and/or rehabilitating undeveloped sites would restore the visual resources of those sites.

Impacts from Travel Management

The designation of OHV open areas can cause adverse impacts to landscapes and visual values. The level of use, season of use, type of soil, and vegetative community influence the amount of change to the landscape. Cross-country OHV use can result in visual contrasts in color from disturbed soils and vegetation and contrasting linear disturbance on the landscape. The length of time observed and distance from important viewpoints can influence the perceived changes to the overall visual values.

Under Alternative N, 1,636,400 acres (77% of the RFO) would remain open to cross-country OHV use. There would be 206,000 acres in VRM Class II, 489,000 acres in VRM Class III and 942,000 acres in VRM Class IV that are open to cross-country OHV use. Although the landscape in many areas would not be impacted by cross-country use due to topographic and vegetation limitations, continuing to manage this large area as open would allow the greatest potential for changes to the landscape and impacts to scenic resources from soil disturbance, tire tracks, and hill climbs, which would be inconsistent with the objectives for VRM Class II. The open OHV acreage is significantly higher in this alternative than any of the other alternatives. There would be 214,000 acres (10% of the RFO) that would be closed to OHV use under this alternative (primarily within WSAs), precluding scenic impacts from OHV use on those lands.

Under this alternative, motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO. OHV routes create visible lines on the landscape. Depending on topography, the vegetation community, and observation point(s), those lines are visible to varying degrees. Further, removal of vegetation would reveal the soil underlying, often a contrasting color and texture with the surrounding vegetation. This would further accentuate the change to the landscape. In those areas were OHV use is limited to designated routes would limit impacts on the landscape to the existing transportation system, and eliminate the creation of new routes that would result in further changes to the landscape and visual quality. This alternative would allow for the use of 4,315 miles. The designation of existing routes protects the visual resources by reducing the potential for the creation of additional routes and changes to the landscape such as soil disturbance, erosion, and loss of vegetation.

The potential for additional changes to the landscape from cross-country access to dispersed campsites would be greatest under this alternative. Dispersed camping and cross-country access to these campsites would be allowed to take place anywhere outside of the WSAs. Existing sites with access would continue to be used, but there is potential for the number of these sites to increase under this alternative, causing changes to the landscape.

Impacts from Lands and Realty

Land tenure decisions include both the disposal and acquisition of land. When public lands are disposed of, BLM no longer controls the scenery and development could affect the visual qualities of adjoining public lands. Since it is unknown what lands if any may be sold over the next 15 to 20 years, it is unknown if these would be of high value due to visual interest. If the BLM acquires lands, it also acquires responsibility for the scenery. Acquired lands would be managed according to VRM objectives on adjoining parcels. Under this alternative, up to 280 acres could potentially leave Federal ownership through FLPMA sales. Although the BLM would no longer control the scenery on lands disposed of by FLPMA Section 203 sales and their development could create minor to major, long-term, direct, localized visual contrasts with the surrounding landscape, the lands identified for sale are usually isolated, hard to manage parcels or are adjacent to developed areas in established communities. These lands would therefore have less potential of being high value for visual interest, so the potential for the loss of public viewing of scenic resources on these lands would be low.

Impacts to visual resources could result from issuance of land use authorizations (ROWs, permits, leases, easements, etc.). Impacts from issuance of these authorizations would vary based upon the nature and purpose of the authorization and the amount of change it would cause to existing landscape form, line, color, or texture. These authorizations could include a reduction in scenic quality ratings. Impacts generally be minor to moderate and would be addressed in site-specific NEPA analysis. Under this alternative, all ACECs (14,780 acres), eligible WSR corridors (12 segments – 135 miles), areas closed to oil and gas leasing (459,700 acres), and areas open to oil and gas leasing with no surface occupancy (22,600 acres) would be managed as right-of-way avoidance areas (with exceptions granted only if the proposed authorization would not create substantial surface disturbance or would create only temporary impacts). Thus, impacts to visual resources in these avoidance areas would be negligible to minor and localized.

Where possible, new right-of-way and communication sites would be collocated in existing corridors or sites. Although such developments could change landscapes, collocating new development with existing facilities would protect undisturbed areas from visual intrusions.

If wind and/or solar energy were developed in the lands managed by the RFO, it would impact visual resources. Introducing large wind structures and solar arrays would be a noticeable change to the landscape. In this alternative, exploration and development would be considered on a case-by-case basis. Because of the potential for a high level of change to the landscape, these developments would only be consistent with VRM Class IV objectives.

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws could prevent major modification to the landscape. However, the identified withdrawals, if established, would be subject to valid existing rights which could result in disturbance and associated impacts to visual resources in these areas. This alternative proposes a total of 169,480 acres of withdrawals.

Impacts from Minerals and Energy

Leasable Minerals

Table 4-3 presents the RFD scenario for oil and gas for lands managed by the RFO. Under all alternatives, the RFD projects that 454 oil and gas wells would be developed within the planning area, which includes all land ownerships, over the next 15 to 20 years.

Table 4-3. Reasonably Foreseeable Development Scenario for Oil and Gas

Development Potential	Well Locations	# of Wells Predicted	Geophysical Surface Impacts	Well Surface Impacts	Total Surface Impacts
High (Area 4) Western Sevier and Sanpete counties	BLM 45% Private 40% USFS 10% State 5%	360	4,500 acres	540 acres	5,040 acres
Moderate (Area 3) Eastern Sevier and Sanpete counties	USFS 100% (Fishlake and Manti-LaSal National Forests)	49	360 acres	1,100 acres	1,460 acres
Low (Areas 1 & 2) Piute, Wayne, eastern Garfield counties and southern Sevier counties	BLM 100%	45	240 acres	1,440 acres	1,680 acres
Totals		**454**	**5,100 acres**	**3,080 acres**	**8,180 acres**

In the high development potential area (Sevier and Sanpete Valleys), the construction of roads, well pads, and other facilities would add further developments to a moderately altered landscape. These agricultural valleys consist of cultivated fields, roads, and rural towns bordered by rolling hills and mountains. Many of the developments would be visible and attract attention, which would result in changes to the existing visual resources.

The moderate development potential area (Eastern Sevier and Sanpete Counties), generally has a natural appearing landscape, but allows for screening of most projects due to topography and vegetation. Road construction in these areas could require more cutting and filling which would be more visible on the landscape. However, this is still relatively few wells, with few disturbance acres spread over a large area which would result in minimum impacts to visual resources.

The area with low development potential is generally more remote with natural appearing landscapes, and visitors may be more sensitive to landscape changes, so few wells spread over such a large area would a have minimal impact on visual resources. The overall landscape character and vistas would not change.

Locatable Minerals

Exploration and development of locatable minerals creates surface disturbances that could adversely impact visual resources - impacts to visual resources would be unavoidable due to major surface disturbing activities to mine for the mineral sources. However, little development of locatable minerals is expected over the next 15-20 years.

Withdrawals would reduce the amount of land open to disturbance. This alternative proposes a total of 169,480 acres of withdrawals. See Lands and Realty section (above) for a discussion on withdrawals.

Salable Minerals

Salable minerals are under the same restrictions as oil and gas resources. The same lands that are open under standard stipulations or minor constraints would be available for salable mineral disposal, just as those lands either closed to leasing or under a no surface occupancy stipulations would be unavailable for salable mineral disposal. Under this alternative, 459,700 acres would be closed to disposal of mineral materials and 169,480 would be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to scenery because no surface disturbing activities associated with mining of salable minerals would be allowed in those areas.

Impacts from Special Designations

Wilderness Study Areas

Managing wilderness study areas under the IMP would prevent most ground disturbing activities. This would contribute to preserving existing landscape character to a major degree over the long-term.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible wild and scenic rivers would help protect visual resources by preventing ground disturbing activities that would impact the scenic character in the river corridors. All eligible segments (12 segments – 135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would preserve the existing character of the landscape in these areas.

Areas of Critical Environmental Concern

Although ACEC designation alone does not necessarily provide protection, management actions included in ACECs are often more restrictive, which indirectly provides protection for visual resources. Protections associated with ACEC designation that would affect visual resources include managing oil and gas

leasing as closed or open with no surface occupancy; more restrictive VRM designations; restricting livestock grazing to protect relict vegetation and ecologic (riparian) values; and travel limitations. Alternative N continues the designation of four ACECs (14,780 acres). Scenery was not one of the relevant and important values identified for these ACECs. However, allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; unavailable for livestock grazing in ACECs with relict vegetation and ecologic relevant and important values; and acquisition of inholdings) would reduce surface disturbing activities within those areas and protect visual resources.

Alternative A

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same as those described under Alternative N with the exception that the buffer zone of no surface occupancy around springs would be 330 feet in this alternative, which would protect a smaller area (8 acres for Alternative A versus 18 acres for Alternative N) from changes to the characteristic landscape.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N, although under Alternative A maximum treatment acreage limits would be set (averaging 73,600 annually for all treatments). While no maximum treatment acreage limits would be set under Alternative N, it is likely that more acres would actually be treated under that alternative because it allows for the full range of fire and fuels management actions to achieve ecosystem sustainability and allows for a full suite of treatment methods (including mechanical, wildland fire use and/or prescribed fire, and chemical methods). Alternative A incorporates more mechanical treatment than either Alternatives N or B.

Potential visual effects from a severe wildfire may include loss of trees, blackening of the landscape, blackened deadfall, including the disruption of line and form from ground disturbing activities. Large areas, including areas in VRM Classes I and II could be blackened and charred and large amounts of smoke could be produced

Impacts from Cultural Resources

Under Alternative A, all cultural properties in the RFO are allocated to one of six uses (scientific, conservation, traditional, public, experimental, or discharged from management). These use allocations pertain to the cultural resources themselves, not to areas of land, so impacts to visual resources from management of cultural resources would be similar to those described for Alternative N. However, under Alternative A, the majority of cultural resource site types would be allocated to public use (see Table 2-6a in Chapter 2), which would provide increased public access to cultural resources and thus increased public opportunities to view these resources.

Impacts from Visual Resources

VRM class designations vary by alternative and are shown in Table 4-2. Under Alternative A, all areas outside of WSAs would be designated as VRM Class III or Class IV. This means that there could be moderate changes to the landscape (on 392,800 acres designated as Class III) or major changes to the existing character of the landscape (on 1,288,300 acres designated as Class IV). This alternative could potentially impact visual resources the most of all the alternatives.

Impacts from Special Status Species

The types of impacts experienced as a result of special status species management would be similar to those described under Alternative N. However, this alternative includes additional strategies to avoid or reduce fragmenting habitat (including employing directional drilling for oil and gas; closing and reclaiming roads; mitigating the effects of proposed projects that have the potential of causing long-term or permanent impacts or losses of habitat; and using species-specific buffers for surface-disturbing activities). All of these actions would reduce surface disturbance and reduce the potential for invasion and spread of invasive species, which would help maintain the visual character of the landscape.

Impacts from Fish and Wildlife

Impacts would be the same as described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for visual resources.

Impacts from Livestock Grazing

Impacts would be essentially the same as those described for Alternative N except that under Alternative A an additional 36,950 acres (<1% of the RFO) would be available for livestock grazing. Installation of additional fences or livestock improvements (cattle guards, water developments, and roads necessary to access improvement sites) on these acres could directly impact visual resources by adding forms, lines, colors, and textures not found in the surrounding landscape. Such impacts would be localized, long-term, and could range from negligible to moderate. Where livestock grazing would not be available (on 102,002 acres), the potential for the abovementioned impacts would be eliminated, effectively maintaining visual resource integrity over the long-term. Any removal of livestock facilities in these areas would enhance visual resources in the long-term by bringing the area back into its natural or near-natural condition.

Impacts from Recreation

The types of impacts experienced as a result of recreation management decisions would be similar to those described for Alternative N except that SRMAs would be established that provide for cross-country OHV activities at Otter Creek (the west side of the reservoir), Big Rocks, Factory Butte, and Sahara Sands under this alternative. Allowing cross-country activities and providing necessary facilities would enhance and probably increase use in these areas which would result in changes to the landscape (developments such as staging areas, restrooms, and increased vehicle tracks). Terrain, soils, season of use, and distance from main travel routes would influence how noticeable these changes are. These areas would be designated as VRM Class IV in order to be consistent with these uses.

The Dirty Devil/Robbers Roost SRMA (290,000 acres) would be established to provide for recreational experiences complementary with the remote and scenic nature and other resource values of the area. No site developments or only the minimum required for site protection, and no on-site interpretive facilities are proposed for this area. The management objectives for this SRMA would help preserve the landscape characteristics in this area.

Impacts from Travel Management

The designation of OHV open areas can cause adverse impacts to landscapes and visual values. The level of use, season of use, type of soil, and vegetative community influence the amount of change to the landscape. The length of time observed and distance from important viewpoints can influence the perceived changes to the overall visual values.

Under this alternative, 449,000 acres (21% of the RFO) would remain open to cross-country OHV use. The open OHV acreage is significantly less in this alternative than Alternative N, but substantially greater than Alternatives B, C, or D. Although the landscape in some areas would not be impacted by cross-country use due to topographic and vegetation limitations, continuing to manage this large area as open would allow the greatest potential for changes to the landscape and impacts to scenic resources from soil disturbance, tire tracks, and hill climbs.

Areas not designated as open to OHV use would be limited to designated routes which would minimize impacts to visual resources on the 1,679,000 acres within the limited category. Limiting vehicles to designated routes would reduce the potential for additional changes to the landscape, such as soil disturbance, erosion, and loss of vegetation although intermittent dust from use of these unpaved routes and visibility of lines in the landscape would still be apparent. The potential impacts identified in Alternative N from cross-country motorized access to dispersed campsites would not be present under this alternative on the areas designated as limited to OHV use – vehicles on existing spur routes to established campsites would be allowed within 300 feet of the centerline of designated routes. No new campsites or travel ways would be authorized, which would result in no effect to visual resources.

No lands would be closed to OHV use under this alternative, with no accompanying benefits to visual resources.

Impacts from Lands and Realty

The types of impacts experienced as a result of land tenure adjustments under this alternative would be similar to those described under Alternative N, except that up to 13,460 acres could potentially leave Federal ownership through FLPMA Section 203 sales. Although the BLM would no longer control the scenery on lands disposed of by Section 203 sales and their development could create minor to major, long-term, direct, localized visual contrasts with the surrounding landscape, the lands identified for sale are usually isolated, hard to manage parcels or are adjacent to developed areas in established communities. These lands would therefore have less potential of being high value for visual interest, so the potential for the loss of public viewing of scenic resources on these lands would be low.

Under this alternative, there would be no new withdrawals from mineral entry considered and therefore no additional benefits to scenic resources over Alternative N.

The types of impacts experienced as a result of issuing lands use authorizations would be similar to those described under Alternative N, although impacts could occur over a larger area due to less acres proposed for right-of-way avoidance areas (446,900 acres closed to oil and gas leasing).

Wind and/or solar energy development would be considered throughout the lands managed by the RFO except for WSAs (VRM Class I) areas. Introducing large wind structures and solar arrays would be a noticeable change to the landscape. Because of the potential for a high level of change to the landscape, these developments would only be consistent with VRM Class IV objectives (1,288,300 acres, or 61% of the RFO). Introducing these developments in VRM Class II and III areas would be inconsistent with the objectives for those VRM classes, and would therefore adversely affect visual resources. This alternative would have the greatest potential impact to visual resources.

Impacts from Minerals and Energy

Leasable Minerals

The types of impacts experienced as a result of leasable minerals development would be similar to those described under Alternative N. Development of oil and gas resources could affect scenic landscapes due to the surface disturbances associated with such development. However, closing or withdrawing areas

from mineral operations would prevent impacts to scenery within those areas (see Lands and Realty section for a discussion on withdrawals). This alternative proposes fewer acres of mineral withdrawals (154,700 acres), less areas closed to oil and gas leasing (446,900 acres), and fewer areas open to oil and gas leasing with no surface occupancy (0 acres) than Alternative N, which would provide less protection to visual resources by precluding surface disturbing activities.

Locatable Minerals

The types of impacts experienced as a result of locatable minerals activities would be similar to those described under Alternative N except this alternative recommends fewer acres of mineral withdrawals (154,700 acres). Thus, impacts associated with locatable minerals mining could occur over a larger area of the RFO.

Salable Minerals

The types of impacts experienced from disposal of salable minerals would be similar to those described under Alternative N except that this alternative proposes fewer acres of mineral withdrawals (154,700 acres), fewer areas closed to salable mineral disposal (446,900 acres), and fewer areas open to with restrictions (0 acres). Thus, impacts associated with disposal of salable minerals could occur over a larger area of the RFO.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible wild and scenic rivers would help protect riparian vegetation by preventing ground disturbing activities in the river corridors. Under this alternative, no eligible river segments would be recommended as suitable. No special management to protect the outstandingly remarkable values of these rivers would be provided so visual resources within these corridors would not be protected from ground disturbing activities in the river corridors from WSR designation. However, most of the eligible river segments (98 of the 135 total miles) are also within WSAs, so ground disturbing activities would not occur in those river corridors and the scenic landscape would be protected.

Areas of Critical Environmental Concern

Alternative A designates no ACECs, so no special management to protect the scenic landscape (such as managing oil and gas leasing as closed or open with no surface occupancy, more restrictive VRM designations, or travel limitations) is proposed. Allowing surface disturbing uses that could cause irreparable damage to the relevant and important values in these areas could impact visual resources.

Alternative B: Preferred Alternative

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same as described under Alternative N

Impacts from Vegetation and Fire and Fuels Management

Under this alternative, vegetation treatment strategies that are consistent with managing scenic quality on public land would be implemented. These treatments would reduce the risk of severe wildfire that could potentially affect all visual classes and result in impacts on visual resources. Large, severe wildfires change the landscape in a way that could degrade visual quality, especially on fragile soils where the duration of erosion impacts may be longest.

Allowing fire to resume a more natural, ecological role across the landscape may constitute a short-term conflict between ecological sustainability and scenic aesthetics. Recent studies, however, have shown public support for controlled burns and other fuels reduction methods to reduce risk of larger, uncontrolled burns (USDA 2003). Resource values and short-term visual impacts versus long-term improvement in visual character of the landscape would be considered in planning fire and fuels management activities.

Impacts from Cultural Resources

Impacts would be similar to those described for Alternative A except that fewer sites would be allocated to public use under Alternative B, which would provide decreased public access to cultural resources and decreased public opportunities to view these resources.

Impacts from Visual Resources

Under Alternative B, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 209,000 acres (10%) would be designated as VRM Class II; 410,800 (19%) would be designated as VRM Class III; and 1,061,300 (50%) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate to major modifications in the existing character of the landscape. However, less of the RFO would be designated in these VRM classes than in Alternatives N or A, resulting in less potential impacts to visual resources as compared to those alternatives.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for visual resources.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

The types of impacts that would be experienced under Alternative B would be similar to those described under Alternative A. Under Alternative B, SRMAs would be established that provide for cross-country OHV activities at Factory Butte and Big Rocks. Management actions would focus on the OHV activities in these areas and the development of facilities to support the motorized activities. Allowing cross-country activities and providing necessary facilities would enhance and probably increase use in these areas, which would result in changes to the landscape (developments such as staging areas, restrooms, and increased vehicle tracks). Terrain, soils, season of use, and distance from main travel routes would influence how noticeable these changes are. These changes would be more apparent at Factory Butte than Big Rocks due to the terrain and proximity to a main highway. The VRM objectives for these areas are proposed to be designated as VRM Class IV in order to be consistent with these uses.

The Capitol Reef Gateway SRMA would be established to manage recreation opportunities associated with Capitol Reef National Park while protecting the values of the Fremont Gorge WSA and WSR segment. In this SRMA, there would be 2,835 acres in VRM Class I, 2,313 acres in Class II, 7,610 acres

in Classes III and IV. Facilities would be allowed to reduce resource impacts. Although the addition of facilities would introduce change into the landscape, the placement of facilities would be required to meet VRM objectives. The planned development of facilities could reduce impacts currently taking place from uncontrolled dispersed use.

The Henry Mountains SRMA would be established in this alternative. The management of Class A scenery as VRM Class II would be beneficial in retaining the visual character of these areas because only low levels of changes to the landscape can occur in Class II areas.

Impacts from Travel Management

Under Alternative B, less than 1% of the RFO (8,400 acres) would remain open to cross-country OHV use. Potential impacts to visual resources could occur within the open area due to a higher concentration of users on a much smaller area. Cross-country use and indications of motorized use on the landscape (including soil disturbance and loss of vegetation) would continue and likely increase on these acres. However, the total acres open to OHV use would be significantly less than under Alternative N.

Approximately 10% of the RFO (210,400 acres) would be closed to OHV use under this alternative (primarily within WSAs), precluding scenic impacts from OHV use on those lands.

The remainder of the RFO lands (1,909,200 acres), would limit motor vehicles to designated routes. OHV use within these areas would be restricted to 4,176 miles of designated routes and would reduce the potential for additional changes to the landscape, such as soil disturbance, erosion and loss of vegetation. The number of designated route miles would be less than in Alternatives N or A, resulting in less intermittent dust from use of these unpaved routes.

The potential impacts identified in Alternative N from cross-country access to dispersed campsites and for parking/staging would be greatly reduced under this alternative (and would only potentially occur on the 8,400 acres open to OHV use). Vehicle access would be allowed on existing spur routes to established campsites within 150 feet of the centerline of designated routes; vehicles would also be allowed to pull off designated routes up to 50 feet of each side of the centerline for parking/staging. Both of these actions would restrict potential effects to the visual landscape to those areas by restricting motorized use.

Impacts from Lands and Realty

The types of impacts experienced as a result of land tenure adjustments under this alternative would be the same as those described for Alternative A.

The types of impacts experienced as a result of issuing lands use authorizations would be similar to those described under Alternative A, although impacts could occur over a smaller area due to more acres proposed for right-of-way avoidance areas (561,400 acres closed to oil and gas leasing or open with no surface occupancy, 2 suitable WSR segments – 59 miles, and 2 ACECs – 2,530 acres).

If wind and/or solar energy were developed in the lands managed by the RFO, it would impact visual resources. Introducing large wind structures and solar arrays would be a noticeable change to the landscape. In this alternative, exploration and development would be considered on a case-by-case basis. Because of the potential for a high level of change to the landscape, these developments would only be consistent with VRM Class IV objectives and would only be allowed in those areas (50% of the RFO).

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws could prevent major modification to the landscape. However, the identified withdrawals, if established, would be subject to valid existing rights which could result in disturbance and associated impacts to visual resources in these areas. This alternative proposes a total of 176,200 acres of withdrawals.

Impacts from Minerals and Energy

Leasable Minerals

The types of impacts experienced as a result of leasable minerals decisions would be similar to those described under Alternative N. However, this alternative proposes more acres of mineral withdrawals (176,200 acres) as compared to Alternatives N or A, which would preclude mineral development in those areas and thus allow less disturbance to visual resources.

Locatable Minerals

The types of impacts experienced as a result of locatable minerals decisions would be similar to those described under Alternative N. However, this alternative proposes more acres of mineral withdrawals (176,200 acres) as compared to Alternatives N or A, which would preclude mining activities in those areas and thus allow less disturbance to the visual landscape.

Salable Minerals

The types of impacts experienced as a result of salable minerals decisions would be similar to those described under Alternative N except that more lands would be closed to disposal of salable minerals or open to salable mineral disposal with restrictions under Alternative B (450,500 acres would be closed to disposal of mineral materials; 1,132,500 acres would be open with restrictions to reduce ground disturbance; and 176,200 acres would be withdrawn from mineral entry). Closing or withdrawing areas from mineral operations would prevent impacts to scenery.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible wild and scenic rivers would help protect riparian vegetation by preventing ground disturbing activities in the river corridors. Two segments (59 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would preserve the existing character of the landscape in these areas. Of the remaining segments, 63 miles are within WSAs, which would protect visual resources because WSAs would be designated as VRM Class I. This leaves 13 miles on which ground disturbing activities could potentially impact the scenic landscape. This alternative would provide less protection to visual resources from WSR decisions than Alternatives N, C or D but more than Alternative A.

Areas of Critical Environmental Concern

The types of impacts experienced as a result of ACEC designations would be similar to those described under Alternative N, except that Alternative B designates fewer areas as ACECs (two areas, totaling 2,530 acres). Scenery was not one of the relevant and important values identified for these ACECs (North Caineville Mesa and Old Woman Front). However, management actions included in ACEC management are often more restrictive, which indirectly provides protection for visual resources. Protections associated with designation of these ACECs for the protection of the relict vegetation relevant and important values that would affect visual resources include recommending for withdrawal from mineral entry; managing oil and gas leasing as open with no surface occupancy; authorizing no new facilities or improvements; acquisition of inholdings; closing to forestry and woodland products harvesting; restricting livestock grazing; and closing to OHV use. All of these actions would reduce surface disturbing activities within those areas and indirectly protect visual resources.

Alternative C

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same as those described under Alternative N with the exception that the buffer zone of no surface occupancy around springs would be 660 feet in this alternative, which would protect a larger area (34 acres for Alternative C versus 18 acres for Alternative N) from changes to the characteristic landscape.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative A, although under Alternative C less acres would be treated annually (averaging 26,000 annually for all treatments). In addition, this alternative proposes using only natural processes (biological and fire) to manage vegetation, which could be less effective than conventional vegetation treatments and would not be effective in all vegetation communities. This could result in the loss of existing vegetation cover or longer timeframes for treated areas to blend in with surrounding areas, resulting in changes in the characteristic landscape lasting for a long period of time. This could also make control of some invasive species difficult because of lack of suitable substitute treatments (using fire as a control tool for species including tamarisk could increase the growth and spread of this non-native species), possibly allowing the spread of invasive species and displacement of desirable vegetation, also resulting in a less natural appearance. Thus, impacts to visual resources under Alternative C would likely result in reduced short-term impacts (due to fewer acres treated) as compared to Alternative A, but increased long-term impacts.

Impacts from Cultural Resources

Impacts would be similar to those described for Alternative B except that more sites would be allocated to conservation use under Alternative C, which would provide decreased public access to cultural sites and decreased public opportunities to view these resources.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N. Under Alternative C, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 230,600 acres (11%) would be designated as VRM Class II; 509,100 (24%) would be designated as VRM Class III; and 941,400 (44%) would be designated as VRM Class IV. Alternative C designates all Class A scenery within ACECs as VRM Class II, which would protect the scenic quality in those areas.

Although designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate to major modifications in the existing character of the landscape, and allow greater flexibility for vegetation treatments, less of the RFO would be designated in these VRM classes than in Alternatives N, A or B, resulting in less potential impacts to visual resources as compared to those alternatives.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for vegetation.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative B.

Impacts from Recreation

Under this alternative, the Dirty Devil/Robbers Roost SRMA (375,800 acres) would be established in order to provide for recreational experiences complementary with the remote and scenic nature and other resource values, notably the ACEC values, of the area. The SRMA would be 85,800 acres larger than in Alternatives A and B, and would have more emphasis on primitive recreation opportunities. No site developments or only the minimum required for site protection, and no on-site interpretive facilities are proposed for this area. The VRM management objectives for this SRMA (205,200 acres in VRM Class I, 48,700 acres in VRM Class II and 121,900 in VRM Classes III and IV) would help preserve the landscape characteristics in this area.

The Capitol Reef Gateway SRMA would be established to manage recreation opportunities associated with Capitol Reef National Park while protecting the values of the Fremont Gorge WSA, WSR segment, and Fremont Gorge/Cockscomb ACEC. No interior site developments or on-site interpretation facilities would be allowed. Only the minimum developments required for site protection would be provided. The management objectives for this SRMA would help preserve the landscape characteristics in this area. There are 2,900 acres in VRM Class I, 2,300 acres in VRM Class II, and 7,600 acres in VRM Class III (no acres in Class IV).

The Henry Mountains SRMA would be established in this alternative and managed in concert with the Henry Mountains ACEC. The management of Class A scenery as VRM Class II would be beneficial in retaining the visual character of these areas.

Sevier Canyon SRMA would be managed to protect the scenic values in and around the Sevier Canyon. Management of this SRMA in concert with the Sevier Canyon ACEC would help preserve the landscape characteristics in this area.

Impacts from Travel Management

Under this alternative, no acres would be open to cross-country OHV use which would protect the visual resources throughout the RFO from potential impacts caused by cross-country motorized use (soil disturbance and loss of vegetation). Thirty-two percent of the RFO (683,000 acres) would be closed to OHVs under this alternative, precluding scenic impacts from OHV use on those lands.

Areas not designated as closed to OHV use would be limited to designated routes, which would protect the visual resources on the 1,445,000 acres within the limited category (no areas would be open to OHV use under this alternative). OHV use within these areas would be restricted to 3,192 miles of designated routes and would reduce the potential for additional changes to the landscape, such as soil disturbance, erosion, and loss of vegetation. The number of designated route miles would be less than under Alternatives N, A or B but more than Alternative D.

Impacts from Lands and Realty

The types of impacts experienced as a result of land tenure adjustments under this alternative would be similar to those described for Alternative A, except that less land would be available for disposal under Alternative C. This alternative identifies no lands for FLPMA land sales; lands could be disposed of by other means (such as exchange) if the land tenure adjustment meets the goals and objectives of this alternative, such as resulting in a net increase of sensitive resources.

The types of impacts experienced as a result of issuing lands use authorizations would be similar to those described under Alternative A, although impacts could occur over a smaller area due to more acres proposed for right-of-way avoidance areas (735,100 acres closed to oil and gas leasing or open with no surface occupancy, 12 suitable WSR segments – 135 miles, and 16 ACECs – 886,810 acres).

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws could prevent major modification to the landscape. However, the identified withdrawals, if established, would be subject to valid existing rights which could result in disturbance and associated impacts to visual resources in these areas. This alternative proposes a total of 331,100 acres of withdrawals.

Wind and/or solar energy development would be considered on all RFO lands that are designated as VRM Class IV (the only class that allows major modifications to the landscape). This would give protection to the landscape character in those areas. This kind of development would still be noticeable in VRM Class IV lands, but would be consistent with the VRM objectives for that class.

Impacts from Minerals and Energy

Leasable Minerals

The types of impacts experienced as a result of leasable minerals decisions would be similar to those described under Alternative N. However, this alternative proposes more acres of mineral withdrawals (331,100 acres) as compared to Alternatives N, A, or B, which would preclude mineral development in those areas and thus allow less disturbance to visual resources.

Locatable Minerals

The types of impacts experienced as a result of locatable minerals decisions would be similar to those described under Alternative N. However, this alternative proposes more acres of mineral withdrawals (331,100 acres) as compared to Alternatives N, A, or B, which would preclude mining activities in those areas and thus allow less modification to the landscape.

Salable Minerals

The types of impacts experienced as a result of salable minerals decisions would be similar to those described under Alternative N except that more lands would be closed to disposal of salable minerals or open to salable mineral disposal with restrictions under Alternative C (586,300 acres would be closed to disposal of mineral materials; 1,049,900 acres would be open with restrictions to reduce ground disturbance; and 331,100 acres would be withdrawn from mineral entry). Closing or withdrawing areas from mineral operations would prevent impacts to scenery by allowing less modification to the landscape.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible wild and scenic rivers would help protect riparian vegetation by preventing ground disturbing activities in the river corridors. All eligible segments (12 segments – 135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. This would preserve the existing character of the landscape in these areas.

Areas of Critical Environmental Concern

Alternative C designates 16 ACECs (886,810 acres). Scenery was specifically identified as a relevant and important value in 7 of these (Badlands, Dirty Devil, Fremont Gorge/Cockscomb, Henry Mountains, Horseshoe Canyon, Little Rockies, and Lower Muddy Creek). To protect the visual resources in these ACECs, the Class A scenery would be designated as VRM Class II. Vegetation management was identified as a management prescription in the Henry Mountains ACEC to provide improved habitat for bison and mule deer, both identified as relevant and important values. Allowing no uses (in all ACECs except for the Henry Mountains) that would cause irreparable damage to the relevant and important values in these areas (such as closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; designating as VRM Class II; unavailable for livestock grazing where appropriate to protect relict vegetation and ecological values or fencing riparian areas in ACECs where grazing occurs; and acquiring inholdings) would reduce surface disturbing activities within those areas, protecting vegetation and improving ecological condition of riparian areas. However, opportunities for vegetation treatments could be limited, which could inhibit or prevent attainment of ecological objectives and DFCs in these areas.

Alternative D

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same as described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as described under Alternative C.

Impacts from Cultural Resources

Impacts would be the same as described under Alternative C.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N, although these impacts would occur over a much smaller area due to differences in VRM class designations between the two alternatives. Under Alternative D, 1,129,600 acres (53% of the lands managed by the RFO) would be designated as VRM Class I; 66,700 acres (3%) would be designated as VRM Class II; 355,100 (17%) would be designated as VRM Class III; and 576,600 (27%) would be designated as VRM Class IV. Just over half of the RFO would be designated as VRM Class I or II, meaning that the existing character of the landscape must be preserved or retained. Thus, surface disturbing activities would generally not be allowed in these areas, resulting in retention of the characteristic landscape. This alternative would therefore result in less impacts to scenery than Alternatives N, A, B or C.

Impacts from Special Status Species

Impacts would be the same as described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, 682,600 acres in 29 areas would be managed to protect their wilderness characteristics (size, naturalness, opportunities for solitude, and opportunities for primitive forms of recreation). To achieve this, these lands would be designated as VRM Class I to preserve the characteristic landscape. These areas would be closed to surface disturbing activities, which would

prevent changes to the characteristic landscape (vegetation, landform, and water) and protect the scenic quality of these lands.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative B.

Impacts from Recreation

Impacts would be similar to those described under Alternative C, with the exception that three additional SRMAs (with a combined acreage of 249,920 acres) would be established: Labyrinth Canyon, Little Rockies and San Rafael Swell. These SRMAs would be established to provide for recreational experiences complementary with the remote and scenic nature and other resource values of the area. No site developments or only the minimum required for site protection, and no on-site interpretive facilities are proposed for this area. The management objectives for this SRMA would help preserve the landscape characteristics in this area.

Impacts from Travel Management

Under Alternative D no acres would be open to cross-country OHV use, so the visual resources throughout the RFO would be protected from potential impacts from cross-country motorized use (including soil disturbance and loss of vegetation). Fifty-four percent of the RFO (1,155,200 acres) would be closed to OHVs under this alternative, precluding scenic impacts from OHV use on those lands. This alternative would designate the most area as closed to OHV use, which would provide the most protection to visual resources.

The remainder of the RFO (972,800 acres) would limit motorized travel to designated routes. OHV use within these areas would be restricted to 3,043 miles of designated routes, which would reduce the potential for additional changes to the landscape, such as soil disturbance, erosion, and loss of vegetation. The number of designated route miles would be least under this alternative

Impacts from Lands and Realty

Under this alternative, 903,900 acres (42% of the RFO) would be recommended for withdrawal from mineral entry including:

- Rainbow Hills ACEC, Old Woman Front ACEC, and portions of the remaining ACEC;
- All 12 eligible wild and scenic river segments; and
- All non-WSA lands with wilderness characteristics.

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws could prevent major modification to the landscape. However, the identified withdrawals, if established, would be subject to valid existing rights which could result in disturbance and associated impacts to visual resources in these areas. Scenic values would be best protected under this alternative because the most acreage would be withdrawn from future entry, location, selection, sale or leasing.

Wind and/or solar energy development would be considered on all RFO lands that are designated as VRM Class IV (the only class that allows major modifications to the landscape). This would give protection to the landscape character in those areas. The introduction of this kind of development would still be noticeable in VRM Class IV lands, but would be consistent with the VRM objectives for that class.

Potential impacts to visual resources from lands and realty decisions would be the least under this alternative.

Impacts from Minerals and Energy

Leasable Minerals

The types of impacts experienced as a result of leasable minerals decisions would be similar to those described under Alternative N, although impacts would occur over a much smaller area due to more acres proposed for withdrawal (903,900 acres under Alternative D) and more areas closed to oil and gas leasing or open with no surface occupancy (1,203,800 acres). Closing or withdrawing areas from mineral operations would prevent changes to the characteristic landscape (vegetation, landform, and water) and protect the scenic quality of these lands. Impacts to visual resources from leasable minerals activities would be much less under this alternative as compared to all the other alternatives.

Locatable Minerals

The types of impacts experienced as a result of locatable minerals decisions would be similar to those described under Alternative N. However, this alternative proposes substantially more acres of mineral withdrawals (903,900 acres) as compared to Alternatives N, A, B, or C, which would preclude mining activities in those areas and thus allow less modification to the landscape.

Salable Minerals

The types of impacts experienced as a result of salable minerals decisions would be similar to those described under Alternative N except that more lands would be closed to disposal of salable minerals or open to salable mineral disposal with restrictions under Alternative D (1,160,500 acres would be closed to disposal of mineral materials; 290,200 acres would be open with restrictions to reduce ground disturbance; and 903,900 acres would be withdrawn from mineral entry). Closing or withdrawing areas from mineral operations would prevent impacts to scenery.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be similar to those described for Alternative C except that additional restrictions would be applied to non-WSA lands with wilderness characteristics areas within ACECs. This includes designating Class A scenery as VRM Class I, not allowing fences or surface disturbing activities, closing these areas to oil and gas leasing, closing to OHV use, recommending for withdrawal from mineral entry, among others. All of these actions would preclude surface disturbing activities in those areas and thus allow minimal modification to the landscape.

4.3.8 Special Status Species

This analysis focuses on impacts to special status species, including Federally-listed species, Federal proposed and candidate species, and BLM sensitive species, as a result of management actions which affect species or their populations and changes to the condition of their habitats. While some data on known locations and habitats within the RFO are available, the data are neither complete nor comprehensive of all special status species known to occur or potential habitat that might exist. Known and potential special status species and habitat locations were considered in the analysis; however, the potential for species to occur outside these areas was also considered and, as a result, some impacts are

discussed in more general terms. Impacts to other fish and wildlife species and their habitats are addressed in Section 4.3.9, Fish and Wildlife.

In order to preserve special status species, various laws, regulations, and policies require that special status species be considered in any agency decision that could affect threatened and endangered and sensitive species. Consideration usually includes inventory, evaluation and mitigation of effects. Addressing effects to these species includes either project relocation or redesign (avoidance) or site-specific mitigation.

Although information on locations of all special status species sites in the RFO is incomplete, the analysis considers the management alternatives and their potential to directly or indirectly affect special status species resources, as noted above. The number of species that could be affected by various actions is directly correlated with the degree, nature, and quantity of surface disturbing activities in the RFO. Impacts are quantified where possible. In the absence of quantitative data, best professional judgment was used. Some of the decisions in this document are programmatic; others may be implemented immediately (e.g., route designation, oil and gas leasing categories). To ensure preservation of specific species, further analyses will be required at the implementation level following site-specific species inventories.

Impacts to special status species from other management programs in the planning area include loss or alteration of native habitats, increased invasion of noxious weeds and other exotic weed species, decreased water availability, increased habitat fragmentation, changes in habitat and species composition, disruption of species behavior leading to reduced reproductive fitness and/or increased susceptibility to predation, and direct mortality of individuals. Surface disturbing actions that alter vegetation characteristics (e.g. structure, composition, and/or production) have the potential to affect habitat suitability for special status plants or animals, particularly where the disturbance removes or reduces cover and/or food resources. Even minor changes to vegetation communities have the potential to affect special status species.

Direct impacts to special status species from management activities may result in mortality or displacement of individuals, disturbance due to reduced air or water quality, and alteration of immediate environments through loss of or changes to key habitat components. Beneficial or adverse effects are possible. Key habitat components include food availability or quality, cover from predators, thermal refugia, nesting/roosting/denning habitat, water availability and quality, travel corridors, etc. Direct impacts may affect individuals, populations, or habitats for the duration of the action, for a few days thereafter, for several growing seasons, or may continue indefinitely where the action results in permanent habitat loss.

Indirect impacts to special status species from management activities typically result from influences of post-disturbance succession, recovery, or rehabilitation of the habitat. Beneficial or adverse effects are possible. These impacts may be long-term, depending on the severity of the habitat alteration, and may change species assemblages (relative abundances or species composition), species behaviors, or overall population trends, benefiting some species and adversely affecting others.

Methods and Assumptions

To analyze the potential effects of the alternatives on special status species, information was gathered from existing inventories, recovery plans, conservation agreements, State Heritage database files, relevant scientific literature, computer habitat models, and other sources identifying the potential distribution of these species in and adjacent to the planning area. The analysis is also based on professional expertise of BLM specialists at the RFO Utah State Office, knowledge of the area, and a review of the relevant scientific literature.

To comply with Section 7 of the Endangered Species Act (ESA), a Biological Assessment (BA) will be prepared to address impacts and mitigating measures on threatened, endangered and candidate species, as well as designated critical habitat. In determining impacts for this DRMP, BLM staff considered how the action would affect listed or candidate species known or suspected to occur in an area. Impacts were measured against information about threats found in the Federal Register notice describing the listing of the species and the potential for the action to modify designated or proposed critical habitat. Direct and indirect impacts were considered together with impacts of activities that are interrelated or interdependent. Impacts were quantified where possible. In absence of quantitative data, best professional judgment was used. In the following discussion, impacts are sometimes described using ranges of potential impacts or in qualitative terms, if appropriate.

This analysis was based on the following assumptions:

- Special status species habitat would be managed for the benefit of those species as a priority over other resources allocations and uses.
- Ground disturbing activities could lead to modification of habitat and/or loss or gain of individuals, depending on the amount of area disturbed, the species affected, and the location of the disturbance.
- All surface disturbing activities would include mitigation to reduce impacts to special status species and their habitat. Conservation measures developed for each listed or proposed species (Appendix 14) would be applied to any proposed project within the habitat of that species. Analysis of impacts and determinations of effects would include any and all mitigation and conservation measures.
- Prior to any surface disturbing activity, a special status species review would occur to determine whether any such species would be present in the project area.
- USFWS would be consulted for any actions that could have a potential to affect Federally-listed species.

Environmental Consequences

Impacts to special status species would likely result from actions proposed under the following resource management programs:

- Soil Resources
- Water Resources
- Vegetation
- Cultural Resources
- Paleontological Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Wild Horses and Burros
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management

- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on special status species.

Alternative N: No Action

Impacts from Soil Resources

Activities conducted under the soil management program are limited to monitoring, support activities, providing information for other BLM programs, and recommending appropriate mitigation. Typical activities implemented under the soil resource program would include mapping soils, maintaining soil databases, identifying timing stipulations, and recommendation of protective measures for critical soils. For example, implementation of timing stipulations would reduce surface disturbance in areas with high seasonal erosion potential. As a result, special status species would benefit from a decrease in erosion and sedimentation, thereby generally maintaining or improving habitat.

Many special status plant species such as Last Chance townsendia (*Townsendia aprica*) and Wright fishhook cactus (*Sclerocactus wrightiae*) are located in drainages or runoff areas within the Mancos Shale formation. These soils are naturally erosive by nature with a high salt content. Increased erosion and sedimentation has been shown to cause the direct mortality of both species (personal observation, Megan Robinson). The management of soil would help reduce the amount of erosion and sedimentation within special status species habitat.

Impacts from Water Resources

Implementation of water quality and quantity related actions would guide or advise other program actions and activities in a manner conducive to maintaining or improving surface water quality. This would be consistent with existing and anticipated uses and applicable state and Federal water quality standards. Beneficial impacts to special status species include improved habitat for fish and wildlife and their associated prey. Maintaining or improving habitat associated with aquatic systems would provide long-term benefits for bald eagle (*Haliaeetus leucocephalus*), Southwestern willow flycatcher (*Empidonax traillii extimus*), Northern goshawk (*Accipiter gentilis*), and Western yellow-billed cuckoo (*Coccyzus americanus*) habitat and populations. Because no actions are anticipated under any of the alternatives that would adversely affect water quality or reduce water quantity, no impacts are anticipated to any of the Federally-listed Colorado River fish or their habitat located downstream from the planning area.

Impacts from Vegetation

Management Activities in Riparian and Wetland Areas

The purpose of the riparian and wetland management program is to maintain, restore, or improve riparian habitats. Proposed management actions that would be implemented to protect riparian areas including restrictions on time, space, placement, and the establishment of 500-foot buffer zones around riparian areas where no surface disturbing activities would be allowed around the outer edge of springs unless it could be shown that there are no practical alternatives, all long-term impacts can be fully mitigated, and the activity would benefit and enhance the riparian area.. This would protect any special status species and their habitat located within this zone from surface disturbing activities, but it could restrict potentially beneficial actions to special status species such as riparian areas restoration and vegetation treatment.

Vegetation treatments and stream bank stabilization projects would potentially result in short-term adverse impacts to special status species whose habitat is located primarily in riparian and wetland areas (e.g., Southwestern willow flycatcher, bald eagle, yellow-billed cuckoo). Stream bank stabilization and

habitat restoration projects could result in the removal of riparian vegetation in these areas. Many of these areas are potential habitat for riparian obligate special status species. Impacts to special status species from these activities could include temporary disturbance or loss of occupied or potential habitat from heavy equipment use, increased human presence, and associated noise. Vegetation treatments in riparian areas could include the use of herbicides, fire, or mechanical removal of exotic plant species such as tamarisk or Russian olive. Application of herbicides has a remote potential for accidental drift into special status species habitat.

In the long-term, vegetation treatments and stream bank recontouring would likely benefit riparian obligate special status species by improving or enhancing riparian habitat. Additionally, beneficial impacts to upland special status species could result from maintaining or improving natural hydrologic watershed processes. Activities to maintain or improve riparian health such as construction of livestock, wildlife, and recreation exclosures within riparian habitats, and habitat rehabilitation projects would have beneficial impacts on riparian-obligate special status species.

As stated above, management of riparian and wetland areas includes the avoidance of surface disturbing activities within 500 feet of riparian areas. This would likely benefit riparian-obligate special status species. For example:

1. The Southwestern willow flycatcher, bald eagle, and yellow-billed cuckoo are riparian obligate species. Any restrictions on surface disturbance in the riparian habitat of these species would reduce adverse impacts. Southwestern willow flycatcher and yellow-billed cuckoos have both been known to nest in exotic riparian plant species such as tamarisk and Russian olive. The restriction of riparian projects such as mechanical removal of exotic species could protect nesting Southwestern willow flycatchers or yellow-billed cuckoos from nest abandonment and destruction.

2. Restrictions and buffers zones would reduce human activity within Southwestern willow flycatcher, bald eagle, and yellow-billed cuckoo habitat. Human activity and noise in areas occupied by Southwestern willow flycatchers, bald eagle, and yellow-billed cuckoos could alter nesting or foraging behavior. Reducing or eliminating human interaction by implementing restrictions and buffer zones would reduce the likelihood of altering these behaviors and help increase nesting success rates. Federally-listed Colorado River fish species located downstream from the planning area would not be adversely affected by any actions related to riparian and wetland management. The restrictions and buffer zones would maintain or improve the current character of the major streams such as the Dirty Devil River which flow into listed Colorado River fish habitat.

All riparian areas are managed in accordance with the BLM Utah riparian policy. It is the objective of this riparian policy to improve or maintain riparian areas in proper functioning condition. Riparian areas are classified as in “proper functioning condition” when there is adequate vegetation and landform structure present to dissipate stream energy from high flows. This results in a reduction in erosion, improvement in water quality, filtration of sediment, capturing of bedload, and an aid in floodplain development. Properly functioning riparian areas also result in an improvement in flood water retention and ground water recharge, development of root masses that stabilize stream banks against cutting action, development of diverse ponding and channel characteristics necessary for fish production and other uses, and support greater biodiversity. Continuing to implement this policy would minimize impacts on special status species inhabiting riparian and wetland areas.

Riparian and Wetland Inventories

Inventories within riparian and wetland areas would result in a better understanding of the extent of special status species and their habitats. This information would assist in the management of these areas. For example, inventory and monitoring activities could lead to habitat improvement actions such as

construction of livestock, wildlife, and recreation exclosures within riparian habitats, and habitat rehabilitation projects. By maintaining or improving riparian habitats, wetland-obligate special status species are likely to benefit in the long-term.

Adverse short-term impacts that could result from riparian and wetland inventories could include the trampling of special status species plants and associated habitats, and increased human activity within special status wildlife species habitat.

Human presence and noise associated with exclosure development and maintenance within special status bird species habitat such as the Southwestern willow flycatcher, bald eagle, and yellow-billed cuckoo could disturb foraging behavior and cause nests to be abandoned if the action inadvertently occurred during the nesting season of these species.

Overall Vegetation Management

Vegetation management activities include fencing, weed treatment, timber harvest, sagebrush management (spraying, mechanical treatment, or burning), and seeding of disturbed areas or weed-treated areas. Vegetation management activities, especially those using heavy equipment, would result in short-term adverse impacts to special status plant species and their habitat. Surface disturbing activities could result in the crushing and mortality of individual plants and alteration of their habitat due to soil erosion or sedimentation.

Potential short-term impacts to Utah prairie dogs (*Cynomys parvidens*) include direct mortality of individuals from accidental chemical treatment drift, increased human presence, and damage to burrows. Heavy equipment used for reseeding or mechanical removal of undesirable vegetation could inadvertently damage burrows. Increased human presence could alter Utah prairie dog behavior, reducing the amount of time available for the species to forage and could cause unnecessary energy expenditures in fleeing and alerting behavior. The presence of biologists during these activities would reduce the potential for burrow disturbance by monitoring and overseeing treatment operations. The removal of sagebrush from around prairie dog colonies would benefit the prairie dogs by allowing for growth of herbaceous vegetation used for foraging and removing predator cover.

Human disturbance and noise associated with the use of heavy equipment could temporarily disperse special status bird species from occupied habitats. Adverse impacts to special status bird species could also result from accidental chemical drift from pesticide use in nearby areas, which could poison individuals and/or result in mortality of prey species. Prescribed burning could also disturb nesting special status bird species. These impacts would be expected to be local and short-term in nature.

In the long-term, special status species would benefit from most vegetation treatments through an increase in vegetation productivity which would provide additional forage, cover, and prey base.

Vegetation Treatments

Vegetation treatment methods include mechanical, prescribed fire, and chemical treatments. Surface disturbing activities, such as the use of heavy equipment, cause crushing and mortality of individual plants and alter habitat. The use of herbicides or pesticides in occupied habitat could render the habitat unsuitable for use by some species. Chemical weed controls could also affect potential pollinators of special status plant species by eliminating their habitat.

Removing vegetation with heavy equipment could temporarily reduce potential breeding and nesting habitats. Human disturbance and noise associated with the use of heavy equipment could also temporarily displace special status bird species from foraging and nesting habitats. For example, the Southwestern willow flycatcher and the yellow-billed cuckoo have been known to nest in tamarisk and Russian olive.

Vegetation treatments to remove these invasive plant species could result in habitat loss and disrupt nesting and foraging behavior.

The use of pesticides could result in a short-term reduction in herbivorous insects, which could cause changes to surrounding vegetation. If insect populations were substantially reduced over a long period, insectivorous special status species could disperse from currently occupied areas in an effort to find a larger forage base.

Chemical treatments and prescribed burning could also disturb nesting special status bird species from smoke or chemical spray inadvertently drifting into occupied habitat. These activities have the potential to remove suitable habitat or other desirable vegetation.

In the long-term, special status species would benefit from most vegetation treatments through an increase in vegetation productivity which would provide additional forage, cover, and prey base.

Management of Noxious Weeds and Invasive Species

Noxious and invasive weed management activities include herbicide use, biological controls, and mechanical treatments in weed infested areas. Actions conducted in areas near special status species habitat could benefit these species by removal of species that would compete with native species for available space and resources. Adverse impacts could result from mechanical vegetation treatments requiring the use of heavy equipment, resulting in the crushing and mortality of individual special status plant and animal species as previously discussed. Short-term habitat and forage loss for some special status species could also result. Adverse direct impacts could also result from accidental chemical drift from herbicide use in nearby areas.

Insect Pest Management

Special status species could benefit from treatments targeting destructive insects such as grasshoppers, cut worms, and Mormon crickets. Actions taken to remove destructive insects would reduce potential competition for available forage. However, many special status plant species' pollination vectors are not clearly understood. The elimination of potential pollinators could contribute to low fruit and seed set within the plant populations.

Control of insects in localized areas would likely result in adverse impacts to special status species in those areas. The reduction of some specific insect populations within special status bird habitats could alter foraging and nesting behavior by reducing the prey base and by requiring the birds to travel further to forage. For example, grasshoppers are a food source for Southwestern willow flycatcher, burrowing owl, yellow-billed cuckoo, and greater sage grouse. The short-term reduction in herbivorous insects could also result in changes to surrounding vegetation. If insect populations were substantially reduced over a long period, special status bird species could disperse from currently occupied areas in an effort to find a larger forage base.

Adverse impacts could also result from accidental chemical drift from pesticide use in nearby areas. Ingestion of pesticides could lead to direct mortality of individual Utah prairie dogs or could cause decreased pup survival. However, continued dusting to control plague would help stabilize prairie dog populations and reduce the potential for catastrophic loss in individual colonies.

Impacts from Cultural Resources

Cultural resource actions (including the development of interpretive sites, identification of cultural resources, the use of hand and power tools, establishment of temporary camping areas, the building of fences, and the stabilization of deteriorating buildings) could occur within occupied or potential habitat of

special status species. Human activities in special status bird species habitats could disrupt nesting and foraging behaviors and cause the species to leave the area or abandon nests. Interpretive sites placed near nests or within home ranges of bird pairs could disturb their nesting behavior on a long-term basis. This activity could lead to individual nest failure and reduced reproductive success.

The development of interpretive sites located within special status species habitat could also increase human activity in an area, resulting in the crushing and trampling of individual plants and habitat degradation over the long-term. Cultural resource program actions involving excavation efforts could cause localized population declines due to crushing and destruction of individual plants, increased sedimentation, and soil compaction.

The cultural resource actions described above could adversely affect special status animal species, such as Utah prairie dogs and greater sage grouse, through the trampling of burrows and habitat degradation if a project is conducted within special status species habitat. These actions could result in surface disturbance, increased human presence, and noise that would disturb or displace special status animal species. Additionally, excavation activities within occupied habitat could cause direct mortality to the species. Human activities could disrupt foraging behaviors and cause species to abandon habitat. Interpretive sites located within or near occupied habitat could disturb species' natural behavior on a long-term basis resulting from increased human presence.

The identification of new areas for field inventories could adversely impact special status species depending on the intensity of the survey. If field inventories were to include special status species habitat, adverse impacts could be expected. Special status plant species populations and habitat could be trampled by surveyors searching for cultural artifacts and sites to survey. Human activities in special status bird species habitats could disrupt nesting and foraging behaviors and could result in the species leaving the area or abandoning nests. Ground dwelling species such as the Utah prairie dog and greater sage grouse could experience trampling of burrows and habitat degradation within the survey areas. These actions could also result in increased erosion, noise, and visual stimulants for the species. Human activities could disrupt foraging behaviors and could result in the abandonment of the areas. Implementation of Alternative N would not directly affect special status species because no priority areas for new field inventories are identified within the RFO.

Impacts from Paleontological Resources

Paleontological resource actions could include the development of interpretive sites, identification of paleontological sites, the use of hand and power tools, establishment of temporary camping areas, and the building of fences. These developments could occur within occupied or potential habitat of special status species. Actions including the development of interpretive sites, identification of paleontological resources, and the use of hand and power tools for excavation activities would increase noise and visual stimulants. These actions have the potential to temporarily disturb or displace birds. In addition, nests or key habitat components could be damaged or destroyed by the removal of vegetation through actual digging activity or the fencing of paleontological sites. Temporary camping areas could be established in habitats utilized by special status bird species. Human activities associated with paleontological activities in bird habitats could disrupt nesting and foraging behaviors and could result in the species leaving the area or abandoning nests.

Paleontological resource activities could cause localized population declines if conducted within special status plant species habitat. It is expected that the necessity to conduct excavations and related activities within special status species plant habitat would be rare.

Based on existing information, there is little overlap between paleontological resources and Utah prairie dog habitats. However, should an excavation be required in prairie dog habitat, the dogs would be

displaced from the disturbed areas. The use of heavy equipment within occupied habitat could destroy occupied burrows. Human activities in viable habitats could disrupt foraging behaviors and could result in the species abandoning occupied habitat. Interpretive sites placed within or near occupied habitat could disturb the prairie dog's natural behavior as a result of increased human activity.

Impacts from Visual Resources

In general, VRM class designations would limit or allow surface disturbing activities in certain areas, thereby affecting special status species. VRM Classes I and II, which preserve or retain the existing character of the landscape, would protect special status species by restricting ground disturbing activities; VRM Classes III and IV would provide less protection by allowing more changes to the landscape and being less restrictive of ground disturbing activities. Under Alternative N, none of the lands managed by the RFO are classified as VRM Class I; 529,500 acres (25%) would be managed as VRM Class II; 569,000 (27%) would be managed as VRM Class III; and 1,029,500 (48%) would be managed as VRM Class IV. Managing areas as VRM Class II would reduce surface disturbance and retain existing vegetation, thereby protecting special status species. Areas managed as VRM Class III or IV (75% of the RFO under this alternative) would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) the habitat for special status species.

Impacts from Special Status Species

Implementation of the special status species program is designed to manage threatened, endangered, candidate, and sensitive species and their habitat. Activities could include conducting surveys, habitat improvement projects, and closing areas that contain populations or suitable habitat for special status species to OHV use or other surface disturbing activities. Other actions would include inventory, monitoring, and population dynamics studies. The BLM would continue to participate in the development of Recovery Plans and Conservation Agreements. Activities conducted under the program would benefit special status species through the provision of guidance, monitoring, and conservation measures. These management activities would be beneficial to special status species.

Impacts from Fish and Wildlife

The primary threat to special status species as a result of implementing actions associated with the wildlife management program is habitat manipulation that causes surface disturbances in potential or occupied habitat. Habitat manipulations such as prescribed burns, chemical, and biological controls are typically used to improve habitat for wildlife. While the continued maintenance and/or improvement of wildlife habitats in the vicinity of listed special status species could hold some long-term benefits for the species, there could be short-term adverse impacts such as loss or fragmentation of habitat, loss of individuals due to redistribution of grazing herbivores, or hydrologic changes that result in temporary sedimentation or changes in natural water regimes. An increase in sedimentation could be particularly harmful to plant species that are located in drainages or wetland areas. However, these potential impacts would be localized and would not affect endangered Colorado River fish habitat located downstream from the planning area.

Restrictions or stipulations of surface disturbing activities within wildlife habitats that overlap with special status species habitat could benefit special status species within the restricted areas. The restrictions would reduce adverse effects incurred by surface disturbances that could harm special status species. Under Alternative N, areas where current surface disturbance restrictions are in place (such as WSAs and eligible wild and scenic river corridors) could benefit special status species that are located within these areas. In areas where there are no surface disturbance restrictions, impacts (such as decreased air quality, erosion, soil compaction, introduction of exotic and noxious weeds, crushing of plants, and habitat modification) could cause incidental take of the species.

Special status species such as the Mexican spotted owl, bald eagle, and Cronquist wild buckwheat (*Eriogonum corymbosum* var. *cronquistii*) are known to exist within the Henry Mountains area. Alternative N restricts oil and gas exploration and leasing activities in crucial bison habitats and in crucial and high value mule deer habitats during the winter and spring, which would also minimize disturbance to these special status species. Soils are often wet during the winter and spring, so lack of activity would minimize the potential for soil compaction and reduce detrimental impacts to the wild buckwheat. Restricting activities in winter and spring would also reduce disturbance to wintering bald eagles and breeding Mexican spotted owls.

Implementation of this alternative would provide no seasonal or spatial restrictions on surface disturbing activities in desert bighorn habitat, but would require compliance with the Desert Bighorn Sheep Management Plan which includes the following goals: 1) Establish optimum populations of bighorn sheep in all suitable habitat within the State; 2) Provide good quality habitat for healthy populations of bighorn sheep; 3) Provide high quality opportunities for hunting and viewing of bighorn sheep. However, since this management plan lacks specific direction on actions to protect bighorn sheep and their habitat from surface disturbing activities (such as oil and gas development), potential adverse impacts could be substantial.

Impacts from Wild Horses and Burros

Alternative N allocates 100 AUMs for wild burros in the Canyonlands HMA. This HMA is located near Mexican spotted owl designated critical habitat. Therefore, authorized wild burro activities could impact occupied Mexican spotted owl habitat during the life of the RMP. The presence of wild burros and subsequent gathering related actions could adversely affect the Mexican spotted owl through noise, construction of temporary gathering structures, and the trampling of habitat utilized by the owl. Herd gathers are generally conducted after July 1, which would minimize harmful effects to nesting spotted owls. Herd gathering is conducted using hazing techniques of low flying helicopters, vehicles, and gathering pens. Wild burros could run through occupied spotted owl habitat. These activities could disrupt foraging behaviors.

Impacts from Fire and Fuels Management

The focus of this analysis is on fire management activities including wildfire suppression, prescribed fire, and non-fire fuel treatments, and not on the impacts of wildfire itself. Actions associated with fire management could adversely affect special status species and their habitat.

Increased human activity and noise associated with wildland fire suppression and prescribed fire in areas occupied by special status bird species would affect nesting, foraging, or roosting behavior. Foraging, nesting, and communal winter roosting habitats could be lost through the use of heavy equipment, hand tools, and noise associated with intensive human activity. Some snags used for perching, roosting, or nesting could be lost due to suppression operations. However, these could be replaced as new snags result from fire mortality. The effects from wildland fire suppression could potentially become long-term, depending upon the severity and extent of the activities conducted during a particular fire suppression operation. While a large fire requiring extensive suppression operations, such as extensive staging areas and fire line construction, could result in long-term adverse effects to special status bird species and their habitats, smaller fires requiring less extensive suppression operations would generally avoid these long-term adverse effects.

Fire suppression activities could adversely affect special status animal species such as the Utah prairie dog and greater sage grouse and cause immediate post-fire alteration or damage of occupied or suitable habitats. Suppression operations could result in harassment, displacement, injury, or mortality during staging, fire line construction, backburning, noise, or other human-caused disturbance. Any direct adverse effects would generally be short-term, ending when or shortly after suppression actions are concluded.

However, surface disturbing operations conducted during fire suppression would result in a reduction or loss in quantity and quality of cover and forage habitat in both the grassland and sagebrush habitats. These activities would reduce forage availability, damage or destroy burrows and/or colonies, and remove the sagebrush and shrubs that provide above-ground vegetation cover. Despite the immediate initial loss of forage and shrub cover, some suppression tactics (e.g., backburning operations), or emergency restoration actions would actually stimulate vigorous regrowth of forb species in the following growing seasons. This would benefit special status species with improved forage quality and quantity, as well as greater visibility for detecting predators.

A large fire event and associated suppression activities could result in the deposition of large amounts of sediment and ash into local river systems. Federally-listed Colorado River fish habitat located downstream from the planning area could experience short-term water quality degradation. However, no long-term adverse impacts to the river system or the fish would be anticipated. Any fire retardant inadvertently deposited into the river system would likely dissipate and would not affect any listed fish species. Because prescribed fire related actions tend to be limited in scope and smaller than major wildfires, no downstream adverse impacts to the listed Colorado River fish would be expected.

Fire management activities could adversely affect special status plant species by trampling individuals or habitat. Fire suppression activities also have the potential for resulting in increased erosion. The fire itself could result in the death of individual plants or the alteration of their habitat. The construction of fire lines using hand tools and heavy machinery could also result in the destruction of individual plants and alter habitat. Many special status plant species are found in locations where wildfire did not historically burn. However, the presence of invasive weeds is resulting in fires burning in areas where they did not previously burn. Therefore, the potential of a wildland fire, with attendant suppression activities, in special status plant species habitat is increasing.

Prescribed fire management activities, including fire line construction and use of staging areas, could adversely affect listed special status plant species by trampling individual plants or altering habitat as previously described. However, the severity of this impact would be much less than described above for Appropriate Management Response because prescribed burns would generally not be proposed within special status plant species habitat.

Under Alternative N, prescribed fires would be used to reduce hazardous fuels within the RFO. As stated above, prescribed fires would have the potential to adversely affect special status species. However, habitat manipulations resulting from the use of fire would also benefit special status species over the long-term through improved vegetative conditions.

Stabilization and rehabilitation efforts would benefit special status species over the long-term by decreasing erosion and restoring or improving habitat conditions following a fire event, although there could be short-term adverse impacts. The planting of non-native species that could out-compete special status plant species and other native plant species utilized by special status wildlife species would alter habitat conditions and make them less favorable. The use of heavy equipment within special status plant species habitat could result in the crushing of individual plants and segmentation of populations. Increased human activity during construction efforts could cause special status bird species to alter foraging, nesting, and roosting behaviors. The use of heavy equipment associated with stabilization efforts within Utah prairie dog colonies could result in the crushing of burrows which could result in the direct mortality of individual prairie dogs.

Alternative N includes stabilization efforts as needed for every wildland fire. Stabilization efforts have the potential to benefit special status species through decreased erosion and improved habitat and vegetative conditions. However, as described above, surface disturbing activities associated with stabilization also

have the potential to adversely affect special status species by altering their habitat, primarily on a short-term basis.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for special status species.

Impacts from Forestry and Woodland Products

Forest and Woodland Products Harvesting

Forestry and woodland management actions include the harvesting of firewood, poles, Christmas trees, pine nuts, timber, and seed collection. Commercial forestry activities (e.g., timber harvests and sales) are restricted to upland forests. These activities could include the use of heavy equipment, helicopters, chemical applications, road construction, and culvert installation, and typically result in increased traffic, noise, and human presence.

The implementation of forestry management actions that reduce pinyon-juniper woodland invasion would benefit those special status species that require open space. The clearing of old, dense, relatively less productive woodlands could open up more productive areas that could be utilized by special status species.

Potential adverse impacts to special status bird species could include loss of habitat, increased human access to remote habitats due to new road construction, increased noise, increased human activity, overspray or drift of chemical treatments, and culvert installation or waterbar construction which could alter riparian function. These activities could result in habitat loss or fragmentation, displacement of individuals, reduction in special status bird species prey base, or direct mortality of individuals. Human activities associated with forestry and woodland actions could increase noise and visual stimulants in habitats which could disrupt nesting and foraging behaviors and could result in the species leaving the area or abandoning nests. It could also lead to individual nest failure and reduced reproductive success. A significant alteration of habitat could render suitable habitat uninhabitable for special status species.

Timber and woodland harvest activities, including the construction of timber access roads, could result in the direct and indirect loss of special status plant species and their habitat. Additionally, authorized collection of seeds within special status plant species habitat could result in loss or damage to plants. Seeds are typically gathered by thrashing the plants with tennis rackets. Motorized vehicles are used as part of the collection activity. The inadvertent or deliberate collection of special status plant species seeds would reduce recruitment within the habitat resulting in population loss.

Surface disturbing activities such as the use of heavy machinery and equipment could contribute to decreased air quality. Decreased air quality could adversely affect special status species if it is significant within occupied habitat.

The clearing of woodlands could open areas that could be utilized by the Utah prairie dog both for burrows and forage.

Most of the special status plants species located in the RFO are not located in forested areas that would be impacted by commercial timber harvesting. However, construction of roads through viable and occupied habitat of special status species to access the timber could adversely impact special status species.

Alternative N would allow timber harvest in areas west of Capitol Reef National Park. Both the Rabbit Valley gilia (*Gilia caespitosa)* and last chance townsendia (*Townsendia aprica*) are located west of Capitol Reef National Park and could be adversely affected. Impacts are described above.

Seed and Live Plant Collection

Alternative N allows the commercial collection of live plants and seeds. Authorized collection of seeds within special status plant species populations and habitat can damage the plants through collection efforts. Seeds are typically gathered by thrashing the plants with tennis rackets. The collection of special status plant species seeds would also reduce recruitment within viable habitat by reducing the number of viable seeds within an area. However, potential impacts would be reduced due to required NEPA analysis and consultation under Section 7 of the ESA for projects involving collection of special status plant species or their seeds.

Human activities associated with seed and live plant collection can increase noise and visual stimulants in viable habitats of special status bird species. These actions could disrupt nesting and foraging behaviors and could result in the species leaving the area or abandoning nests. It could also lead to individual nest failure and reduced reproductive success.

Human activities associated with seed and live plant collections could result in the trampling of burrows for Utah prairie dog and pygmy rabbit. It could also alter foraging behaviors within a population during seed collection activities. The collection of seeds within special status species habitat could reduce available forage for special status species or their prey.

Impacts from Livestock Grazing

The primary threats to special status species from the implementation of the livestock grazing program are surface disturbing actions such as the construction of fences, water pipelines, cattle guards, wells, livestock ponds, and actual grazing activities. Although the threat would be minimized through inventories, clearances and mitigation, construction activities have the potential to directly impact special status plant species through individual mortality during construction efforts (e.g., crushing of plants from vehicles, fence posts, etc.). The construction of fences or livestock ponds have the potential to indirectly affect special status plant species by leading to concentrations of cattle in occupied habitat resulting in trampling of plants. Similarly, placement of salt and mineral supplements can also lead to cattle concentration in special status plant species habitats and could result in trampling of individuals. Non-structural grazing projects could include seeding, plowing, and herbicide spraying. Plowing and herbicide use could result in the direct mortality of populations and viable habitat. The alteration of habitat could have an indirect adverse effect on habitat for the pollinators of special status plant species.

Human activity from authorized construction and herding efforts in viable special status bird species habitats could disrupt nesting and foraging behaviors and could result in the species leaving the area or abandonment of nests. The placement of salt and mineral supplements could lead to cattle concentration in special status bird species habitats and could result in the displacement of the species. Finally, non-structural grazing projects could include seeding, grazing, and herbicide spraying. These activities could alter the habitats utilized by special status bird species prey, and could result in disrupted foraging behaviors.

Livestock grazing management activities (construction of fences and water ponds, herding cattle, watering, and salting) within occupied prairie dog habitat can cause the direct mortality of individuals. Increased human activity during these projects could disrupt the foraging habits of the Utah prairie dog.

Conversion of Kind of Livestock and Adjusting Season of Use and Permitted Use

Adjusting livestock season of use could benefit special status species. Many special status plant species appear to be particularly susceptible to livestock grazing related impacts during the spring, when the plants are sprouting, flowering, and fruiting. Most of the special status bird species thrive when there is little or no disturbance during breeding and nesting periods.

Studies conducted on the effects of grazing and habitat quality on the Utah prairie dog have shown strong associations between grazing season of use and prairie dog weight gain and reproduction. Adult weight gain was three times lower in complexes grazed in the summer than in complexes grazed in the spring or fall/winter (Ritchie and Cheng 2001). The BLM permits authorizing livestock grazing contain terms and conditions specifying livestock numbers and season-of-use to ensure that an area is properly grazed. Livestock grazing in summer appears to be the most detrimental to Utah prairie dog populations. Fall or winter grazing was shown to have a beneficial effect on prairie dogs as compared to no grazing, since grazing can prevent vegetation from visually obscuring the horizon and aid prairie dogs in detecting predators. Spring grazing could enhance prairie dog survival, but repeated annual spring grazing is likely to accelerate shrub invasion leading to long-term Utah prairie dog habitat degradation. Fall and winter grazing may not reduce standing plant material enough to enhance prairie dog predator detection, especially in areas dominated by crested wheatgrass (*Agropyron cristatum*).

The ability to adjust livestock numbers due to unforeseen conditions such as drought also benefits special status species. During drought conditions, competition between livestock and wildlife is high and undesirable vegetation is consumed. This could include special status plant species. Additionally, livestock within special status animal species habitat such as the Utah prairie dog are in direct competition with one another for forage. Livestock numbers that might have a beneficial effect or no effect to Utah prairie dogs in wet years could have detrimental effects during drought conditions.

The conversion of kind of livestock use could have adverse effects on special status plant species. For example, since sheep have upper incisors, sheep can graze more closely to the ground than cattle and impact vegetation more severely. Thus, sheep within Utah prairie dog habitat could graze more forage utilized by the prairie dogs for survival than would cattle. Sheep also would eat a greater variety of plant species than cattle. Therefore, the introduction of sheep in a former cattle allotment could have detrimental effects resulting in additional foraging on special status plant species and habitat.

Impacts from Recreation

Any form of recreational activity that increases noise and dust could adversely impact special status species by disturbing breeding, feeding, or sheltering activities. Motorized recreation has the greatest potential to affect special status species, particularly during the time of year when species are rearing young. Animals could be injured or killed by collisions with vehicles on designated routes, and plants could be crushed by vehicles. Disturbance could lead to emigration and/or an increased risk of predation.

Foot traffic through sensitive areas could disturb, injure, or kill special status species or prevent successful feeding or breeding activities. Recreational shooting activities may increase noise and trash in a localized area and could lead to injury or death of animals. Camping may cause minor to moderate impacts by disturbing animals, altering or removing habitat, crushing plants, increasing trash and debris in the area, and increasing the risk of wildfire. Animals may ingest foreign food substances that may cause illness or death. Camping activities where pets are allowed to roam freely may also cause impacts to special status wildlife. Use restrictions on these types of activities should reduce or eliminate adverse effects.

Recreationists often use riparian areas because of the presence of shade, water, aesthetic values, and opportunities for camping, fishing, boating, swimming, and other activities. Impacts to these habitats

could be detrimental to riparian obligate species by altering foraging, nesting, and mating behaviors. Extended recreational use in riparian areas could also result in sedimentation and compaction of soils which could alter viable habitat for aquatic species.

Visitor use is expected to increase throughout the RFO. Under this alternative, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified. Off-road vehicle use in particular could lead to inadvertent damage to special status species and their habitat due to ease of access across a large portion of the RFO. Increasing recreational uses could also have adverse impacts on special status birds, particularly in riparian areas, displacing birds and degrading habitat.

Special recreation permits (SRPs) are issued to control visitor use and protect resources. Stipulations for protecting special status species, developed in consultation with USFWS, would be included in SRPs which would mitigate impacts to species and habitat (e.g., limiting camping near springs and protecting raptors/nests from rock climbing activities).

Impacts from Travel Management

Motorized activities in special status bird species habitats can disrupt nesting and foraging behaviors, resulting in the species leaving the area or abandoning nests. Frequently used OHV areas near nests or within home ranges of individual pairs could disturb their nesting behavior on a long-term basis. This can also lead to individual nest failure and reduced reproductive success.

Off-highway vehicle use can degrade habitat, particularly meadow and shrub habitats vital to special status bird species prey. Noise produced by OHVs can disturb special status bird species at important nesting and roosting sites during critical periods.

OHV use in riparian habitats can result in the trampling, clearing, and cutting of vegetation, prevention of seed germination due to soil compaction, increased bank erosion and sedimentation, increased incidence of fire, introduction of exotic plant species, and noise disturbance. These impacts can result in adverse effects for special status species such as the Southwestern willow flycatcher, bald eagle, and the yellow-billed cuckoo. Adverse effects could result from reduction of available foraging, roosting, breeding, and stopover habitats. OHV disturbance can increase the potential for nest abandonment or mortality of young and eggs.

Impacts of OHV use on special status plant species could involve habitat disturbance and increased access for illegal collectors. OHV use within special status species habitats has the potential to lead to direct mortality of the species via the crushing of plants, and indirect mortality from increases in erosion and sedimentation. For example, monitoring has shown that OHV use has had an adverse impact on special status plant species population in the Factory Butte area. The increasing use of OHVs on BLM land can also transport noxious and invasive weed seeds from infested areas to uninfested areas. Surface disturbance associated with OHV use (e.g., crushing of vegetation and soil disturbance) has the potential to increase the susceptibility of native plant communities to weed establishment, and can modify localized soil conditions to the point where they are unsuitable for establishment by native species.

OHV use has the potential to result in adverse impacts to Utah prairie dogs including damage to burrows, loss of forage, harassment, noise, and direct mortality. If OHV use occurs in occupied Utah prairie dog colonies, ground disturbances associated with these activities could cause burrows to collapse, thereby impacting Utah prairie dog colony structure and function. In addition, OHV use could destroy vegetation within and near Utah prairie dog colonies, thereby degrading potential foraging habitats. Increased human activity near prairie dog towns can alter typical activity patterns which can lead to decreased nutritional

health. OHV use has the potential to increase interactions between Utah prairie dogs and humans, and if these interactions include hunters, the potential for mortality of prairie dogs could also increase.

Restrictions on OHV use within special status species habitat would benefit the species by limiting disturbance. Under Alternative N, 1,636,400 acres would continue to be open to cross-country OHV use. This area includes some habitat for and populations of all of the special status species located within the RFO. As stated above, continued OHV use would result in adverse impacts to special status species. It is anticipated that OHV use will continue to increase in the future. As a result, adverse impacts to special status species in the RFO would also increase.

Under Alternative N, there would be 4,315 miles of open routes and 65 miles of routes that would be closed. Alternative N does not take into account special status species when considering OHV route designations because these designations are based on location of existing routes. Therefore, special status species could be adversely impacted by OHV route designation under this alternative.

Impacts from Lands and Realty

Land Tenure Adjustments

The effects of land tenure adjustments on special status species would be determined through site-specific environmental analysis for any proposed land disposals. Generally, lands containing listed plant and animal species habitat would not be considered for disposal. BLM could acquire lands that contain special status species habitat. This would benefit special status species by providing protections that would not be afforded by non-Federal ownership.

Withdrawals

Implementation of Alternative N would include recommending the four existing ACECs for mineral withdrawal in addition to the existing withdrawals. Withdrawing these areas from mineral entry would reduce any adverse effects to special status species in these areas that could result from mineral development.

Rights-of-Way and Other Land Use Authorizations

ROWs or other land use authorizations (permits, leases, easements, etc.) could be proposed in populations and habitats for special status species. Construction of ROWs in special status species habitats could cause direct impacts to their habitat through trampling and other surface disturbance. Indirect impacts could include changes in hydrology or degradation of habitat that could be the result of increased sedimentation or habitat fragmentation. ROWs within viable or occupied special status species habitat could also degrade habitat through the introduction of invasive weeds.

Surface disturbances associated with ROWs and other land use authorizations could cause habitat loss, and/or changes in vegetation structure which could alter special status bird species breeding and migratory habitats at or near disturbance locations. In addition, the construction, operation, and maintenance of ROWs could increase noise and human presence in otherwise remote areas and could increase stress levels of special status bird species. Increased human presence could disturb foraging and nesting behavior of special status bird species prey. The disturbance of individuals could result in possible reduction in productivity or nesting success, and a possible increased likelihood of individual mortality.

If ROWs were authorized and developed in or near known populations of listed plant species, the habitat could be degraded, resulting in plant mortality.

Activities associated with ROW development (e.g., blading/grading of vegetation for construction of ROWs) could produce open areas that create ideal habitat for prairie dogs. Blading and grading of habitat

could also be beneficial to prairie dogs by decreasing the vegetation height and therefore increasing visibility around existing colonies. When these disturbed areas are successfully reclaimed, the regrowth of native vegetation provides ideal forage for the prairie dog.

Construction and operation of roadway systems increase both traffic and visitation to otherwise remote areas. Increases in traffic and human presence could lead to increased mortality of special status animal species such as the Utah prairie dog from vehicle collisions as well as potential poaching (Laun 1957; Johnson and Collinge 2004).

ROW construction activities have the potential to result in short-term impacts to the Utah prairie dog that include damage to burrows, temporary displacement, loss of forage, and direct mortality. Potential long-term impacts include loss of habitat and disturbance from increased human presence, noise, and increased vehicular traffic on roadways. Direct habitat loss including the conversion of habitat to agriculture, urban sprawl, and roadway development have all been cited as reasons for population declines in prairie dogs (Smith 1955; Wuerthner 1997; National Wildlife Federation 2000; National Wildlife Federation and Environmental Defense 2002). Any direct habitat loss caused by ROW development in existing (e.g., established prairie dog towns) or potential (e.g., short grass prairie; low growing shrub lands) habitat could adversely impact the Utah prairie dog.

Any new land use authorizations (ROWs, permits, leases, easements, etc.) would require consultation with USFWS and NEPA review, which would minimize impacts to special status species. Under Alternative N, all ACECs (14,780 acres), eligible WSR corridors (12 segments – 135 miles), areas closed to oil and gas leasing (459,700 acres), and areas open to oil and gas leasing with no surface occupancy (22,600 acres) would be managed as right-of-way avoidance areas (with exceptions granted only if the proposed authorization would not create substantial surface disturbance or would create only temporary impacts). Thus, impacts to special status species in these avoidance areas would be negligible.

Wind and Solar Energy

According to the U.S. Department of Energy, National Renewable Energy Laboratory, the planning area has a low potential for wind and solar energy. Wind energy developments could potentially impact several special status plant and animal species. According to the Final Programmatic Environmental Impact Statement on Wind Energy Development (BLM 2005c), impacts to threatened and endangered species would include habitat disturbance, introduction of invasive weeds, individual mortality, erosion and runoff, fugitive dust, noise, exposure to contaminants, and interference with behavioral activities. The EIS notes that the operational impacts of most concern to ecological resources are those associated with bird and bat strikes with turbines and associated infrastructure (e.g., transmission lines and meteorological towers) and to a lesser extent, electrocution of birds. Other concerns include habitat fragmentation, noise, and disturbance from human and vehicle activity.

Alternative N would include solar and wind energy exploration and development on a case-by-case basis. Any impacts to special status species would depend upon the type of project proposed. For example, the use of solar panels within a special status plant species population could block sunlight from the plants; or the use of wind turbines could result in collisions with special status bird species.

Impacts from Minerals and Energy

Construction and operation of facilities associated with mineral exploration could expand current roadway systems and increase both traffic and visitation to otherwise remote areas. Increased traffic could result in increased mortality of special status species from vehicle collisions, poaching, and trampling of habitat. In addition to direct human-caused mortality, special status species could also be affected through exposure to spills or other sources of petroleum products.

Impacts from mineral development activities could include disturbances related to construction activities, noise from vehicles and equipment, seismic activities, increased human presence, and other related operations. Increased vehicle traffic could disturb special status bird species nesting and roosting sites. Mineral and energy development typically disturb or remove vegetation and soil, and where these activities are within special status bird species foraging habitat, the species can be adversely affected through a loss or decrease in food base. Exploration and production activities could result in increased human presence, increased noise levels, habitat fragmentation, and displacement of individuals.

Potential impacts of energy and mineral development to special status plant species include direct mortality from construction equipment and vehicles in occupied habitats. Also, habitat could be lost or modified by constructing well pads, pipelines, and associated facilities in occupied and suitable habitats, and disturbing habitat of the species' pollinators.

Leasable Minerals - Oil and Gas

In December 2004, BLM and USFWS completed a programmatic consultation under Section 7 of the ESA that resulted in the development of a set of lease notices for listed species to be attached to oil and gas leases offered in the State. These lease notices, in conjunction with a threatened and endangered lease stipulation required by Instruction Memorandums (IMs) WO 2002-174 and IM UT 2005-089, would alert potential lessees of the possible presence of listed species on the lease parcels. The notices would also inform potential lessees of restrictions and requirements that could be necessary at a future developmental stage. The lease notices and accompanying consultation memoranda are found in Appendix 11. These notices apply to all of the listed species found within the RFO. Application of the measures resulted in a "may affect, not likely to adversely affect" determination for the oil and gas leasing program.

Implementation of Alternative N would result in 1,236,500 acres (58% of the RFO) open to leasing under standard stipulations, 409,200 acres (19%) open to leasing with controlled surface use or timing stipulations, 22,600 acres (1%) with no surface occupancy, and 459,700 acres (22%) closed to leasing. Special status species that are located in open areas, or areas open to leasing subject to controlled surface use or timing stipulations include the Rabbit Valley gilia, greater sage grouse, California condor, and pygmy rabbit. Fluid mineral development could adversely impact these species.

Leasable Minerals - Coal

Any direct impacts of coal development on listed plant and animal species would be precluded by Coal Unsuitability Criterion 9 which states that, "Federally-designated habitat for listed threatened or endangered plant and animal species or species proposed for listing…shall be considered unsuitable."

Geophysical

Under Alternative N, the BLM would allow geophysical explorations outside of WSAs and existing ACECs. Geophysical exploration involves the use of OHVs and vehicles to lay geophones, drill shot holes for charges, or to create a sound wave using all-terrain "thumper" vehicles instead of using charges. Vehicles are also used to remove the geophones and reclaim the shot holes if used. Exploration for oil and gas (including coal bed natural gas) may also include the drilling of one or more wells to test for the reservoir and its productive viability. During the exploration phase of drilling, surface disturbing activities include the construction of roads, well pads, reserve pits, and other facilities. Adverse impacts to special status species, which are described above in the general "Minerals and Energy" discussion, may result from surface disturbing geophysical activities.

Locatable Minerals

Special status species could be adversely affected (as described above) by surface disturbing activities resulting from locatable minerals development. Under this alternative, 169,480 acres would continue to be

withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to special status species from these types of activities.

Salable Minerals

This alternative allows the sale of mineral materials (salable minerals) on 1,668,300 acres (78% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted – it is likely that special status species do not occur in these areas. However, new sites would be subject to NEPA review and consultation with USFWS, which would protect special status species.

Impacts from Special Designations

Wilderness Study Areas

Continued management of WSAs under the IMP would limit surface disturbing activities that could adversely affect special status species. Special status species located in WSAs include the Mexican spotted owl and bald eagle. WSAs are closed to oil and gas leasing, precluding any impact from oil and gas development on special status species within these areas, and are managed as VRM Class I, which further restricts surface disturbing activities. Special status species located in WSAs include Mexican spotted owl and bald eagle.

Wild and Scenic Rivers

Under Alternative N, the outstandingly remarkable values, tentative classification and free-flowing nature of all eligible river segments would be protected. Special status species such as the Mexican spotted owl and bald eagle could benefit from continuing these protections because no surface disturbing activities would be allowed within special status species habitat located within these areas.

Areas of Critical Environmental Concern

Under Alternative N, BLM would continue designation and special management of the four existing ACECs: Beaver Wash Canyon, North Caineville Mesa, South Caineville Mesa, and Gilbert Badlands. Habitat for the Wright fishhook cactus, Mexican spotted owl, and bald eagle is located within these ACECs. ACECs provide limited protection for special status species by restricting many surface disturbing activities.

Alternative A

Impacts from Soil Resources

Impacts would be the same as those described for Alternative N.

Impacts from Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Vegetation

The types of impacts experienced as a result of riparian management would be similar to those described for Alternative N except that the size of the buffer zone in which no surface disturbance would be allowed is 330 feet on each side of the riparian area (versus 500 feet for Alternative N). Thus, Alternative A would protect a smaller area around the riparian/wetland zones from surface disturbance. However, projects to improve habitat conditions within these riparian zones (if they would benefit special status species) could still be performed, even within this buffer zone.

The types of impacts experienced as a result of vegetation management would be similar to those described for Alternative N. Under Alternative A, existing vegetation treatments would be maintained and new treatments to increase productivity and achieve desired vegetation conditions would be implemented.

Beneficial effects could result from many of these activities which would include improved vegetation conditions. An increase in vegetation productivity could result in the introduction of native or non-native species that could directly compete with special status plant species through encroachment in occupied and potential habitat. Additionally, adverse effects could also result from the construction efforts associated with some vegetation treatments as described previously for Alternative N.

The types of impacts experienced as a result of noxious weed and invasive species management would be similar to those described for Alternative N except that implementation of Alternative A would likely result in additional acres being managed for invasive and noxious weed control over that being considered in Alternative N. As a result, potential adverse short-term impacts to special status species could increase because of the additional areas to be treated. However, potential long-term benefits would also be greater as a result of weed control methods that would improve forage and habitat for special status animal species. Special status species habitat would also be improved by the removal of invasive and noxious weeds which compete for available space and resources.

Impacts from implementing insect pest management actions would be same as those described for Alternative N.

Impacts from Cultural Resources

Impacts would be similar to those described for Alternative N, except that most cultural resource sites would be allocated and managed for public use under Alternative A. This allocation would emphasize public education and interpretation of cultural resources, which would increase visitation to sites. Human activities in special status bird species habitats could disrupt nesting and foraging behaviors and could result in the species leaving the area or abandoning nests. Ground dwelling species such as the Utah prairie dog and greater sage grouse could experience trampling of burrows and habitat degradation within the survey areas. These actions could also result in increased erosion, noise, and visual stimulants for the species. Human activities could disrupt foraging behaviors and could result in the abandonment of the areas. However, this would only affect relatively small, localized areas.

Alternative A identifies Horseshoe Canyon South WSA as an inventory priority area. Special status species known to exist in the area include the Mexican spotted owl (*Strix occidentalis*), bald eagle (*Haliaeetus laucocephalus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and Northern goshawk (*Accipiter gentiles*). Adverse impacts from inventories could result in localized habitat degradation, altered foraging behaviors, and nest abandonment.

Impacts from Paleontological Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described for Alternative N except that 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I under Alternative A. If special status species habitat overlaps with these areas, special status species would benefit because VRM Class I areas (which require preservation of the existing landscape) would restrict surface disturbing activities.

Under Alternative A, none of the lands managed by the RFO would be designated as VRM Class II; 392,800 acres (18%) would be designated as VRM Class III; and 1,288,300 (61%) would be managed as VRM Class IV. Areas designated as VRM Class III or IV (79% of the RFO under this alternative) would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would

drastically alter (at least in the short-term) the habitat for special status species. This alternative designates more acres as VRM Classes III and IV than any of the alternatives.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be similar to those described for Alternative N, except that Alternative A would restrict surface disturbing activities within one-quarter mile of sage grouse leks from March 15 through June 1; mitigation could be required in deer and elk habitats from December 15 through April 15, and in crucial desert bighorn habitat from April 15 through June 15. Implementation of these restrictions would directly benefit the greater sage grouse by protecting leks during mating periods. These restrictions and mitigation measures could also benefit other special status species located in these areas.

Impacts from Wild Horses and Burros

Impacts would be the same as those described for Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced under this alternative would be similar to those described for Alternative N except that under Alternative A maximum treatment acreage limits would be set (averaging 73,600 annually). Prescribed fires and wildland fires have the potential to adversely affect special status species. However, habitat manipulations with the use of fire could benefit special status species over the long-term through improved vegetative conditions.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for special status species.

Impacts from Forestry and Woodland Products

Forest and Woodland Products Harvesting

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described for Alternative N, except that commercial and non-commercial harvesting would be allowed throughout the RFO (with the exception of WSAs). Thus, impacts from this type of activity would occur over a larger area.

Seed and Live Plant Collection

The types of impacts experienced as a result of seed and live plant collecting would be similar to those described for Alternative N, except that the designation of specific areas for seed collection would be considered under Alternative A. If specific areas that exclude occupied special status species habitat are designated for seed collection, adverse effects that would result from seed and plant collection activities could be reduced. If occupied special status species habitat is considered for seed collection, NEPA analysis and Section 7 consultation would be required, reducing the potential for adverse impacts.

Impacts from Livestock Grazing

Impacts would be similar to those described for Alternative N, except that 36,950 more acres would be available for livestock grazing under Alternative A. Thus, impacts from surface disturbing activities associated with the construction and implementation of range improvements (both structural and non-structural) could occur on additional acres. However, since this represents a very small portion of the

total RFO (less than 2%), impacts to special status species from implementation of Alternative A would be negligible.

Impacts from Recreation

The establishment of and management associated with SRMAs would provide for management at popular recreation use areas. Management of these areas would decrease the potential for inadvertent damage of special status species and their habitat compared to Alternative N.

Under Alternative A, five SRMAs (516,400 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. This would decrease the potential for impacts to species status species such as trampling, erosion, destruction of viable and occupied habitat, and the direct mortality of individuals. Limiting OHV use in the Otter Creek Reservoir SRMA to designated routes would limit the extent of potential impacts.

The construction of recreation facilities in the Big Rock SRMA and the Sahara Sands SRMA would focus recreation use, minimizing impacts. Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would reduce the potential for impacts to special status species by limiting OHV recreation use to designated routes. Managing the Factory Butte SRMA (199,700 acres) for a motorized recreational opportunity and allowing moderate to extensive landscape modification would have potentially major impacts and result in continued impacts to special status species. However, this area is currently receiving heavy motorized use.

This alternative allows vehicles to pull off designated routes (outside WSAs) up to 100 feet of either side of the centerline for the purposes of parking/staging, and up to 300 feet of either side of the centerline for the purposes of camping. This could result in vehicles generally impacting special status species and their habitat in these areas.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described for Alternative N, except that implementation of Alternative A would result in 449,000 acres that are open to cross-country OHV use. These open areas include some populations of and some habitat for the Wright fishhook cactus and San Rafael cactus, both Federally-listed species. OHV use within special status species habitats has the potential to lead to direct mortality of the species via the crushing of plants and indirect mortality from increases in erosion and sedimentation. The increasing use of OHVs on BLM land could also transport noxious and invasive weed seeds from infested areas to uninfested areas. Surface disturbance associated with OHV use (e.g., crushing of vegetation and soil disturbance) has the potential to increase the susceptibility of native plant communities to weed establishment, and can modify soil conditions to the point where they are unsuitable for establishment by native species. OHV use in special status plant species habitat could provide increased access for illegal collectors.

Areas, including those that contain special status species habitat, that are either closed to OHV use or where the use is restricted to designated roads and trails would be protected from the surface disturbing activities associated with this activity. This alternative, which designates no areas as closed to OHV use and 1,679,000 acres as limited, would provide more protection to special status species than Alternative N because substantially less areas are open to cross-country OHV use.

Under Alternative A, 4,312 miles of routes would be available for public use, and 68 miles would be closed. Alternative A was developed to avoid threats to soil, watershed, vegetation, and special status species with respect to route designations. Therefore, special status species could be protected when road restrictions are placed in areas where OHV use is deemed to be a threat to a particular species. Under Alternative A, routes that are restricted or closed are located in areas where special status species exist

such as the Mexican spotted owl, pygmy rabbit, and the Wright fishhook cactus. Limited or no access to these areas would reduce adverse effects to special status species that could result from OHV use.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described for Alternative N.

Withdrawals

Implementation of Alternative A would have little or no effect on special status species. The existing withdrawals are located in picnic and camping areas that do not contain any known special status species populations or habitats.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that under this alternative there would be less right-of-way avoidance areas. However, since consultation with USFWS and NEPA review would be required for any new ROW or other land use authorization, impacts to special status species would be negligible.

Wind and Solar Energy

Implementation of Alternative A would allow wind and solar energy exploration and development throughout the RFO except for WSAs and VRM Class I areas. The restriction of wind and solar energy exploration and development within WSAs and VRM Class I areas could indirectly benefit special status species such as the Mexican spotted owl and the Wright fishhook cactus by eliminating surface disturbing activities within these areas.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Under Alternative A, 860,600 acres (40% of the RFO) would be open to leasing under standard stipulations, 820,500 acres (39%) would be open to leasing with controlled surface use or timing stipulations such as seasonal limitations, and 446,900 acres (21%) would be closed to leasing. Special status species that are located in open areas, or open areas with controlled surface use or timing stipulations to leasing include Rabbit Valley gilia, pygmy rabbit, greater sage grouse, and the California condor. Fluid mineral development could adversely impact these species. Potential impacts to special status species from fluid mineral development are greatest under this alternative.

Leasable Minerals - Coal

Impacts would be the same as those described for Alternative N.

Geophysical

The type of impacts experienced as a result of geophysical exploration would be the same as those described for Alternative N, except that under Alternative A, geophysical explorations would be allowed throughout the RFO with the exception of WSAs, as determined through site-specific NEPA analysis. This alternative could therefore result in more potential impacts to special status species than Alternative N.

Locatable Minerals

The types of impacts experienced as a result of locatable minerals activities would be the same as those described under Alternative N. Under this alternative, 154,700 acres would continue to be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to

special status species from these types of activities. This alternative would recommend the least amount of acres for mineral withdrawal, which could result in the most impacts to special status species.

Salable Minerals

The types of impacts experienced from the disposal of salable minerals would be the same as those described for Alternative N. This alternative allows sale of mineral materials (salable minerals) on 1,681,100 acres (79% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted – it is likely that special status species do not occur in these areas. However, new sites would be subject to NEPA review and consultation with USFWS, which would protect special status species.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Under Alternative A, no eligible rivers would be recommended or managed as suitable. The outstandingly remarkable values, tentative classification and free-flowing nature of these river segments would not be protected. Thus, special status species such as the Mexican spotted owl and bald eagle would not receive any additional benefit.

Areas of Critical Environmental Concern

Under Alternative A, no ACECs would be designated. No special management to protect relevant and important values would be provided to special status species or their habitat. Impacts, however, would be little changed from Alternative N as three of the four ACECs are within wilderness study areas and the other – North Caineville Mesa – is virtually inaccessible. ACECs provide limited protection for special status species by restricting many surface disturbing activities.

Alternative B: Preferred Alternative

Impacts from Soil Resources

Impacts would be the same as those described for Alternative N.

Impacts from Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Vegetation

Impacts from riparian, vegetation, and noxious weeds/invasive species management would be the same as those described for Alternative A.

The types of impacts experienced as a result of insect pest management would be similar to those described for Alternative N except that implementation of Alternative B would allow for pest control treatments when the area economic threshold is exceeded. This action would likely be implemented only during large insect outbreaks such as with grasshoppers and Mormon crickets. The use of insecticides within viable and occupied special status plant species habitat during large outbreaks could benefit the species by reducing competition for available food. However, adverse impacts would also be realized in the form of decreased plant pollinators and reduced forage base for special status wildlife species.

Impacts from Cultural Resources

Impacts would be similar to those described for Alternative A, except that less cultural resource sites would be allocated and managed for public use. This allocation, which emphasizes public education and interpretation of cultural resources, would increase visitation to sites. However, human disruption to special status species would only affect relatively small, localized areas and would occur in less areas than in Alternatives N or A.

Alternative B would emphasize several new priority inventory areas. Many of the special status species are located in these inventory areas. Potential adverse effects to special status species as a result of cultural resources inventories would include surface disturbing activities that could result in nest abandonment, habitat alteration, loss of individual plants, etc. Significance of the impacts would depend on the exact location of the designated area and the intensity of the inventory.

Impacts from Paleontological Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

The types of impacts under this alternative would be similar to those described for Alternative A except that more acres would be designated as VRM Classes I and II (655,900 acres, or 31% of the RFO), which would protect special status species by restricting surface disturbing activities in these areas.

Under Alternative B, 410,800 acres (19%) would be designated as VRM Class III and 1,061,300 (50%) would be managed as VRM Class IV. These areas, which can allow for greater landscape modification and therefore greater surface disturbance, could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) the habitat for special status species. This alternative designates more acres as VRM Classes III and IV than Alternatives C or D, but less than Alternatives N or A.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Proposed actions such as habitat manipulations and range developments could result in short-term adverse impacts to the Mexican spotted owl and bald eagle and could detrimentally influence their behavior. Additionally, habitat manipulations and developments could also reduce populations and alter habitat of special status plant species such as Cronquist wild buckwheat.

Short-term adverse impacts could result from vegetation treatments which require the use of heavy equipment. Human disturbance and noise associated with the use of heavy equipment could temporarily disperse Mexican spotted owls and bald eagles from occupied habitats. Adverse direct impacts could also result from accidental chemical drift from pesticide use in nearby areas. These activities have the potential to remove suitable habitat or other desired vegetation for special status species. Additionally, habitat manipulations and developments could also reduce populations and alter habitat of special status plant species such as Cronquist wild buckwheat. Vegetation treatments would likely benefit special status species and their prey over the long-term by providing additional forage.

Implementation of Alternative B would result in seasonal and spatial stipulations to protect desert bighorn sheep habitats during lambing and other sensitive times during their life cycles. However, exceptions could be granted on a case-by-case basis. Protective stipulations placed on crucial habitats that overlap with special status species' habitat would reduce adverse effects caused by surface disturbing activities.

Surface disturbing activities could contribute to decreased air quality, soil erosion, soil compaction, introduction and spread of invasive and noxious weeds, crushing of plants, habitat degradation, and could result in incidental take of listed wildlife species. Restrictions or stipulations of surface disturbing activities within wildlife habitats that overlap with special status species habitat could benefit special status species within the restricted areas. The restrictions would reduce adverse effects incurred by surface disturbances that could harm special status species. Alternative B would prohibit surface disturbing activities within one-half mile of sage grouse leks from March 15 through June 1, in crucial and high value deer and elk habitat from December 1 through April 15, and in crucial desert bighorn habitat from April 15 through June 15. Mitigation measures would be required for pronghorn antelope from May 15 through June 15. Implementation of the sage grouse restrictions and stipulations would directly benefit the species by protecting leks during mating periods. The additional surface restrictions and mitigations related to other wildlife species would indirectly benefit special status species located in these areas by limiting habitat disturbance. Special status species that would benefit from these surface restrictions would include the Utah prairie dog, pygmy rabbit, Mexican spotted owl, and bald eagle.

Impacts from Wild Horses and Burros

The types of impacts experienced as a result of wild horse and burro management would be similar to those described for Alternative N, except that Alternative B proposes to manage the Canyonlands HMA for 60-100 wild burros. New burros could be introduced to maintain genetic variability. Activities under this alternative, including the introduction and gathering of wild burros, would have the potential to adversely affect the Mexican spotted owl as described for Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced under this alternative would be similar to those described for Alternative N except that Alternative B would include stabilization efforts to sustain ecosystems, improve public health, improve safety, and to help communities protect infrastructure. Priority would be given to areas that pose a threat to life and property and areas with a potential for invasive weeds. As previously discussed, stabilization efforts would have the potential to benefit special status species through decreased erosion and improved habitat and vegetation conditions, but would also result in short-term impacts adverse that would alter habitat.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for special status species.

Impacts from Forestry and Woodland Products

Forest and Woodland Products Harvesting

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described for Alternative N, except that commercial and non-commercial harvesting would be allowed throughout the RFO (with the exception of WSAs and the two suitable wild and scenic river corridors recommended under this alternative). Thus, impacts from this type of activity would occur over a larger area than Alternative N but over a smaller area than Alternative A.

Seed and Live Plant Collection

The types of impacts experienced as a result of seed and live plant collecting would be similar to those described for Alternative N, except that the designation of specific areas for seed and live plant collection would be considered under Alternative B (with the exception of WSAs and the two recommended suitable wild and scenic river corridors). The exclusion of these areas from live plant and seed collection activities would reduce the adverse impacts to special status species that occupy these areas. If specific areas that exclude occupied special status species habitat are designated for seed collection, adverse

effects that would result from seed and plant collection activities could be reduced. If occupied special status species habitat is considered for seed collection, NEPA analysis and consultation under Section 7 of the ESA would be required, reducing the potential for adverse impacts.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative A except that Alternative B would establish five SRMAs (838,700 acres) to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. This alternative proposes 2,600 acres at Factory Butte and 265 acres at Big Rocks as OHV SRMAs, which would decrease the potential for impacts to special status species as compared to Alternative A.

This alternative allows vehicles to pull off designated routes (outside WSAs) up to 50 feet of either side of the centerline for the purposes of parking/staging, and up to 150 feet of either side of the centerline for the purposes of camping. While this could result in vehicles generally impacting special status species, the area of potential impact would be less than under either Alternatives N or A.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described for Alternative N, except that implementation of Alternative B would result in 8,400 acres that are open to cross-country OHV use. These open areas include populations and habitat of Wright fishhook cactus. OHV use could be more concentrated in this smaller area, and would likely have more adverse effects per acre. Impacts of OHV use on special status plant species could involve habitat disturbance and increased access for illegal collectors. Off-highway vehicle use within special status species habitats has the potential to lead to direct mortality of the species via the crushing of plants by tires, and indirect mortality from increases in erosion and sedimentation. The increasing use of OHVs on BLM land can also transport noxious and invasive weed seeds from infested areas to uninfested areas. Surface disturbance associated with OHV use (e.g., crushing of vegetation and soil disturbance) has the potential to increase the susceptibility of native plant communities to weed establishment, and can modify soil conditions to the point where they are unsuitable for establishment by native species.

Areas, including those that contain special status species habitat, that are either closed to OHV use or where the use is restricted to designated roads and trails would be protected from the surface disturbing activities associated with this activity. Alternative B designates 210,400 acres as closed to OHV use and 1,909,200 acres as limited, which would provide more protection to special status species than either Alternatives N or A because substantially less areas are open to OHV use.

Under Alternative B, there would be 4,176 miles of routes available for use by the public, and 204 miles would be closed. Alternative B designates routes to minimize harassment of wildlife or significant disruption of wildlife. It also gives special attention to special status species and their habitats. Many of the routes that are restricted or closed are located in areas where special status species exist such as the Mexican spotted owl, last chance townsendia, Winkler pincushion cactus, Rabbit Valley gilia, pygmy rabbit, and the Wright fishhook cactus. Limited or no access to these areas would reduce adverse effects to special status species that could result from OHV use.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described for Alternative N.

Withdrawals

Implementation of Alternative B would include recommending two ACECs (2,530 acres), two suitable wild and scenic river segments (59 miles), and developed recreation sites for mineral withdrawal. Several special status species are located in these areas including Mexican spotted owl, Wright fishhook cactus, and Winkler pincushion cactus. Withdrawing these areas from mineral entry would reduce adverse impacts to special status species that could result from mineral developments in these areas.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that less right-of-way avoidance areas are proposed under Alternative B. Since consultation with USFWS and NEPA review would be required for new ROWs or other land use authorizations, impacts to special status species would be negligible.

Wind and Solar Energy

Implementation of Alternative B would allow wind and solar energy exploration and development throughout the RFO except for WSAs, ACECs, areas managed as open to oil and gas leasing subject to no surface occupancy, migratory bird habitats, raptor nesting complexes, threatened and endangered species habitats, and VRM Class I and II areas. The restriction on wind and solar development within these areas would likely benefit Federally-listed and non-listed special status bird species, including migratory species, by providing sites where conflicts between birds and wind and solar facilities would be avoided. Potential species involved would include the Southwestern willow flycatcher, bald eagle, Mexican spotted owl, greater sage grouse, ferruginous hawk, Western yellow-billed cuckoo and California condor. Restriction of wind and solar exploration activities located in WSAs and ACECs could indirectly benefit other special status species such as the pygmy rabbit (*Brachylagus idahoensis*) which may be within those areas. The potential impacts to special status species from wind and solar energy would be less than under Alternatives N and A due to more areas where restrictions apply.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Under Alternative B, 545,000 acres (26% of the RFO) would be open to leasing under standard stipulations, 1,021,600 acres (48%) would be open to leasing with controlled surface use or timing stipulations, 110,900 acres (5%) would be open to leasing subject to no surface occupancy, and 450,500 (21%) would be closed to leasing. Special status species that are located in open areas, or open areas with controlled surface use or timing stipulations include the Rabbit Valley gilia, greater sage grouse, pygmy rabbit, and the California condor. Fluid mineral development could adversely impact these species.

Leasable Minerals - Coal

Impacts would be the same as those described for Alternative N.

Geophysical

The type of impacts experienced as a result of geophysical exploration would be the same as those described for Alternative N, except that under Alternative B, geophysical explorations would be allowed throughout the RFO with the exception of WSAs, suitable wild and scenic river corridors (2 segments – 59 miles), and ACECs (2,530 acres), as determined through site-specific NEPA analysis. This alternative

could therefore result in more potential impacts to special status species than Alternatives N, C or D but less than Alternative A.

Locatable Minerals

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N. Under this alternative, 176,200 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to special status species from these types of activities. This alternative would recommend fewer acres for mineral withdrawal than Alternatives C or D but more than Alternatives N or A.

Salable Minerals

The type of impacts experienced from the disposal of salable minerals would be the same as those described for Alternative N. This alternative allows the sale of mineral materials (salable minerals) on 1,677,500 acres (79% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted – it is likely that special status species do not occur in these areas. However, new sites would be subject to NEPA review and consultation with USFWS, which would protect special status species.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Under Alternative B, two river segments (the Dirty Devil River and the Fremont River in Fremont Gorge – 59 total miles) would be recommended as suitable for wild and scenic river designation. Managing these areas as suitable for inclusion in the National Wild and Scenic River System (NWSRS) would benefit species such as the Mexican spotted owl and bald eagle that utilize these areas. A lack of potential for surface disturbing activities would also result in the protection of habitat used by the prey of the Mexican spotted owl. Water quality and quantity downstream in listed Colorado River fish habitat would be maintained.

Areas of Critical Environmental Concern

Under Alternative B, two ACECs would be designated: North Caineville Mesa (2,200 acres) and Old Woman Front Research Natural Area (RNA) (330 acres). Habitat for the Wright fishhook cactus, Winkler pincushion cactus, and bald eagle is included within these ACECs. The ACECs would provide protection for special status species by restricting many surface disturbing activities. Special management of these ACECs would include closing to OHV use, managing as either closed to oil and gas leasing (Old Woman Front) or open with no surface occupancy (North Caineville Mesa), unavailable for livestock grazing, closed to harvesting of woodland products (Old Woman Front), and managing as right-of-way avoidance areas. These management prescriptions to protect relevant and important values would also protect the special status species that occur in the ACECs.

Alternative C

Impacts from Soil Resources

Impacts would be the same as those described for Alternative N.

Impacts from Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Vegetation

The types of impacts experienced as a result of riparian management would be similar to those described for Alternative N except that the size of the buffer zone in which no surface disturbance would be allowed is 660 feet on each side of the riparian area (versus 500 feet for Alternative N). Thus, Alternative C would protect a larger area around the riparian/wetland zones from surface disturbing activities.

The types of impacts experienced as a result of vegetation management would be similar to those described for Alternative N except that Alternative C would only allow for vegetation management through natural processes. Implementing this alternative would have no adverse effects on special status species resulting from surface disturbing or vegetation manipulation activities. However, the potential for beneficial impacts would be reduced since types of treatment methods proposed under this alternative could be less effective than conventional vegetation treatments and may not be effective in all vegetation communities. This could result in the loss of existing vegetation cover, indirectly decreasing ecological condition of the treated area and could also make control of some invasive species difficult because of lack of suitable substitute treatments (using fire as a control tool for species including tamarisk could increase the growth and spread of this non-native species), possibly allowing the spread of invasive species and displacement of desirable vegetation.

The types of impacts experienced as a result of noxious weed and invasive species management would be similar to those described for Alternative N except that implementation of Alternative C would initiate an attempt to control noxious and invasive weeds through treatment methods that mimic natural processes. Implementation of this alternative could make control of some invasive species difficult because of lack of suitable substitute treatments (using fire as a control tool for species including tamarisk could increase the growth and spread of this non-native species), possibly allowing the spread of invasive species and displacement of desirable vegetation. This could have indirect adverse effects on special status species because noxious and invasive weeds would likely expand their range and could alter suitable special status plant species habitat and reduce available forage for special status wildlife species such as the Utah prairie dog and the pygmy rabbit. In addition, weeds could compete with special status plant species for available space and nutrients. The short-term adverse effects discussed for Alternative A resulting from surface disturbing activities would not be realized. Beneficial impacts resulting from weed control treatments through natural processes within special status species habitat would be limited.

The types of impacts experienced as a result of insect pest management would be similar to those described for Alternative N except that implementation of Alternative C would result in no immediate beneficial or adverse impacts from pest control treatments within special status plant species habitat because no control measures would be implemented. However, special status species could be affected if insect pests proliferate to the point of changing the landscape/habitat by removing large amounts of potential forage.

Impacts from Cultural Resources

Impacts would be similar to those described for Alternative B, except that less cultural resource sites would be allocated and managed for public use. This allocation, which emphasizes public education and interpretation of cultural resources, would increase visitation to sites. However, human disruption to special status species would only affect relatively small, localized areas and would occur in less areas than in Alternatives N or A.

Impacts from Paleontological Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described for Alternative B except that more acres would be designated as VRM Classes I and II (677,500 acres, or 32% of the RFO), which would protect special status species by restricting surface disturbing activities in these areas.

Under Alternative C, 509,100 acres (24%) would be designated as VRM Class III and 941,400 (44%) would be designated as VRM Class IV. These areas, which would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance, could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) the habitat for special status species. This alternative designates more acres as VRM Classes III and IV than Alternative D, but less than Alternatives N, A, or B.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

The types of impacts experienced as a result of fish and wildlife management would be similar to those described for Alternative B, except that Alternative C implements seasonal and spatial stipulations to protect desert bighorn sheep habitats during lambing and other sensitive times during their life cycles. Stipulations placed on crucial habitat management areas that overlap with special status species habitat would reduce adverse effects caused by surface disturbing activities that could harm special status species.

Alternative C also prohibits surface disturbing activities within two miles of sage grouse leks from March 15 through June 1, in crucial and high value deer and elk habitat from December 1 through April 15, in crucial desert bighorn habitat from April 15 through June 15, and in crucial pronghorn antelope habitat from May 15 through June 15. These restrictions and stipulations would directly benefit sage grouse by protecting leks during mating periods. The additional surface restrictions and mitigations related to other wildlife species would indirectly benefit special status species located in these surface restriction areas, by limiting habitat disturbance. Special status species that would benefit from these surface restrictions would include the Utah prairie dog, pygmy rabbit, Mexican spotted owl, and bald eagle.

Impacts from Wild Horses and Burros

The types of impacts experienced as a result of wild horse and burro management would be similar to those described for Alternative N, except that Alternative C proposes to manage the Canyonlands HMA for 120-200 wild burros. New burros could be introduced to maintain genetic variability. Activities under this alternative, including the introduction and gathering of wild burros, would have the potential to adversely affect the Mexican spotted owl as described for Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced under this alternative would be similar to those described for Alternative B except that under Alternative C average annual treatments would be less (26,000 acres). As stated previously, prescribed fires and wildland fires have the potential to adversely affect special status species. However, habitat manipulations with the use of fire could benefit special status species over the long-term through improved vegetative conditions. With fewer acres treated under this alternative, there would be less potential adverse impacts, but also less potential beneficial impacts from habitat manipulations.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for special status species.

Impacts from Forestry and Woodland Products

Forest and Woodland Products Harvesting

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described for Alternative N, except that commercial and non-commercial harvesting would be allowed throughout the RFO (with the exception of WSAs and suitable wild and scenic river corridors). Thus, impacts from this type of activity would occur over a smaller area than Alternatives A or B. In addition, the rejuvenating benefits to habitats from the clearing of woodland areas would not be realized in the areas where forest and woodland products harvesting is precluded.

Seed and Live Plant Collection

The types of impacts experienced as a result of seed and live plant collection would be similar to those described for Alternative N, except that the designation of specific areas for seed and live plant collection would be considered under Alternative C (with the exception of WSAs and suitable wild and scenic river corridors). The exclusion of these areas from live plant and seed collection activities would reduce the adverse impacts to special status species that occupy these areas. If specific areas that exclude occupied special status species habitat are designated for seed collection, adverse effects that would result from seed and plant collection activities could be reduced. If occupied special status species habitats are considered as areas for seed collection, NEPA analysis and Section 7 consultation would be required, reducing the potential for adverse impacts. This alternative would preclude more areas from seed and live plant collection than Alternatives N, A, or B but less than Alternative D.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative A except that four SRMAs (928,550 acres) would be established to manage recreational use and to mitigate impacts caused by this use. No SRMAs would be established for OHV use under Alternative C, which would decrease the potential for impacts to special status species from this type of use.

Managing the Dirty Devil/Robbers Roost SRMA (375,800 acres) for dispersed recreation in a primitive setting would indirectly reduce the potential for surface disturbance (and associated damage to special status species) from recreation. Managing the Henry Mountains SRMA (533,900 acres) for primitive and semi-primitive recreation and managing the Sevier Canyon SRMA (7,500 acres) for scenic values would indirectly maintain or reduce the potential for disturbance and impacts to special status species. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural recreation experience and the development of facilities could have localized site-specific impacts, although consultation with USFWS and NEPA review would be required prior to construction of any facilities.

This alternative allows vehicles to pull off designated routes (outside WSAs) up to 25 feet of either side of the centerline for the purposes of parking/staging; camping would be allowed only in designated campsites, with travel between campsites only allowed on designated routes. These management prescriptions would minimize disturbance to special status species and would result in less disturbance than Alternatives N, A or B.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described for Alternative N, except that under Alternative C no acres would be open to cross-country OHV use, 1,445,000 acres would be limited to designated roads and trails and 683,000 acres would be closed to OHV use. By eliminating areas that are open to unrestricted OHV use, adverse impacts to special status species would be substantially reduced.

Under Alternative C, there would be 3,192 miles of designated routes and 1,188 miles of routes that would be closed. Alternative C designates routes to minimize harassment of wildlife or significant disruption of wildlife. It would also give special attention to special status species and their habitats. Many of the routes that are restricted or closed are located in areas where most of the special status species within the planning area exist. Limited or no access to these areas would reduce adverse effects to special status species that could result from OHV use.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described for Alternative N.

Withdrawals

Alternative C recommends withdrawing from mineral entry all or parts of several ACECs, suitable wild and scenic river corridors, and developed recreation sites (331,100 acres, or 16% of the RFO). Several special status species are located in these areas including Mexican spotted owl, Wright fishhook cactus, pygmy rabbit, Rabbit Valley gilia, bald eagle, Utah prairie dog, and Winkler pincushion cactus. Withdrawing these areas from mineral entry would reduce adverse impacts to special status species that could result from mineral developments in these areas.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more right-of-way avoidance areas are proposed under Alternative C (735,100 acres closed to oil and gas leasing or open with no surface occupancy, 12 suitable WSR segments, and 16 ACECs). Since consultation with USFWS and NEPA review would be required, impacts to special status species would be negligible.

Wind and Solar Energy

This alternative specifically excludes special status species habitats from wind and solar energy developments. This would help to protect special status species (including bats, migratory birds, and raptors) from any surface disturbing action that could result from these developments.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Under Alternative C, 491,900 acres (23% of the RFO) would be open to leasing under standard stipulations, 901,100 acres (42%) would be open to leasing with controlled surface use or timing stipulations such as seasonal limitations, 148,800 acres (7%) would be open to leasing subject to no surface occupancy, and 586,300 acres (28%) would be closed to leasing. Special status species that are located in open areas, or open areas with controlled surface use or timing stipulations include the Rabbit Valley gilia, greater sage grouse, and pygmy rabbit. Fluid mineral development could adversely impact these species.

Leasable Minerals - Coal

Impacts would be the same as those described for Alternative N.

Geophysical

The type of impacts experienced as a result of geophysical exploration would be the same as those described for Alternative N, except that under Alternative C, geophysical explorations would be allowed throughout the RFO with the exception of WSAs, suitable wild and scenic river corridors (12 segments – 135 miles), and ACECs (886,810 acres), as determined through site-specific NEPA analysis. This alternative could result in more potential impacts to special status species than Alternative D but less than Alternatives N, A, or B.

Locatable Minerals

The types of impacts that would be experienced from locatable mineral activities would be the same as those described for Alternative N. However, under Alternative C, the location, exploration, and development of locatable minerals could occur throughout the RFO except in areas withdrawn from mineral entry (331,100 acres) including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, Koosharem Picnic Area, Dirty Devil/North Wash ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, Little Rockies ACEC, Rainbow Hills ACEC, and suitable wild and scenic river corridors. Special status species located in the withdrawn areas would be protected from surface disturbing activities that could result from locatable minerals activities.

Salable Minerals

The types of impacts experienced from the disposal of salable minerals would be the same as those described for Alternative N. This alternative allows the sale of mineral materials (salable minerals) on 1,541,700 acres (72% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted – it is likely that special status species do not occur in these areas. However, new sites would be subject to NEPA review and consultation with USFWS, which would protect special status species.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Under Alternative C, the Dirty Devil River, Beaver Wash Canyon, Larry Canyon, No Man's Canyon, Robbers Roost Canyon, Sams Mesa Box Canyon, Twin Corral Box Canyon, Fish Creek, Maidenwater Creek, Quitchupah Creek, and the Fremont River in Fremont Gorge and below Capitol Reef National Park to the Caineville ditch diversion would be designated as suitable wild and scenic rivers. Management to protect their outstandingly remarkable values, tentative classification and free-flowing nature (including closing to OHV use, closing to oil and gas leasing, and withdrawing from mineral entry) would benefit the Mexican spotted owl and bald eagle.

Areas of Critical Environmental Concern

Under Alternative C, 16 areas (886,810 acres) would be designated as ACECs: Badlands, Bull Creek Archaeological District, Dirty Devil/North Wash, Fremont Gorge/ Cockscomb, Henry Mountains, Horseshoe Canyon, Kingston Canyon, Little Rockies, Lower Muddy Creek, Old Woman Front, Parker Mountain, Quitchupah, Rainbow Hills, Sevier Canyon, Thousand Lakes Bench, and Special Status

Species ACECs. These ACECs contain populations and habitat for all special status species within the RFO. ACECs provide protection for special status species by restricting many surface disturbing activities including mineral leasing, OHV use and other motorized recreational activities, wood cutting, and new rights-of-way.

The Special Status Species ACEC contains 15,100 acres of land that is specifically designated to protect special status species from surface disturbing activities such as OHV use, adverse recreation impacts, land sales, new rights-of-way, vegetative treatments, open mineral leasing, and mineral disposals.

Alternative D

Impacts from Soil Resources

Impacts would be the same as those described for Alternative N.

Impacts from Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Vegetation

Impacts would be the same as those described for Alternative C.

Impacts from Cultural Resources

Impacts would be similar to those described for Alternative C, except that less cultural resource sites would be allocated and managed for public use. This allocation, which emphasizes public education and interpretation of cultural resources, would increase visitation to sites. However, human disruption to special status species from cultural resource management would only affect relatively small, localized areas and would occur in fewer areas than in any other alternative.

Impacts from Paleontological Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described for Alternative C except that more acres would be designated as VRM Classes I and II (1,196,300 acres, or 56% of the RFO), which would protect special status species by restricting surface disturbing activities in these areas.

Under Alternative D, 355,100 acres (17%) would be designated as VRM Class III and 576,600 (27%) would be managed as VRM Class IV. These areas, which would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance, could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) the habitat for special status species. This alternative designates far fewer acres as VRM Classes III and IV than any other alternative, so impacts to special status species would be the least of all alternatives due to VRM class designations.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the same as those described for Alternative C.

Impacts from Wild Horses and Burros

Impacts would be the same as those described for Alternative N.

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, non-WSA lands with wilderness characteristics (682,600 acres) would be protected from impacts that could degrade their wilderness values. This would limit impacts to special status species and their habitat, where those species and habitat lie within the protected lands. For example:

- Of 635,100 acres identified as potential brooding areas for the greater sage grouse within the RFO, less than 1,000 acres are included within the non-WSA lands with wilderness characteristics. Protecting the wilderness characteristics would have little impact on the sage grouse.
- Of 365,500 acres of Mexican spotted owl critical habitat within the RFO, 157,300 acres (43%) are within the non-WSA lands with wilderness characteristics. Protecting the wilderness characteristics areas would reduce or eliminate potential impacts to the owls and owl habitat within these areas.
- Of 364,300 acres of potential habitat for the Wright fishhook cactus, 206,400 acres (57%) are within the non-WSA lands with wilderness characteristics. Protecting the wilderness characteristics areas would likewise protect the cacti from surface disturbing activities, notably cross-country OHV use, in over half of their identified habitat.

Impacts from Forestry and Woodland Products

Forest and Woodland Products Harvesting

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described for Alternative N, except that commercial and non-commercial harvesting would not be allowed in WSAs, suitable wild and scenic river corridors, and non-WSA lands with wilderness characteristics. Thus, impacts from this type of activity would occur over a much smaller area than under any other alternative, which would potentially provide the greatest benefit to special status species. However, the rejuvenating benefits to habitats from the clearing of woodland areas would not be realized.

Seed and Live Plant Collection

The types of impacts experienced as a result of seed and live plant collecting would be similar to those described for Alternative N, except that the designation of specific areas for seed collection would be considered under Alternative D (with the exception of WSAs, suitable wild and scenic river corridors, and non-WSA lands with wilderness characteristics). The exclusion of these areas from live plant and seed collection activities would reduce the adverse impacts to special status species that occupy these areas. If specific areas that exclude occupied special status species habitat are designated for seed collection, adverse effects that would result from seed and plant collection activities could be reduced. If occupied special status species habitat is considered for seed collection, NEPA analysis and consultation under Section 7 of the ESA would be required, reducing the potential for adverse impacts. This alternative would preclude more areas from seed and live plant collection than any other alternative, which would potentially provide the greatest benefit to special status species.

Impacts from Livestock Grazing

Impacts would be similar to those described for Alternative N, except that surface disturbing activities associated with the construction and implementation of range improvements (both structural and non-

structural) would be prohibited within non-WSA lands with wilderness characteristics (682,600 acres). This would protect special status species in these areas by eliminating any potential for impact resulting from range improvement construction.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative C except that seven SRMAs (1,358,200 acres) would be established to manage recreational use and to mitigate impacts caused by this use. No SRMAs would be established for OHV use, which would decrease the potential for impacts to special status species from this type of use. As described under Alternative C, the development of facilities could have localized site-specific impacts, although consultation with USFWS and NEPA review would be required prior to construction of any facilities.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described for Alternative N, except that under Alternative D, no acres would be open to cross-country OHV use, 972,800 acres would be limited to designated roads and trails and 1,155,200 acres would be closed to OHV use. Potential impacts to special status species from OHV use would be the least under this alternative.

Under Alternative D, there would be 3,043 miles of designated routes and 1,242 miles that would be closed. Many of the routes that are restricted or closed are located in areas where most of the special status species within the planning area exist. Reducing access to these areas would reduce adverse effects to special status species that could result from OHV use. Impacts to special status species from route designations would be least under this alternative.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described for Alternative N.

Withdrawals

Alternative D would recommend withdrawing from mineral entry all non-WSA lands with wilderness characteristics, all or parts of several ACECs, suitable wild and scenic river corridors, and developed recreation sites (903,900 acres, or 42% of the RFO), the most under any of the alternatives. Several special status species are located in these areas including Mexican spotted owl, Wright fishhook cactus, pygmy rabbit, Rabbit Valley gilia, bald eagle, Utah prairie dog, and Winkler pincushion cactus. Withdrawing these areas from mineral entry would reduce adverse impacts to special status species in these areas that could result from mineral developments. Alternative D would reduce potential impacts from mining activity more than all of the other alternatives.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more right-of-way avoidance areas are proposed under Alternative D (1,203,800 acres closed to oil and gas leasing or open with no surface occupancy, 12 suitable WSR segments, and 16 ACECs). Since consultation with USFWS and NEPA review would be required for any new ROWs or other land use authorizations, impacts to special status species would be negligible.

Wind and Solar Energy

Impacts would be the same as those described for Alternative C.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Under Alternative D, 290,200 acres (14% of the RFO) would be open to leasing under standard lease terms, 634,000 acres (30%) would be open to leasing with controlled surface use or timing stipulations such as seasonal limitations, 43,300 acres (2%) would be open to leasing subject to no surface occupancy, and 1,160,500 acres (54%) would be closed to leasing. Special status species that are located in open areas, or open areas with controlled surface use or timing stipulations include the Rabbit Valley gilia, greater sage grouse, and pygmy rabbit. Potential impacts to special status species from fluid mineral development would be least under this alternative.

Leasable Minerals - Coal

Impacts would be the same as those described for Alternative N.

Geophysical

Under Alternative D, BLM would allow geophysical explorations outside of WSAs, non-WSA lands with wilderness characteristics, wild and scenic river corridors, and ACECs as determined through site-specific NEPA analysis. Potential impacts to special status species from geophysical exploration would be least under this alternative because the least amount of land would be available for this type of activity.

Locatable Minerals

The types of impacts that would be experienced from locatable mineral activities would be the same as those described for Alternative N. However, under Alternative D, the location, exploration, and development of locatable minerals could occur throughout the RFO except in areas withdrawn from mineral entry (903,900 acres) including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, Koosharem Picnic Area, Dirty Devil/North Wash ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, Little Rockies ACEC, Rainbow Hills ACEC, suitable wild and scenic river corridors and non-WSA lands with wilderness characteristics. Special status species located in the withdrawn areas would be protected from surface disturbing activities that could result from locatable minerals activities. Potential impacts to special status species from locatable mineral development would be least under this alternative.

Salable Minerals

With the implementation of Alternative D, 1,160,500 acres would be closed to disposal of salable minerals (WSAs, non-WSA lands with wilderness characteristics, the Dirty Devil/North Wash ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, Little Rockies ACEC, Rainbow Hills ACEC, and within one-quarter mile of suitable wild and scenic rivers). The exclusion of these areas from surface disturbing mineral materials activities would indirectly benefit special status species that are located within these areas. The disposal of mineral materials on other public lands would be allowed on a case-by-case basis. The potential impact to special status species from mineral material sales would be least under this alternative.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described for Alternative C.

4.3.9 Fish and Wildlife

The BLM manages public lands to provide suitable habitat for more than 600 fish and wildlife species. Species analyzed in this section include deer, elk, bison, antelope, bighorn sheep, and migratory birds. Impacts to fish and wildlife from other management programs include loss or alteration of native habitats, increased invasion of noxious weeds and other exotic weed species, decreased water availability, increased habitat fragmentation, changes in habitat and species composition, disruption of species behavior leading to reduced reproductive fitness and/or increased susceptibility to predation, and direct mortality. Surface disturbing actions that alter vegetation characteristics (e.g., structure, composition, and/or production) have the potential to affect habitat suitability for fish and wildlife, particularly where the disturbance removes or reduces cover and/or food resources. Even minor changes to vegetation communities have the potential to affect resident fish and wildlife populations.

Wildlife populations fluctuate, sometimes widely, in response to natural factors such the abundance of prey base or extremes in seasonal weather (e.g., severe winters, drought). These factors make it difficult to discern potential impacts on wildlife resulting from specific management actions and from impacts caused by natural factors. Changes or stressors to habitat components (vegetation, water, soil, or air) are likely to cause direct and indirect effects on wildlife and fish. Therefore, potential effects on habitats are the principal focus of this assessment.

Impacts on fish and wildlife include actions that result in habitat alteration, fragmentation, or loss; wildlife displacement; and habitat maintenance and enhancement. Habitat alteration occurs when decisions change the existing habitat character. Surface disturbing activities, development, or other activities that degrade habitat lead to habitat alteration, fragmentation, or loss. Habitat alteration, fragmentation, and loss affect the usable ranges and routes for wildlife movement. Wildlife displacement occurs when land use activities result in the movement of wildlife into other habitats, increasing stress on individual animals, and increasing competition for habitat resources. Impacts to fish and wildlife from displacement depend on the location, extent, timing, and/or the intensity of the disruptive activity or human presence. Occurrence of these disruptive activities in areas adjacent to fish and wildlife habitat could cause displacement of wildlife. Impacts from displacement would be greater for wildlife species with limited existing habitat and/or a low tolerance for disturbance. Habitat maintenance and enhancement can maintain or improve the condition of vegetation and levels of forage species or reduce soil loss through vegetation treatments, and restrictions on surface disturbing activities.

Methods and Assumptions

The analysis of potential impacts to fish and wildlife resources is based on the expertise of BLM resource specialists at the RFO and the Utah State Office. Combined, these staffs possess an extensive knowledge of fish and wildlife resources within the planning area. The impact analysis is also based on review of existing literature and information provided by non-planning team experts in the BLM, National Park Service (NPS), and other agencies.

Quantifying these impacts is difficult due to the lack of monitoring data for most species. In the absence of quantitative data, best professional judgment was used. Impacts are sometimes described using ranges

of potential impacts or in qualitative terms, if appropriate. The intensities of impacts are also described, where possible.

The following assumptions were used in this analysis:

- All surface disturbing activities include mitigation to reduce impacts to wildlife resources. Analysis of impacts includes any and all mitigation measures in place.
- Sufficient habitat exists to maintain current fish and wildlife population objectives.
- Disruptive activities would displace wildlife, though some wildlife adaptation would occur.

Environmental Consequences

Impacts to fish and wildlife would likely result from actions proposed under the following resource management programs:

- Soil Resources and Water Resources
- Vegetation
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Wild Horses and Burros
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on fish and wildlife.

Alternative N: No Action

Impacts from Soil Resources and Water Resources

Activities conducted under the soil management program are limited to monitoring, support activities, providing information for other BLM programs, and recommending appropriate mitigation. Typical activities implemented under the soil resource program would include mapping soils, maintaining soil databases, identifying timing stipulations, and recommending protective measures for critical soils. For example, implementation of timing stipulations would reduce surface disturbance in areas with high seasonal erosion potential. Proposed decisions to increase soil productivity, reduce erosion, and/or maintain vegetation cover necessary to avoid accelerated erosion would maintain or improve wildlife habitat.

Implementation of water quality and quantity related actions would guide or advise other program actions and activities in a manner conducive to maintaining or improving surface water quality. This would be consistent with existing and anticipated uses and applicable state and Federal water quality standards.

Beneficial impacts include improved habitat for fish and wildlife (including migratory birds) and their associated prey.

Soil and water resources would be managed to avoid surface disturbing activities within 500 feet from springs and streams, reducing or eliminating impacts to fish and wildlife species by preventing degradation of the water sources and associated wildlife habitat. In addition, goals to maintain or restore soil productivity, minimize accelerated soil erosion, and prevent flood or sediment damage would maintain or improve aquatic habitat and water quality for fish and wildlife species.

Impacts from Vegetation

Vegetation Treatments

Managing vegetation using mechanical, chemical, and wildland and/or prescribed fire treatments could result in a mix of seral stages throughout the lands managed by the RFO. This would provide cover, foraging, and nesting areas to maintain diverse wildlife populations. Treatments in pinyon-juniper woodlands, aspen, and sagebrush-steppe communities would return the treated areas to an earlier seral stage of succession, increasing vegetation species and structural diversity. Providing early seral habitats would foster small mammal populations, which serve as prey species for raptors and larger mammals. These habitats also would provide diverse forage and habitat for non-game, big game, prey species, and upland game birds, and create nesting habitat for birds. Vegetation treatments that result in mosaic patches of sagebrush of different ages and structures would benefit sage grouse. Vegetation manipulation to open closed-canopy communities and provide greater diversity in vegetation type and seral stage would benefit many species of birds and mammals, such as scrub jay and northern goshawk, while adversely affecting those species which prefer closed canopy pinyon-juniper or sagebrush cover greater than 30%. Overall, proposed decisions for managing vegetation would have beneficial impacts on migratory birds and their habitats. Vegetation treatments could have short-term adverse impacts on migratory birds and their habitats due to loss of nesting habitats immediately following treatments, and long-term beneficial impacts as vegetation re-establishes.

Vegetation management activities include fencing, weed treatment, timber harvest, sagebrush management (spraying, mechanical treatment, or burning), and seeding of disturbed areas or weed-treated areas. Vegetation management activities, especially those using heavy equipment, would result in short-term adverse impacts to fish and wildlife and their habitat. Surface disturbing activities could result in the alteration of habitat due to soil erosion or sedimentation. Large-scale vegetation management projects, such as sagebrush harrowing or juniper chaining, could impact fish and wildlife or their habitats in the sagebrush-steppe and pinyon-juniper woodlands vegetation types where such treatments would be conducted. No vegetation treatments are proposed in the non-vegetated and desert shrub vegetation types.

Under Alternative N, no acreage or treatment limitation is prescribed. Depending on the timing, location, and project size, treatments could have adverse or beneficial impacts on wildlife habitat, which would be determined by site-specific environmental analysis. For example, in mule deer summer range, reducing the pinyon-juniper component promotes favorable forage conditions. Conversely, reducing sagebrush habitat that provides cover and forage for the greater sage grouse reduces forage availability and canopy cover, rendering them vulnerable to predation.

Management Activities in Riparian and Wetland Areas

The purpose of the riparian and wetland management program is to maintain, restore, or improve riparian habitats. Proposed management actions that would be implemented to protect riparian areas including restrictions on time, space, placement, and the establishment of 500-foot buffer zones around riparian areas (where no surface disturbing activities would be allowed around the outer edge of springs unless it could be shown that there are no practical alternatives, all long-term impacts can be fully mitigated, and

the activity would benefit and enhance the riparian area.) These buffers would protect and enhance riparian vegetation communities that provide forage and cover for game and non-game mammals, as well as potential nesting sites for neo-tropical migratory birds, raptors, and waterfowl, but they could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Vegetation treatments and stream bank stabilization projects would potentially result in short-term adverse impacts to fish and wildlife species whose habitat is located primarily in riparian and wetland areas. Stream bank stabilization and habitat restoration projects could result in the removal of riparian vegetation in these areas. Impacts to fish and wildlife from these activities could include temporary disturbance or loss of habitat from heavy equipment use, increased human presence, and associated noise. Vegetation treatments in riparian areas could include the use of herbicides, fire, or mechanical removal of exotic plant species such as tamarisk or Russian olive.

In the long-term, vegetation treatments and stream bank recontouring would likely benefit riparian obligate species by improving or enhancing riparian habitat. Additionally, beneficial impacts to upland species could result from maintaining or improving natural hydrologic watershed processes. Activities to maintain or improve riparian health such as construction of livestock and recreation exclosures within riparian habitats, and habitat rehabilitation projects would have beneficial impacts on riparian obligate species.

All riparian areas are managed in accordance with the BLM Utah riparian policy. It is the objective of this riparian policy to improve or maintain riparian areas in proper functioning condition. Riparian areas are classified as in "proper functioning condition" when there is adequate vegetation and landform structure present to dissipate stream energy from high flows. This results in a reduction in erosion, improvement in water quality, filtration of sediment, capturing of bedload, and aids in floodplain development. Properly functioning riparian areas also result in an improvement in flood water retention and ground water recharge, development of root masses that stabilize stream banks against cutting action, development of diverse ponding and channel characteristics necessary for fish production and other uses, and support greater biodiversity. Continuing to implement this policy would minimize impacts on wildlife species (including migratory birds) that inhabit riparian and wetland areas.

Invasive Species Management

Under this alternative, approved weed control methods (including preventative management and mechanical, biological, and chemical techniques) would be allowed. Generally, controlling noxious and invasive species would be beneficial for wildlife habitat. However, some species considered invasive (e.g., tamarisk and Russian olive) provide important habitat components for neo-tropical songbirds. Treating noxious weeds could have short-term adverse/long-term beneficial impacts on some species of migratory birds (e.g., removing tamarisk would result in lost habitat for Southwestern willow flycatcher and other riparian obligate species until willow communities were re-established).

Depending on the timing, location, and project size, weed treatments could have adverse or beneficial impacts on wildlife habitat which would be determined by site-specific environmental analysis. Use of herbicides or other chemicals to treat vegetation could impact fish and wildlife species by altering erosion patterns and introducing herbicides and chemicals into the hydrologic system. Increased sediment, loss of habitat integrity, fragmentation of hydrologic networks, and potential chemical introductions could impact water quality. Biological treatments would not cause short-term alteration or displacement of species because they would be implemented over longer periods of time and would be host-specific.

Insect Pest Management

Wildlife could benefit from treatments targeting destructive insects such as grasshoppers, cut worms, and Mormon crickets. Actions taken to remove destructive insects would reduce potential competition for

available forage. Adverse impacts could also result from accidental chemical drift from pesticide use in nearby areas. Ingestion of pesticides could lead to direct mortality of individual animals or could cause decreased survival of young.

Control of insects in localized areas would likely result in adverse impacts to wildlife species in those areas. The reduction of some specific insect populations within special status bird habitats could alter foraging and nesting behavior by reducing the prey base and by requiring the birds to travel further to forage. The short-term reduction in herbivorous insects could also result in changes to surrounding vegetation. If insect populations were substantially reduced over a long period, special status bird species could disperse from currently occupied areas in an effort to find a larger forage base.

Impacts from Visual Resources

In general, VRM class designations would limit or allow surface disturbing activities in certain areas, thereby affecting wildlife species. VRM Classes I and II, which preserve or retain the existing character of the landscape, would protect wildlife by restricting ground disturbing activities; VRM Classes III and IV would provide less protection by allowing more changes to the landscape and being less restrictive of ground disturbing activities. Under Alternative N, none of the lands managed by the RFO are classified as VRM Class I; 529,500 acres (25%) would be managed as VRM Class II; 569,000 (27%) would be managed as VRM Class III; and 1,029,500 (48%) would be managed as VRM Class IV. Managing areas as VRM Class II would reduce surface disturbance and retain existing vegetation, thereby protecting wildlife and wildlife habitat. However, meeting VRM Class II objectives could result in some adverse impacts to migratory birds and their habitats by limiting vegetation treatment options.

Areas managed as VRM Class III or IV (75% of the RFO under this alternative) would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) wildlife habitat.

Impacts from Special Status Species

Implementation of the special status species program is designed to manage threatened, endangered, candidate, and sensitive species and their habitat. Activities associated with management of special status species could include conducting surveys, habitat improvement projects, and closing areas that contain populations or suitable habitat for special status species to OHV use or other surface disturbing activities. Protections afforded to special status plant species would benefit wildlife habitat by protecting plant species from surface disturbing and disruptive activities. These decisions would, in general, minimize impacts from other resource and resource uses and surface disturbing activities on fish and wildlife (including migratory birds) and associated habitat.

Impacts from Fish and Wildlife

Habitat manipulations such as prescribed burns, and chemical and biological controls are typically used to improve habitat for wildlife. While the continued maintenance and/or improvement of wildlife habitats could hold some long-term benefits, there could be short-term adverse impacts such as loss or fragmentation of habitat, loss of individuals due to redistribution of grazing herbivores, or hydrologic changes that result in temporary sedimentation or changes in natural water regimes. An increase in sedimentation could be particularly harmful to aquatic species that are located in drainages or wetland areas; however, these potential impacts would be localized.

This alternative proposes restrictions or stipulations of surface disturbing activities within crucial bison habitat, crucial deer and elk habitats, and within sage grouse brooding habitats. These restrictions or stipulations would also benefit other wildlife species within the restricted areas by reducing adverse

effects incurred by surface disturbances that could harm wildlife species. Other areas where current surface disturbance restrictions are in place (such as WSAs and eligible wild and scenic river corridors) would also benefit wildlife species that are located within these areas. In areas where there are no surface disturbance restrictions, impacts (such as decreased air quality, erosion, soil compaction, introduction of exotic and noxious weeds, crushing of plants, and habitat modification) could cause mortality to wildlife and disruption to foraging and/or reproductive behavior.

Alternative N provides no seasonal or spatial restrictions on surface disturbing activities in desert bighorn habitat, but would require compliance with the Desert Bighorn Sheep Management Plan. This plan includes the following goals: 1) establish optimum populations of bighorn sheep in all suitable habitat within the state; 2) provide good quality habitat for healthy populations of bighorn sheep; and 3) provide high quality opportunities for hunting and viewing of bighorn sheep. However, since this management plan lacks specific direction on actions to protect bighorn sheep and their habitat from surface disturbing activities (such as oil and gas development), potential adverse impacts could be substantial.

Under this alternative, wildlife reintroductions could be allowed into historic ranges. Wildlife reintroductions could increase species and genetic diversity, augment existing populations, and re-establish species previously extirpated.

Impacts from Wild Horses and Burros

Alternative N allocates 100 AUMs for wild burros in the Canyonlands HMA. Burros compete with wildlife (notably antelope and bighorn sheep) for water and forage. In addition, authorized wild burro activities could impact wildlife habitat during the life of the RMP. The presence of wild burros and subsequent herd gathering related actions could adversely wildlife through noise, construction of temporary gathering structures, and the trampling of habitat. Herd gathering is conducted using hazing techniques of low flying helicopters, vehicles, and gathering pens. These activities could disrupt foraging behaviors.

Impacts from Fire and Fuels Management

The focus of this analysis is on fire management activities including wildfire suppression, prescribed fire, and non-fire fuel treatments, and not on the impacts of wildfire itself. Actions associated with fire management could adversely affect fish and wildlife species and their habitat.

Increased human activity and noise associated with wildland fire suppression and prescribed fire would affect nesting, foraging, or roosting behavior. Foraging, nesting, and communal winter roosting habitats could be lost through the use of heavy equipment, hand tools, and noise associated with intensive human activity. Some snags used for perching, roosting, or nesting could be lost due to suppression operations. However, these could be replaced as new snags result from fire mortality. The effects from wildland fire suppression could potentially become long-term, depending upon the severity and extent of the activities conducted during a particular fire suppression operation. While a large fire requiring extensive suppression operations, such as extensive staging areas and fire line construction could result in long-term adverse effects to fish and wildlife, smaller fires requiring less extensive suppression operations would generally avoid these long-term adverse effects.

Fire suppression activities could adversely affect fish and wildlife species and cause immediate post-fire alteration or damage of crucial and/or high value habitats. Suppression operations could result in harassment, displacement, injury, or mortality during staging, fire line construction, backburning, noise, or other human-caused disturbance. Any direct adverse effects would generally be short-term, ending when or shortly after suppression actions are concluded. However, surface disturbing operations conducted during fire suppression would result in a reduction or loss in quantity and quality of cover and forage habitat in both the grassland and sagebrush habitats. These activities would reduce forage

availability, damage or destroy burrows and/or colonies, and remove the sagebrush and shrubs that provide above-ground vegetation cover. Despite the immediate initial loss of forage and shrub cover, some suppression tactics (e.g., backburning operations), or emergency restoration actions would actually stimulate vigorous regrowth of forb species in the following growing seasons. This would benefit fish and wildlife species with improved forage quality and quantity, as well as greater visibility for detecting predators.

A large fire event and associated suppression activities could result in the deposition of large amounts of sediment and ash into local river systems. Aquatic species could experience water quality degradation for a short-term period of time. However, no long-term adverse impacts to the river system would be anticipated. Any fire retardant inadvertently deposited into the river system would likely dissipate and therefore not affect any aquatic species. Because prescribed fire related actions tend to be limited in scope and smaller than major wildfires, no long-term impacts would be expected.

Fire management activities could adversely affect fish and wildlife species by trampling individuals or habitat. Fire suppression activities also have the potential to result in increased erosion. The construction of fire lines using hand tools and heavy machinery and the fire itself could result in direct disturbance to individuals or the alteration of habitat. In addition, the presence of invasive weeds is resulting in fires burning in areas where they did not previously burn.

Under Alternative N, prescribed fires and other treatment methods would be used to reduce hazardous fuels with no acreage limitation established. Prescribed fire management activities, including fire line construction and use of staging areas, could adversely affect fish and wildlife species by trampling individuals, crushing burrows, or altering habitat as previously described. However, habitat manipulations resulting from the use of fire would also benefit species over the long-term through improved vegetative conditions.

Alternative N includes stabilization and rehabilitation efforts as needed for every wildland fire. Stabilization and rehabilitation efforts would benefit fish and wildlife species over the long-term by decreasing erosion and restoring or improving habitat conditions following a fire event, although there could be short-term adverse impacts. The planting of non-native species that could out-compete native plant species utilized by wildlife species would alter habitat conditions and make it less favorable. The use of heavy equipment could result in the direct mortality of individuals and segmentation of populations. Increased human activity during construction efforts could cause bird species to alter foraging, nesting, and roosting behaviors.

Hazardous fuels reduction treatments would be allowed under this alternative with no acreage or treatment limitations prescribed. Depending on the timing, location, and project size, treatments could have adverse or beneficial impacts on wildlife habitat that would be determined by site-specific environmental analysis. For example, in mule deer summer range, reducing the pinyon-juniper component promotes favorable forage conditions. Conversely, reducing sagebrush habitat that provides cover and forage for the greater sage grouse reduces forage availability and canopy cover, rendering them vulnerable to predation.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for fish and wildlife.

Impacts from Forestry and Woodland Products

Forestry and woodland management actions include the harvesting of firewood, poles, Christmas trees, pine nuts, timber, and seed collection. Commercial forestry activities (e.g., timber harvests and sales) are

restricted to upland forests. These activities could include the use of heavy equipment, helicopters, chemical applications, road construction, and culvert installation, and typically result in increased traffic, noise, and human presence.

The implementation of forestry management actions that reduce pinyon-juniper woodland invasion would benefit those species that require open space. The clearing of old, dense, relatively less productive woodlands could open up more productive areas that could be utilized by wildlife species.

Potential adverse impacts to bird species could include loss of habitat, increased human access to remote habitats due to new road construction, increased noise, increased human activity, overspray or drift of chemical treatments, and culvert installation or waterbar construction which could alter riparian function. These activities could result in habitat loss or fragmentation, displacement of individuals, reduction in prey base, or direct mortality of individuals. Human activities associated with forestry and woodland actions could increase noise and visual stimulants in habitats which could disrupt nesting and foraging behaviors and could result in the species leaving the area or abandoning nests. It could also lead to individual nest failure and reduced reproductive success. A significant alteration of habitat could render suitable habitat uninhabitable for wildlife species.

Impacts from Livestock Grazing

The effects of livestock grazing on wildlife could include direct competition for forage, water, and space and indirect habitat alteration through range improvements. The impacts of livestock grazing management on stream processes and fish habitats include the short-term and site-specific loss of stabilizing riparian vegetation, which can lead to stream instability and an associated loss of habitat complexity; the loss of shading vegetation, which can lead to elevated stream temperatures and increased sediment delivery; and the loss of stream channel complexity provided by fluvial process and woody debris. These impacts could vary depending on livestock grazing intensity, site characteristics, and species habitat requirements. Improving livestock grazing allotments to meet the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration would enhance fish and wildlife habitat in the long-term by increasing the amount of desirable vegetation cover, structure, and species diversity, which would also improve water quality, aquatic species habitat, and wildlife species diversity. Meeting the Utah Standards for Rangeland Health would also result in some benefits to migratory birds and their habitat by its prescriptions for improving rangeland and riparian conditions.

The ability to adjust livestock numbers due to unforeseen conditions such as drought also benefits wildlife species. During drought conditions, competition between livestock and wildlife is high and undesirable vegetation is consumed. Livestock numbers that might have a beneficial effect or no effect to wildlife in wet years could have detrimental effects during drought conditions.

Domestic sheep can transmit diseases to bighorn sheep. Under this alternative, domestic sheep grazing could continue in bighorn sheep habitat, which could have adverse effects on wildlife.

Impacts from Recreation

Any form of recreational activity that increases noise and dust could adversely impact fish and wildlife resources by disturbing breeding, feeding, or sheltering activities. Wildlife resources could be impacted from disturbance associated with commercial recreation or competitive events depending upon the nature, location, and duration of the action. Some wildlife may be injured or killed as a result of such activities. Vehicular events have the greatest potential to affect wildlife, particularly those held during the time of year when species are rearing young. Animals could be injured or killed by collisions with vehicles on designated routes. Disturbance could lead to emigration and/or an increased risk of predation. While this alternative includes provisions to alter recreational activities that affect sensitive areas or species, such provisions would not be enforced until after monitoring had detected the impacts.

Foot traffic through sensitive areas could disturb, injure, or kill wildlife or prevent successful feeding or breeding activities. Recreational shooting activities may increase noise and trash in a localized area and could lead to injury or death of animals. Camping may cause minor to moderate impacts to wildlife resources by disturbing animals, altering or removing habitat, increasing trash and debris in the area, and increasing the risk of wildfire. Animals may ingest foreign food substances that may cause illness or death. Camping activities where pets are allowed to roam freely may also cause impacts to wildlife. Use restrictions on these types of activities should reduce or eliminate adverse effects to wildlife.

Recreationists often use riparian areas because of the presence of shade, water, aesthetic values, and opportunities for camping, fishing, boating, swimming, and other activities. Impacts to these habitats could be detrimental to riparian obligate species (such as migratory birds) by altering foraging, nesting, and mating behaviors. Extended recreational use in riparian areas could also result in sedimentation and compaction of soils which could alter viable habitat for fish and other aquatic species.

Visitor use is expected to increase throughout the RFO. Under this alternative, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified. Off-road vehicle use in particular could lead to inadvertent damage to wildlife species and their habitat due to ease of access across a large portion of the RFO. Increasing recreational uses could also have adverse impacts on migratory birds, particularly in riparian areas, displacing birds and degrading habitat.

Special recreation permits (SRPs) are issued to control visitor use and protect resources. Stipulations for protecting wildlife resources can be included in SRPs which would mitigate impacts to species and habitat (e.g., limiting camping near springs and protecting raptors/nests from rock climbing activities).

Impacts from Travel Management

Off-highway vehicle use within wildlife habitat areas can adversely impact wildlife by harassing and displacing animals and damaging vegetation. OHV recreation use on big game crucial winter range can lead to loss and/or alteration of habitat and forage and can potentially cause displacement and physiological stress during the winter. If the disturbance becomes chronic or continuous, these impacts can result in reduced animal fitness and reproductive potential (Geist 1978). Unregulated OHV use in sagebrush habitat could be detrimental to greater sage grouse populations. While some birds might be able to adjust by using adjacent sagebrush habitats, sage grouse hens show fidelity for nesting in the same general area (WGFD 2003). Limiting OHV recreation use to designated routes in sage grouse breeding and nesting habitat would localize impacts. However, impacts associated with human presence and noise from OHVs would result in displacement or harassment during sensitive life cycles and possible nest abandonment. In addition to sage grouse, other sagebrush obligate species would be impacted by human presence, noise from OHVs, and habitat degradation.

Cross-country OHV recreation in open areas could result in modification of forage composition and habitat. This change in composition and structure would result in potential displacement of wildlife. This activity could impact raptor and greater sage grouse nesting sites, sage grouse leks and brood rearing areas, big game fawning and calving areas, and all crucial winter habitats. Unrestricted OHV use can also impact migratory birds by causing harassment, direct mortality, nest abandonment, and habitat alteration. In addition, cross-country OHV recreation use could also alter the landscape, resulting in indirect impacts such as increased erosion, siltation, sediment loading, and introduction of invasive species into riparian and aquatic habitats.

Designating areas as limited to designated roads and/or limited seasonally would provide greater protection for fish and wildlife and associated habitat than open areas. Designated routes would minimize

alteration and destruction to habitat components from cross-country OHV use. Designating areas as closed to OHV recreation use would further reduce surface disturbance and habitat modification. This management action would remove potential impacts to fish and wildlife and associated habitat by limiting alteration to habitat components and disturbance associated with OHV use and human presence.

Proposed decisions to designate areas as open, closed, or limited to OHV use could have impacts on migratory birds and their habitats as well. In areas open to cross-country travel, migratory birds could be adversely impacted by habitat alteration, habitat fragmentation, and direct mortality from vehicle use. Adverse impacts would be less in areas where vehicles are limited to designated roads and trails. Closed areas, where vehicle use is prohibited, would protect migratory birds and their habitats from vehicle disturbance. Under Alternative N, 1,636,400 acres would continue to be open to cross-country OHV use. As stated above, continued OHV use would result in adverse impacts to fish and wildlife species. It is anticipated that OHV use will continue to increase in the future. As a result, adverse impacts to fish and wildlife in the RFO would also increase.

Proposed decisions to designate existing routes open to vehicle use, particularly routes in riparian areas, could adversely impact migratory birds due to habitat degradation and fragmentation from the routes and direct mortality from vehicle use. Conversely, proposed decisions to close routes would benefit birds and habitat by reducing the degradation, fragmentation, and direct mortality. Proposed decisions to close routes seasonally, primarily to protect wildlife species such as deer, elk, bison, and sage grouse, would benefit migratory birds to the extent closures overlap with bird breeding seasons. Under Alternative N, there would be 4,315 miles of routes available for motorized use and 65 miles of routes that would be closed. In addition, this alternative would continue to seasonally close routes in bison crucial habitat from December 20 through March 20 at Swap Mesa and Cave Flat, which would limit disturbance to all wildlife species in these areas during that time period. Alternative N does not take into account crucial or high value wildlife habitats when considering OHV route designations because these designations are based on location of existing routes. Therefore, wildlife species could be adversely impacted overall by OHV use under this alternative.

Continuing to manage the existing Paiute and Great Western Trail systems would limit effects on migratory birds and habitat to existing disturbed areas (trails). Impacts of new additions to the trail systems would be addressed in site-specific analysis.

Impacts from Lands and Realty

Land Tenure Adjustments

The effects of land tenure adjustments on fish and wildlife species would be determined through site-specific environmental analysis for any proposed land disposal. Land disposals could result in losses of wildlife habitat, while acquisitions could result in gains of habitat. Acquisition of habitat would benefit fish and wildlife species by providing protections that would not be afforded by non-Federal ownership.

Withdrawals

Implementation of Alternative N would include recommending the four existing ACECs (14,780 acres) for mineral withdrawal in addition to the existing withdrawals (154,700 acres). Withdrawing these areas from mineral entry would reduce any adverse effects to fish and wildlife in these areas that could result from mineral development.

Rights-of-Way and Other Land Use Authorizations

Construction of ROWs or other land use authorizations (permits, leases, easements, etc.) could cause direct impacts to habitat through trampling and other surface disturbance. Other indirect impacts could

include changes in hydrology or degradation of habitat that could be the result of increased sedimentation or habitat fragmentation. ROWs could also degrade habitat through the introduction of invasive weeds.

Surface disturbances associated with ROWs and other land use authorizations could cause habitat loss, and/or changes in vegetation structure which could alter bird breeding and migratory habitats at or near disturbance locations. In addition, the construction, operation, and maintenance of ROWs could increase noise and human presence in otherwise remote areas and could increase stress levels. Increased human presence could disturb bird foraging and nesting behavior and prey abundance. The disturbance of individuals could result in possible reduction in productivity or nesting success, and a possible increased likelihood of individual mortality.

Activities associated with ROW development (e.g., blading/grading of vegetation for construction of ROWs) could produce open areas that create ideal habitat for some wildlife species. Blading and grading of habitat could also be beneficial to these species by decreasing the vegetation height and therefore increasing visibility around existing colonies. When these disturbed areas are successfully reclaimed, the regrowth of native vegetation would provide ideal forage.

Construction and operation of roadway systems increase both traffic and visitation to otherwise remote areas. Increases in traffic and human presence could lead to increased mortality of wildlife species from vehicle collisions as well as potential poaching (Laun 1957; Johnson and Collinge 2004).

ROW construction activities have the potential to result in short-term impacts to other wildlife species as well, including damage to burrows, temporary displacement, loss of forage, and direct mortality. Potential long-term impacts include loss of habitat, and disturbance from increased human presence, noise, and increased vehicular traffic on roadways.

Any new land use authorizations (ROWs, permits, leases, easements, etc.) would require NEPA review, which would minimize impacts to fish and wildlife species. Under this alternative, all ACECs (14,780 acres), eligible WSR corridors (12 segments – 135 miles), areas closed to oil and gas leasing (459,700 acres), and areas open to oil and gas leasing with no surface occupancy (22,600 acres) would be managed as right-of-way avoidance areas (with exceptions granted only if the proposed authorization would not create substantial surface disturbance or would create only temporary impacts). Thus, impacts to fish and wildlife species in these avoidance areas would be negligible.

Wind and Solar Energy

The planning area has a low potential for development of wind and solar energy. Wind energy developments could potentially impact fish and wildlife species. Impacts to fish and wildlife species (including migratory birds) would include habitat disturbance, introduction of invasive weeds, individual mortality, erosion and runoff, fugitive dust, noise, exposure to contaminants, and interference with behavioral activities. Operational impacts of most concern to ecological resources are those associated with bird and bat strikes with turbines and associated infrastructure (e.g., transmission lines and meteorological towers) and to a lesser extent, electrocution of birds. Other concerns include habitat fragmentation, noise, and disturbance from human and vehicle activity.

Alternative N would allow solar and wind energy exploration and development on a case-by-case basis. Any impacts to fish and wildlife species would depend upon the type of project proposed. For example, the use of solar panels could block sunlight from the plants; or the use of wind turbines could result in collisions with special status bird species.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Wildlife habitat areas open and closed to oil and gas leasing vary by species and by alternative, as shown in Table 4-4 through Table 4-8. Under all alternatives, up 454 oil and gas wells could be developed, directly disturbing 3,080 acres. Sixty-three percent of the surface disturbance would be in the Sevier Frontal Zone Play (USGS Play-1907) which contains elk and mule deer habitat. The effects of oil and gas leasing would depend on the location and degree of disturbance, the proximity to crucial habitats, and the need to develop roads. Human impacts associated with minerals exploration and associated development would include habitat and forage losses or alterations. Indirect impacts to big game could include displacement and physiological stress caused by human presence and activity during the winter (Bromley 1985). The impacts described above would not occur in closed areas, and would be minimal in areas where no surface occupancy is allowed.

Table 4-4. Oil and Gas Lease Stipulations in Bighorn Sheep Habitat

			Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	Standard Lease Terms	Acres	98,800	8,700	3,900	3,400	1,100
		% habitat	44%	4%	2%	1%	<1%
	Timing or controlled surface use restrictions	Acres	30,300	121,200	97,800	71,700	5,500
		% habitat	13%	53%	43%	32%	2%
	No Surface Occupancy	Acres	300	0	24,300	23,200	6,900
		% habitat	< 1%	0%	11%	10%	3%
Closed		Acres	97,900	97,400	101,300	129,000	213,800
		% habitat	43%	43%	44%	57%	94%

Table 4-5. Oil and Gas Lease Stipulations in Bison Habitat

			Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	Standard Lease Terms	Acres	89,400	200	200	0 ac	0
		% habitat	36%	<1%	<1%	0%	0%
	Timing or controlled surface use restrictions	Acres	44,600	134,300	92,600	84,400 ac	30,500
		% habitat	18%	54%	37%	34%	12%
	No Surface Occupancy	Acres	500	0	41,700	15,800 ac	4,700
		% habitat	<1%	0%	17%	6%	2%
Closed		Acres	116,400	116,400	116,400	150,700	215,700
		% habitat	46%	46%	46%	60%	86%

Table 4-6. Oil and Gas Lease Stipulations in Elk Habitat

			Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	Standard Lease Terms	Acres	82,300	100	200	100	100
		% habitat	39%	<1%	<1%	<1%	<1%
	Timing or controlled surface use restrictions	Acres	124,900	212,100	211,700	201,000	172,700
		% habitat	59%	100%	99%	95%	81%
	No Surface Occupancy	Acres	4,900	0	300 ac	10,500 ac	10,500
		% habitat	2%	0%	<1%	5%	5%
Closed		Acres	100	0	0	600	28,900
		% habitat	<1%	0%	0%	<1%	14%

Table 4-7. Oil and Gas Stipulations in Mule Deer Habitat

			Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	Standard Lease Terms	Acres	225,400	400	100	100	100
		% habitat	40%	<1%	<1%	<1%	<1%
	Timing or controlled surface use restrictions	Acres	243,800	477,300	439,400	412,800	300,000
		% habitat	43%	84%	77%	73%	53%
	No Surface Occupancy	Acres	8,500	0	38,200	31,200	15,500
		% habitat	1%	0%	7%	5%	3%
Closed		Acres	91,500	91,500	91,500	125,100	253,600
		% habitat	16%	16%	16%	22%	44%

Table 4-8. Oil and Gas Stipulations in Pronghorn Antelope Habitat

			Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	Standard Lease Terms	Acres	23,600	0	0	0	0
		% habitat	23%	0%	0%	0%	0%
	Timing or controlled surface use restrictions	Acres	73,300	102,700	102,700	102,700	102,700
		% habitat	71%	100%	100%	100%	100%
	No Surface Occupancy	Acres	5,300	0	0	0	0
		% habitat	5%	0%	0%	0%	0%
Closed		Acres	500	0	0	0	0
		% habitat	1%	0%	0%	0%	0%

As shown in the tables above, the majority of bighorn sheep habitat (57%), bison habitat (54%), elk habitat (98%), mule deer habitat (83%) and pronghorn habitat (94%) is within areas open under standard lease terms or timing/controlled surface use restrictions under this alternative. Consequently, these species would experience impacts from oil and gas development.

Leasable Minerals – Coal

The effects of coal resource development and production vary, depending on the location and degree of disturbance, the proximity to crucial habitats, and the need to develop roads that would cause surface disturbance. Surface mining of coal would impact crucial bison and mule deer habitat by disturbing surfaces and removing existing vegetation. Coal resource production sites often create areas of disturbed soil, providing areas for noxious weed infestations. However, this disturbance could convert vegetation to early seral stages, creating habitat for some wildlife species, but reducing habitat for wildlife with mid to late seral habitat requirements. Seasonal restrictions on coal resource development would minimize stress to wildlife by limiting construction and other activities that are potentially disruptive to raptor nest sites, sage grouse leks, and wintering, calving, and lambing wildlife habitats. Migration/transition ranges and winter concentration areas for raptors could require intensive management to prevent the loss of habitat and/or to reduce stress. In any case, impacts to wildlife from coal development would be addressed in site-specific environmental analysis.

Geophysical

Under Alternative N, the BLM would allow geophysical explorations outside of WSAs and existing ACECs. Geophysical exploration involves the use of OHVs and vehicles to lay geophones, drill shot holes for charges, or to create a sound wave using all-terrain “thumper" vehicles instead of using charges. Vehicles are also used to remove the geophones and reclaim the shot holes if used. Exploration for oil and gas (including coal bed natural gas) may also include the drilling of one or more wells to test for the reservoir and its productive viability. During the exploration phase of drilling, surface disturbing activities include the construction of roads, well pads, reserve pits, and other facilities. Adverse impacts to wildlife species (including disturbance to reproductive and foraging activities, damage to habitat from use of vehicles, and direct mortality of individual animals) may result from surface disturbing geophysical activities.

Locatable Minerals

The effects of locatable mineral resource development and production on wildlife could vary, depending on the location and degree of disturbance, the proximity to habitats, and the need to develop roads and other support facilities. Environmental contaminants associated with mining activities could affect wildlife species in many ways and at many levels within the ecosystem. Some contaminants associated with mines (e.g., lead, arsenic, cyanide, etc.) can cause acute or chronic effects on resident wildlife. Site-specific impacts to wildlife would be addressed in individual mining plans of operation. Under this alternative, 169,480 acres would continue to be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to fish and wildlife species from these types of activities.

Salable Minerals

This alternative allows sale of mineral materials (salable minerals) on 1,668,300 acres (78% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted, so it is likely that additional impacts to fish and wildlife species would be minimal in these areas. New sites would only involve small areas of land and would be subject to NEPA review. Effects on wildlife would be addressed on a case-by-case basis before sales were permitted.

Impacts from Special Designations

Wilderness Study Areas

Wilderness is important to the conservation of wildlife species that are prone to conflict with humans and vulnerable to human-caused mortality. Wilderness-dependent wildlife species are those vulnerable to human influence whose continued existence is dependent on and reflective of wild, extensive, undisturbed habitat. Continued management of WSAs under the IMP would limit surface disturbing actions that could adversely affect wildlife species. WSAs are closed to oil and gas leasing, precluding any impact from oil and gas development on wildlife species within these areas, and are managed as VRM Class I, which further restricts surface disturbing activities. Species within the RFO that inhabit wilderness study areas and benefit from the isolation and lack of disturbance afforded by these areas include bison and desert bighorn sheep.

Direction for managing wildlife in WSAs is prescribed by the IMP. The IMP allows: 1) stocking of native fish and wildlife species within their historical ranges or exotics that were being stocked before October 21, 1976; and 2) introductions of threatened, endangered, or other special status species native to North America within their historical ranges. Permanent installations could be permitted to maintain or improve conditions for wildlife and fish, if the benefiting native species enhance wilderness values. All proposed actions must be scrutinized to determine if the action is necessary to protect the physical, biological, and cultural resources, as well as the quality of the wilderness experience.

Wild and Scenic Rivers

Under Alternative N, the outstandingly remarkable values, tentative classification and free-flowing nature of all eligible river segments would be protected. Fish and wildlife species would benefit from continuing these protections because no surface disturbing activities (which would protect riparian values) would be allowed within the portions of their habitat located within these areas.

Areas of Critical Environmental Concern

The existing four ACECs would continue to be designated and managed to protect their relevant and important values under this alternative. Management actions restricting surface disturbances in North Caineville Mesa ACEC, South Caineville Mesa ACEC, and Gilbert Badlands ACEC would maintain existing forage and habitat composition and structure. In addition, protecting relict vegetation values in the North and South Caineville Mesa ACECs indirectly maintains important areas for potential bird habitat. Managing Beaver Wash Canyon ACEC to protect the cold desert riparian ecosystem would protect important areas for wildlife feeding, breeding, and sheltering. This could result in a high degree of plant diversity along the riparian corridors, providing increased quality and quantity of forage for wildlife species.

Alternative A

Impacts from Soil Resources and Water Resources

Impacts would be similar to Alternative N except that soil and water resources would be managed to avoid surface disturbing activities within 330 feet from streams, reducing or eliminating impacts to fish and wildlife species in these buffer zones. Thus, the area of protection from surface disturbing activities would be reduced as compared to Alternative N.

Impacts from Vegetation

Vegetation Treatments

The types of impacts under Alternative A would be similar to those described for Alternative N. Vegetation treatments would be allowed under all alternatives but methods allowed vary. Large-scale vegetation management projects, such as sagebrush harrowing or juniper chaining, could impact fish and

wildlife or their habitats in the sagebrush-steppe and pinyon-juniper woodlands vegetation types where such treatments would be conducted. No vegetation treatments are proposed in the non-vegetated and desert shrub vegetation types.

Under Alternative A, an average of 73,600 acres of vegetation could be treated annually using fire, mechanical, biological, manual, or chemical means. Depending on the timing, location, and project size, treatments could have adverse or beneficial impacts on wildlife habitat, which would be determined by site-specific environmental analysis. For example, in mule deer summer range, reducing the pinyon-juniper component promotes favorable forage conditions. Conversely, reducing sagebrush habitat that provides cover and forage for the greater sage grouse reduces forage availability and canopy cover, rendering them vulnerable to predation.

Management Activities in Riparian and Wetland Areas

Restoring riparian areas that are non-functioning or functioning at risk would improve the habitat quality and/or quantity for fish and wildlife species by increasing vegetation species diversity, structure, and improving water quality. Soil, water, and riparian resources would be managed to achieve proper functioning condition, avoid surface disturbing activities within riparian and wetland habitat, and provide buffer zones within 330 feet from streams, reducing or eliminating impacts to fish and wildlife species. In addition, goals to maintain or restore soil productivity, minimize accelerated soil erosion, and prevent flood or sediment damage would maintain or improve riparian-wetland habitat and water quality for fish and wildlife species. Closing and rehabilitating roads would have beneficial impacts to wildlife by reducing the potential for harassment and providing additional habitat.

Invasive Species Management

The types of impacts experienced as a result of noxious weeds and invasive species management would be similar to those described for Alternative N except that implementation of Alternative A would likely result in additional acres being managed for invasive and noxious weed control over that being considered in the Alternative N. As a result, potential adverse short-term impacts to special status species could increase because of the additional areas to be treated. However, potential long-term benefits would also be greater as a result of weed control methods that would improve forage and habitat for special status animal species. Special status species habitat would also be improved by the removal of invasive and noxious weeds which compete for available space and resources.

Insect Pest Management

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described for Alternative N except that 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I under Alternative A. Fish and wildlife species whose habitat overlaps with these areas would benefit because VRM Class I areas (which require preservation of the existing landscape) would restrict surface disturbing activities.

Under Alternative A, none of the lands managed by the RFO would be designated as VRM Class II; 392,800 acres (18%) would be designated as VRM Class III; and 1,288,300 (61%) would be managed as VRM Class IV. Areas designated as VRM Class III or IV (79% of the RFO under this alternative) would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) fish and wildlife habitat. This alternative designates more acres as VRM Classes III and IV than any of the alternatives.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be similar to those described for Alternative N, except that Alternative A would restrict surface disturbing activities within one-quarter mile of sage grouse leks from March 15 through June 1; mitigation could be required in deer and elk habitats from December 15 through April 15, and in crucial desert bighorn habitat from April 15 through June 15. Implementation of these restrictions and mitigation measures could also benefit other wildlife species located in these areas.

Impacts from Wild Horses and Burros

Impacts would be the same as those described for Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced under this alternative would be similar to those described for Alternative N except that under Alternative A maximum treatment acreage limits would be set (averaging 73,600 annually). Prescribed fires and wildland fires have the potential to adversely affect fish and wildlife species in the short-term (for the reasons described under Alternative N). However, habitat manipulations with the use of fire could benefit fish and wildlife species over the long-term through improved vegetative conditions.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for fish and wildlife.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described for Alternative N, except that commercial and non-commercial harvesting would be allowed throughout the RFO (with the exception of WSAs). Thus, impacts to wildlife species from this type of activity would occur over a larger area.

Impacts from Livestock Grazing

Impacts would be similar to those described for Alternative N, except that 36,950 more acres would be available for grazing under Alternative A. Thus, impacts to fish and wildlife could occur over a larger area. However, since livestock grazing would be managed to meet the *Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration*, impacts to fish and wildlife should not be significant. Modifying and improving livestock grazing management to meet these Standards and Guidelines would improve rangeland conditions that could also benefit wildlife habitat.

Impacts from Recreation

The establishment of and management associated with SRMAs would provide for management at popular recreation use areas. Management of these areas would decrease the potential for inadvertent damage of fish and wildlife species and their habitat compared to Alternative N.

Under Alternative A, five SRMAs (516,400 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. This would decrease the potential for impacts to fish and wildlife species such as trampling, erosion, destruction of habitat, and the direct mortality of individual animals. Limiting OHV use in the Otter Creek Reservoir SRMA to designated routes would limit the extent of potential impacts.

The construction of recreation facilities in the Big Rock SRMA and the Sahara Sands SRMA would focus recreation use, minimizing impacts. Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would reduce the potential for impacts to wildlife by limiting OHV recreation use to designated routes. Managing the Factory Butte SRMA (199,700 acres) for a motorized recreational opportunity and allowing moderate to extensive landscape modification would have potentially major impacts and result in continued impacts to wildlife. However, this area is receiving heavy motorized use currently.

This alternative allows vehicles to pull off designated routes (outside WSAs) 100 feet either side of centerline for the purposes of parking/staging, and 300 feet either side of centerline for the purposes of camping. This could result in vehicles generally impacting wildlife species and their habitat in these areas.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described for Alternative N, except that implementation of Alternative A would result in 449,000 acres that are open to OHV use. OHV use has the potential to lead to direct mortality of individual animals as well as disruption of reproductive and foraging activities. The increasing use of OHVs on BLM land could also transport noxious and invasive weed seeds from infested areas to uninfested areas. Surface disturbance associated with OHV use (e.g., crushing of vegetation and soil disturbance) has the potential to increase the susceptibility of native plant communities to weed establishment, and can modify soil conditions to the point where they are unsuitable for establishment by native species.

Areas that are either closed to OHV use or where the use is restricted to designated roads and trails would be protected from the surface disturbing activities associated with this activity. This alternative, which designates no areas as closed to OHV use and 1,679,000 acres as limited, would provide more protection to fish and wildlife species than Alternative N because substantially less areas are open to OHV use.

This alternative proposes to limit OHV use to designated routes in crucial bison habitat and in sage grouse leks and nesting habitats. This would also benefit other wildlife species (including migratory birds) to the extent these restricted areas overlap with bird breeding seasons. Proposed decisions for allowing motorized access to campsites adjacent to designated routes could impact migratory birds and their habitats due to disturbance of birds and alteration of habitat by campers, particularly in riparian areas that are often important bird habitat as well as desirable places to camp.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described for Alternative N.

Withdrawals

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that less acres would be withdrawn from mineral entry (154,700 acres under Alternative A). Thus, impacts to fish and wildlife species from mining-related surface disturbing activities could be greater under this alternative.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of rights-of-way and other land use authorizations would be similar to those described under Alternative N, except that under this alternative there would be fewer right-of-way avoidance areas. Thus, impacts to fish and wildlife species from construction, operation, and maintenance of rights-of-way and other land use authorizations could be greater under this alternative.

Wind and Solar Energy

Implementation of Alternative A would allow wind and solar energy exploration and development throughout the RFO except for WSAs and VRM Class I areas. The restriction of wind and solar energy exploration and development within WSAs and VRM Class I areas could indirectly benefit fish and wildlife species by eliminating surface disturbing activities within these areas.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

As shown in Table 4-4 through Table 4-8, 57% of bighorn sheep habitat, 37% of bison habitat, 99% of elk habitat, 77% of mule deer habitat and 100% of pronghorn habitat is within areas open under standard lease terms, or timing or controlled surface use restrictions under this alternative. Consequently, these species would experience impacts from oil and gas development (particularly elk, mule deer, and pronghorn since the majority of their habitat would be in these lease categories). Impacts would be the greatest under this alternative. Other wildlife that occur within open areas, or open areas with controlled surface use or timing stipulations to leasing, would also be adversely impacted by oil and gas development activities.

Leasable Minerals - Coal

Impacts would be the same as those described for Alternative N.

Geophysical

The type of impacts experienced as a result of geophysical exploration would be the same as those described for Alternative N, except that under Alternative A, geophysical explorations would be allowed throughout the RFO with the exception of WSAs, as determined through site-specific NEPA analysis. This alternative could therefore result in more potential impacts to fish and wildlife species than Alternative N.

Locatable Minerals

The types of impacts experienced as a result of locatable minerals activities would be the same as those described under Alternative N. Under this alternative, 154,700 acres would continue to be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to fish and wildlife species from these types of activities. This alternative would recommend the least amount of acres for mineral withdrawal, which could result in the most potential impacts.

Salable Minerals

The type of impacts experienced from the disposal of salable minerals would be the same as those described for Alternative N. This alternative allows sale of mineral materials (salable minerals) on 1,681,100 acres (79% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted, so it is likely that impacts to fish and wildlife species would be minimal in these areas. However, new sites would only involve small areas of land and would be subject to NEPA review. Effects on wildlife would be addressed on a case-by-case basis before sales were permitted.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Under Alternative A, no eligible rivers would be recommended or managed as suitable. The outstandingly remarkable values, tentative classification and free-flowing nature of these river segments would not be protected. Thus, fish and wildlife species would not receive any additional benefit.

Areas of Critical Environmental Concern

Under Alternative A, no ACECs would be designated. No special management to protect relevant and important values would be provided to fish and wildlife species or their habitat.

Alternative B: Preferred Alternative

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Vegetation

Vegetation Treatments

Impacts would be the same as those described for Alternative A.

Management Activities in Riparian and Wetland Areas

Impacts would be the same as those described for Alternative A.

Invasive Species Management

Impacts would be the same as those described for Alternative A.

Insect Pest Management

The types of impacts experienced as a result of insect pest management would be similar to those described for Alternative N except that implementation of Alternative B would allow for pest control treatments when the area's economic threshold is exceeded. This action would likely be implemented only during large insect outbreaks such as with grasshoppers and Mormon crickets. The use of insecticides during large outbreaks could benefit wildlife species by reducing competition for available food. However, adverse impacts would also be realized in the form of decreased plant pollinators and reduced forage base.

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described for Alternative A except that more acres would be designated as VRM Classes I and II (655,900 acres, or 31% of the RFO), which would protect fish and wildlife species by restricting ground disturbing activities in these areas.

Under Alternative B, 410,800 acres (19%) would be designated as VRM Class III and 1,061,300 (50%) would be managed as VRM Class IV. These areas, which can allow for greater landscape modification and therefore greater surface disturbance, could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) the habitat for fish and wildlife. This alternative designates more acres as VRM Classes III and IV than Alternatives C or D, but less than Alternative N or A.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Proposed actions such as habitat manipulations and range developments could result in short-term adverse impacts to fish and wildlife and could detrimentally influence their behavior. Short-term adverse impacts could result from vegetation treatments which require the use of heavy equipment. Human disturbance and noise associated with the use of heavy equipment could temporarily disperse wildlife from occupied habitats. Adverse direct impacts could also result from accidental chemical drift from pesticide use in nearby areas. These activities have the potential to remove suitable habitat or other desired vegetation for wildlife species. Vegetation treatments would likely benefit wildlife species and their prey over the long-term by providing additional forage.

Implementation of Alternative B would result in seasonal and spatial stipulations to protect desert bighorn sheep habitats during lambing and other sensitive times during their life cycles. However, exceptions could be granted on a case-by-case basis. Protective stipulations placed on crucial habitats would reduce adverse effects to these species, as well as to other wildlife species that occupy the same areas, caused by surface disturbing activities.

Surface disturbing activities could contribute to decreased air quality, soil erosion, soil compaction, introduction and spread of invasive and noxious weeds, crushing of plants, and habitat degradation. Restrictions or stipulations of surface disturbing activities within wildlife habitats would also benefit other wildlife species that occur within the restricted areas. Alternative B would prohibit surface disturbing activities within one-half mile of sage grouse leks from March 15 through June 1, in deer and elk habitat from December 1 through April 15, and in crucial desert bighorn habitat from April 15 through June 15. Mitigation measures would be required for pronghorn antelope from May 15 through June 15. Implementation of these restrictions and stipulations would directly benefit other species by precluding surface disturbing activities during reproductive periods, as well as indirectly benefiting wildlife located in these areas by limiting habitat disturbance.

Impacts from Wild Horses and Burros

The types of impacts experienced as a result of wild horse and burro management would be similar to those described for Alternative N, except that Alternative B proposes to manage the Canyonlands HMA for 60-100 wild burros. New burros could be introduced to maintain genetic variability. Activities under this alternative, including the introduction and gathering of wild burros, would have the potential to adversely affect wildlife species as described for Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced under this alternative would be similar to those described for Alternative N except that Alternative B would include stabilization efforts to sustain ecosystems, improve public health, improve safety, and to help communities protect infrastructure. Priority would be given to areas that pose a threat to life and property and areas with a potential for invasive weeds. As previously discussed, stabilization efforts would have the potential to benefit fish and wildlife species through decreased erosion and improved habitat and vegetation conditions, but would also result in short-term impacts that would alter habitat.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for fish and wildlife.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described for Alternative N, except that commercial and non-commercial harvesting would be

allowed throughout the RFO (with the exception of WSAs and the two suitable wild and scenic river corridors proposed under this alternative). Thus, impacts from this type of activity would occur over a larger area than Alternative N but over a smaller area than Alternative A.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative A except that Alternative B would establish five SRMAs (838,700 acres) to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. This alternative proposes only 2,600 acres at Factory Butte and 265 acres at Big Rocks as OHV SRMAs, which would decrease the potential for impacts to wildlife as compared to Alternative A.

This alternative allows vehicles to pull off designated routes (outside WSAs) 50 feet of either side of the centerline for the purposes of parking/staging, and 150 feet of either side of the centerline for the purposes of camping. While this could result in vehicles impacting wildlife species, the area of potential impact would be very localized and would be less than that under either Alternative N or A.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described for Alternative N, except that implementation of Alternative B would result in 8,400 acres that are open to cross-country OHV use. OHV use could be more concentrated in this smaller area, and would likely have more adverse effects per acre. Impacts of OHV use on wildlife could involve habitat disturbance, as well as disturbance to individual animals during reproductive or foraging activities. The increasing use of OHVs on BLM land can also transport noxious and invasive weed seeds from infested areas to uninfested areas. Surface disturbance associated with OHV use (e.g., crushing of vegetation and soil disturbance) has the potential to increase the susceptibility of native plant communities to weed establishment, and can modify soil conditions to the point where they are unsuitable for establishment by native species.

Areas that are either closed to OHV use or where the use is restricted to designated roads and trails would be protected from the surface disturbing activities associated with this activity. This alternative, which designates 210,400 acres as closed to OHV use and 1,909,200 acres as limited, would provide more protection to fish and wildlife species than either Alternative N or A because substantially fewer areas are open to OHV use.

Under Alternative B, there would be 4,176 miles of routes designated for use by the public, and 204 miles would be closed. Alternative B designates routes to minimize harassment of wildlife or significant disruption of wildlife. Limited or no access would reduce adverse effects to fish and wildlife species that could result from OHV use.

This alternative proposes the following travel restrictions in wildlife habitat areas: limit OHV use to designated routes on 646,000 acres and close to OHV use on 4,000 acres within deer and elk crucial winter range; limit OHV use to designated routes in crucial bison habitat and in sage grouse brooding habitats. This would also benefit other wildlife species (including migratory birds) to the extent these restricted areas overlap with bird breeding seasons. Proposed decisions for allowing motorized access to campsites adjacent to designated routes could impact migratory birds and their habitats due to disturbance of birds and alteration of habitat by campers, particularly in riparian areas that are often important bird habitat and desirable places to camp.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described for Alternative N.

Withdrawals

Implementation of Alternative B would include recommending for mineral withdrawals two ACECs (2,530 acres), two suitable wild and scenic river segments (59 miles), and developed recreation sites. Withdrawing these areas from mineral entry would reduce any adverse impacts to fish and wildlife species in these areas that could result from mineral developments.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that less right-of-way avoidance areas are proposed under Alternative B. Since site-specific NEPA review would be required, impacts to fish and wildlife species would be minimized or mitigated.

Wind and Solar Energy

Implementation of Alternative B would result in the potential for wind and solar energy exploration and development in the majority of the RFO, with the exception of WSAs, ACECs, areas managed as no surface occupancy for oil and gas development, and VRM Class I and II areas. The restriction on wind and solar development within these areas would likely benefit bird species, including migratory species, by providing sites where conflicts between birds and wind and solar facilities would be avoided.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

As shown in Table 4-4 through Table 4-8, 45% of bighorn sheep habitat, 37% of bison habitat, 99% of elk habitat, 77% of mule deer habitat and 100% of pronghorn habitat is within areas open under standard lease terms, or timing or controlled surface use restrictions under this alternative. Consequently, these species would experience impacts from oil and gas development (particularly elk, mule deer, and pronghorn since the majority of their habitat would be in these lease categories), although impacts would be slightly less than under Alternative N. Other wildlife that occur within open areas, or open areas with controlled surface use or timing stipulations to leasing, would also be adversely impacted by oil and gas development activities.

Leasable Minerals - Coal

Impacts would be the same as those described for Alternative N.

Geophysical

The type of impacts experienced as a result of geophysical exploration would be the same as those described for Alternative N, except that under Alternative B, geophysical explorations would be allowed throughout the RFO with the exception of WSAs, suitable wild and scenic river corridors (2 segments – 59 miles), and ACECs (2,530 acres), as determined through site-specific NEPA analysis. This alternative could therefore result in more potential impacts to wildlife than Alternatives N, C or D but less than Alternative A.

Locatable Minerals

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N. Under this alternative, 176,200 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to fish and

wildlife species from these types of activities. This alternative would recommend fewer acres for mineral withdrawal than Alternatives C or D but more than Alternatives N or A.

Salable Minerals

The type of impacts experienced from the disposal of salable minerals would be the same as those described for Alternative N. This alternative allows sale of mineral materials (salable minerals) on 1,677,500 acres (79% of the RFO). However, new sites would only involve small areas of land and would be subject to NEPA review. Effects on wildlife would be addressed on a case-by-case basis before sales were permitted, and potential impacts would be mitigated.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Under Alternative B, two river segments (the Dirty Devil River and the Fremont River in Fremont Gorge – 59 total miles) would be recommended as suitable for wild and scenic river designation. Managing these areas as suitable for inclusion in the National Wild and Scenic River System would benefit species such as migratory birds that utilize these areas by protecting riparian values and ecological condition. A lack of potential for surface disturbing activities would also result in the protection of habitat used by the prey of wildlife species.

Areas of Critical Environmental Concern

Under Alternative B, two ACECs would be designated: North Caineville Mesa (2,200 acres) and Old Woman Front RNA (330 acres). The ACECs would provide protection for fish and wildlife species by restricting many surface disturbing activities. Special management of these ACECs would include closing to OHV use, managing as either closed to oil and gas leasing (Old Woman Front) or open with no surface occupancy (North Caineville Mesa), unavailable for livestock grazing, closed to harvesting of woodland products (Old Woman Front), and managing as right-of-way avoidance areas. These management prescriptions to protect relevant and important values would also protect the fish and wildlife species that occur in the ACECs. However, the total acreage contained within these ACECs (2,530 acres) is nominal, so designation of these areas would provide little additional protection to wildlife.

Alternative C

Impacts for Soil Resources and Water Resources

Impacts would be similar to Alternative N except that soil and water resources would be managed to avoid surface disturbing activities within 660 feet from streams, reducing or eliminating impacts to fish and wildlife species in these buffer zones. Thus, the area of protection from surface disturbing activities would be increased as compared to Alternative N. Alternative C (along with Alternative D) would best protect habitat for riparian-obligate species, provide and protect clean water sources for big game, protect aquatic invertebrates, and protect and promote riparian vegetation, which would provide habitat for songbirds. Closing and rehabilitating roads would have beneficial impacts to wildlife by reducing the potential for harassment and providing additional habitat.

Impacts from Vegetation

Vegetation Treatments

Impacts would be similar to those described for Alternative N. Under Alternative C, an average of 26,000 acres annually could be treated using only prescribed or wildland fire and biological treatments. Depending on the timing, location, and project size, treatments could have adverse or beneficial impacts

on wildlife habitat, which would be determined by site-specific environmental analysis. For example, in mule deer summer range, reducing the pinyon-juniper component promotes favorable forage conditions. Conversely, reducing sagebrush habitat that provides cover and forage for the greater sage grouse reduces forage availability and canopy cover, rendering them vulnerable to predation. The limitation on treatment methods under Alternative C could preclude effective vegetation management for wildlife in some areas.

Management Activities in Riparian and Wetland Areas

The types of impacts experienced as a result of riparian management would be similar to those described for Alternative N except that the size of the buffer zone in which no surface disturbance would be allowed is 660 feet on each side of the riparian area (versus 500 feet for Alternative N). Thus, Alternative C would protect a larger area around the riparian/wetland zones from surface disturbing activities – this would protect habitat for riparian-obligate species, provide and protect clean water sources for big game, protect aquatic invertebrates, and protect and promote riparian vegetation, which would provide habitat for songbirds.

Invasive Species Management

The types of impacts experienced as a result of noxious weeds and invasive species management would be similar to those described for Alternative N, except that implementation of Alternative C would initiate an attempt to control noxious and invasive weeds through treatment methods that mimic natural processes. Implementation of this alternative could make control of some invasive species difficult because of lack of suitable substitute treatments (e.g., using fire as a control tool for species including tamarisk could increase the growth and spread of this non-native species because it is a fire-adapted species with more efficient recovery mechanisms than most native species), possibly allowing the spread of invasive species and displacement of desirable vegetation (Hart 1999). This could have indirect adverse effects on fish and wildlife species because noxious and invasive weeds would likely expand their range and could alter suitable fish and wildlife habitat and reduce available forage. The short-term adverse effects discussed for Alternative A resulting from surface disturbing activities would not be realized. Beneficial impacts resulting from weed control treatments through natural processes within fish and wildlife habitat would be limited.

Insect Pest Management

The types of impacts experienced as a result of insect pest management would be similar to those described for Alternative N except that implementation of Alternative C would result in no immediate beneficial or adverse impacts from pest control treatments. However, wildlife species could be affected if insect pests proliferate to the point of changing the landscape/habitat by removing large amounts of potential forage.

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described for Alternative B except that more acres would be designated as VRM Classes I and II (677,500 acres, or 32% of the RFO), which would protect fish and wildlife species by restricting ground disturbing activities in these areas.

Under Alternative C, 509,100 acres (24%) would be designated as VRM Class III and 941,400 (44%) would be managed as VRM Class IV. These areas, which would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance, could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) the habitat for fish and wildlife species. This alternative designates more acres as VRM Classes III and IV than Alternative D, but less than Alternatives N, A, or B.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

The types of impacts experienced as a result of fish and wildlife management would be similar to those described for Alternative B, except that Alternative C implements seasonal and spatial stipulations to protect desert bighorn sheep habitats during lambing and other sensitive times during their lifecycles. Stipulations placed on crucial habitat management would reduce adverse effects caused by surface disturbing activities that could harm those species, as well as others that occur within the same area.

Restrictions or stipulations of surface disturbing activities within wildlife habitats would also benefit other wildlife species that occur within the restricted areas. Alternative C prohibits surface disturbing activities within two miles of sage grouse leks from March 15 through June 1, in deer and elk habitat from December 1 through April 15, in crucial desert bighorn habitat from April 15 through June 15, and in crucial pronghorn antelope habitat from May 15 through June 15. Implementation of these restrictions and stipulations would directly benefit other species by precluding surface disturbing activities during reproductive periods, as well as indirectly benefiting wildlife located in these areas by limiting habitat disturbance.

Impacts from Wild Horses and Burros

The types of impacts experienced as a result of wild horse and burro management would be similar to those described for Alternative N, except that Alternative C proposes to manage the Canyonlands HMA for 120-200 wild burros. New burros could be introduced to maintain genetic variability. Activities under this alternative, including the introduction and gathering of wild burros, would have the potential to adversely affect wildlife species as described for Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced under this alternative would be similar to those described for Alternative B, except that under Alternative C the average annual treatment limits would be less (26,000 acres). As stated previously, prescribed fires and wildland fires have the potential to adversely affect wildlife species. However, habitat manipulations with the use of fire could benefit wildlife over the long-term through improved vegetative conditions. With less acres treated under this alternative, there would be less potential adverse impacts, but also less potential beneficial impacts from habitat manipulations.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for fish and wildlife.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described for Alternative N, except that commercial and non-commercial harvesting would be allowed throughout the RFO (with the exception of WSAs and suitable wild and scenic river corridors). Thus, impacts from this type of activity would occur over a smaller area than Alternatives A or B. In addition, the rejuvenating benefits to habitats from the clearing of woodland areas would not be realized in the areas where forest and woodland products harvesting is precluded.

Impacts from Livestock Grazing

Impacts would be similar to those described for Alternative N, except that this alternative prohibits a change in kind of livestock from cattle to domestic sheep within all identified bighorn sheep habitat.

Since domestic sheep can transmit diseases to bighorn sheep, this would provide protections for bighorn sheep within the RFO from livestock.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative A, except that four SRMAs (928,550 acres) would be established to manage recreational use and to mitigate impacts caused by this use. No SRMAs would be established for OHV use under Alternative C, which would decrease the potential for impacts to fish and wildlife species from this type of use.

Managing the Dirty Devil/Robbers Roost SRMA (375,800 acres) for dispersed recreation in a primitive setting would indirectly reduce the potential for surface disturbance (and associated damage to fish and wildlife) from recreation. Managing the Henry Mountains SRMA (533,900 acres) for primitive and semi-primitive recreation and managing the Sevier Canyon SRMA (7,500 acres) for scenic values would indirectly maintain or reduce the potential for disturbance and impacts to fish and wildlife. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural recreation experience and the development of facilities could have localized site-specific impacts, although NEPA review would be required prior to construction of any facilities.

This alternative allows vehicles to pull off designated routes (outside WSAs) up to 25 feet of either side of the centerline for the purposes of parking/staging; camping would be allowed only in designated campsites, with travel between campsites only allowed on designated routes. Together, this would minimize disturbance to fish and wildlife species and would result in less disturbance than Alternatives N, A or B.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described for Alternative N, except that under Alternative C no acres would be open to cross-country OHV use, 1,445,000 acres would be limited to designated roads and trails and 683,000 acres would be closed to OHV use. By eliminating areas that are open to unrestricted OHV use, adverse impacts to fish and wildlife species would be substantially reduced.

Under Alternative C, there would be 3,192 miles of designated routes and 1,188 miles of routes that would be closed. Alternative C designates routes to minimize harassment of wildlife or significant disruption of wildlife. Limited or closed areas would reduce adverse effects to fish and wildlife species that could result from OHV use.

This alternative proposes the following travel restrictions in wildlife habitat areas: within deer and elk crucial winter range, limit OHV use to designated routes on 509,000 acres and close to OHV use on 142,000 acres; within crucial bison habitat, limit OHV use to designated routes on 62,000 acres and close to OHV use on 189,000 acres; and limit OHV use to designated routes in sage grouse brooding habitats. This would also benefit other wildlife species (including migratory birds) to the extent these restricted areas overlap with bird breeding seasons. Proposed decisions for allowing motorized access to campsites adjacent to designated routes could impact migratory birds and their habitats due to disturbance of birds and alteration of habitat by campers, particularly in riparian areas that are often important bird habitat and desirable places to camp.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described for Alternative N.

Withdrawals

Alternative C recommends withdrawing from mineral entry all or parts of several ACECs, suitable wild and scenic river corridors, and developed recreation sites (331,100 acres, or 16% of the RFO). Withdrawing these areas from mineral entry would reduce adverse impacts to fish and wildlife species in these areas that could result from mineral developments.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more right-of-way avoidance areas are proposed under Alternative C (735,100 acres closed to oil and gas leasing or open with no surface occupancy, 12 suitable WSR segments, and 16 ACECs). Since NEPA review would be required prior to issuing any land use authorization, impacts to fish and wildlife species would be minimal.

Wind and Solar Energy

This alternative specifically excludes special status species habitats from wind and solar energy developments. This would help to protect other wildlife species that occur in these areas (including bats, migratory birds, and raptors) from any surface disturbing action that could result from these developments.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

As shown in Table 4-4 through Table 4-8, 33% of bighorn sheep habitat, 34% of bison habitat, 95% of elk habitat, 73% of mule deer habitat and 100% of pronghorn habitat is within areas open under standard lease terms, or timing or controlled surface use restrictions under this alternative. Consequently, these species would experience impacts from oil and gas development (particularly elk and pronghorn since almost all of their habitat would be in these lease categories), although the impacts would be less than under Alternatives N, A or B. Other wildlife that occur within open areas, or open areas with controlled surface use or timing stipulations to leasing, could also be adversely impacted by oil and gas development activities.

Leasable Minerals - Coal

Impacts would be the same as those described for Alternative N.

Geophysical

The type of impacts experienced as a result of geophysical exploration would be the same as those described for Alternative N, except that under Alternative C, geophysical explorations would be allowed throughout the RFO with the exception of WSAs, suitable wild and scenic river corridors (12 segments – 135 miles), and ACECs (886,810 acres), as determined through site-specific NEPA analysis. This alternative could result in more potential impacts to wildlife species than Alternative D, but less than Alternatives N, A, or B.

Locatable Minerals

The types of impacts that would be experienced from locatable mineral activities would be the same as those described for Alternative N. Under Alternative C, the location, exploration, and development of locatable minerals could occur throughout the RFO except in areas withdrawn from mineral entry (331,100 acres) including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, Koosharem Picnic Area, Dirty Devil/North Wash ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon

ACEC, Little Rockies ACEC, Rainbow Hills ACEC, and suitable wild and scenic river corridors. Wildlife species located in the withdrawn areas would be protected from surface disturbing activities that could result from locatable minerals activities.

Salable Minerals

The type of impacts experienced from the disposal of salable minerals would be the same as those described for Alternative N. This alternative allows sale of mineral materials (salable minerals) on 1,541,700 acres (72% of the RFO). However, new sites would only involve small areas of land and would be subject to NEPA review. Effects on wildlife would be addressed on a case-by-case basis before sales were permitted, and potential impacts would be mitigated.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Under Alternative C, the Dirty Devil River, Beaver Wash Canyon, Larry Canyon, No Man's Canyon, Robbers Roost Canyon, Sams Mesa Box Canyon, Twin Corral Box Canyon, Fish Creek, Maidenwater Creek, Quitchupah Creek, and the Fremont River in Fremont Gorge and below Capitol Reef National Park to the Caineville ditch diversion would be designated as suitable wild and scenic rivers. Management to protect their outstandingly remarkable values, tentative classification and free-flowing nature (including closing to OHV us, closing to oil and gas leasing, and withdrawing from mineral entry) would benefit species such as migratory birds that utilize these areas. A lack of potential for surface disturbing activities would also result in the protection of habitat used by the prey of wildlife species.

Areas of Critical Environmental Concern

Under Alternative C, 16 areas (886,810 acres) would be designated as ACECs: Badlands, Bull Creek Archaeological District, Dirty Devil/North Wash, Fremont Gorge/ Cockscomb, Henry Mountains, Horseshoe Canyon, Kingston Canyon, Little Rockies, Lower Muddy Creek, Old Woman Front, Parker Mountain, Quitchupah, Rainbow Hills, Sevier Canyon, Thousand Lakes Bench, and Special Status Species ACECs. ACECs provide protection for fish and wildlife by restricting many surface disturbing activities including mineral leasing, OHV use, wood cutting, new rights-of-way, or motorized camping. Those ACECs with relevant and important values related to fish and wildlife resource values and associated habitat would have special management to protect these resources, and this would indirectly result in additional protection for big game species and sage grouse and associated habitat. In some areas, notably the Henry Mountains, there could be short-term adverse impacts to bird habitat from vegetation manipulation projects. These effects would be mitigated in the long-term by anticipated improvement in vegetation health and vigor.

Alternative D

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative C.

Impacts from Vegetation

Vegetation Treatments

Impacts would be the same as those described for Alternative C.

Management Activities in Riparian and Wetland Areas

Impacts would be the same as those described for Alternative C.

Invasive Species Management

Impacts would be the same as those described for Alternative C.

Insect Pest Management

Impacts would be the same as those described for Alternative C.

Impacts from Visual Resources

The types of impacts would be the same as described under Alternative C, except that more acres would be designated as VRM Classes I and II (1,196,300 acres, or 56% of the RFO), which would protect fish and wildlife species by restricting ground disturbing activities in these areas.

Under Alternative D, 355,100 acres (17%) would be designated as VRM Class III and 576,600 (27%) would be managed as VRM Class IV. These areas, which would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance, could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) the habitat for fish and wildlife species. This alternative designates far less acres as VRM Classes III and IV than any other alternative, so impacts to fish and wildlife would be the least of all alternatives due to VRM class designations.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the same as those described for Alternative C.

Impacts from Wild Horses and Burros

Impacts would be the same as those described for Alternative N.

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Protecting the non-WSA lands with wilderness characteristics would provide habitat for wildlife species vulnerable to human influence, whose continued existence is dependent on and reflective of wild, extensive, undisturbed habitat. Species within the RFO that benefit from the isolation and lack of disturbance afforded by these areas include bison and desert bighorn sheep.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described for Alternative N, except that commercial and non-commercial harvesting would not be allowed in WSAs, suitable wild and scenic river corridors, and non-WSA lands with wilderness characteristics. Thus, impacts from this type of activity would occur over a much smaller area than under any other alternative, which would potentially provide the greatest benefit to fish and wildlife species. However, the rejuvenating benefits to habitats from the clearing of woodland areas would not be realized.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative C.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative C except that seven SRMAs (1,358,200 acres) would be established to manage recreational use and to mitigate impacts caused by this use. No SRMAs would be established for OHV use, which would decrease the potential for impacts to fish and wildlife species from this type of use. As described under Alternative C, the development of facilities could have localized site-specific impacts although NEPA review would occur prior to construction of any facilities, which would mitigate and minimize impacts to wildlife.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described for Alternative N, except that under Alternative D, no acres would be open to cross-country OHV use, 972,800 acres would be limited to designated roads and trails, and 1,155,200 acres would be closed to OHV use. Potential impacts to fish and wildlife species from OHV use would be the least under this alternative.

Under Alternative D, there would be 3,043 miles of designated routes and 1,242 miles that would be closed. Reducing access would reduce adverse effects to fish and wildlife species that could result from OHV use. Impacts to fish and wildlife from route designations would be least under this alternative.

This alternative proposes the following travel restrictions in wildlife habitat areas: within deer and elk crucial winter range, limit OHV use to designated routes on 393,000 acres and close to OHV use on 258,000 acres; within crucial bison habitat, limit OHV use to designated routes on 44,000 acres and close to OHV use on 207,000 acres; and limit OHV use to designated routes in sage grouse brooding habitats. This would also benefit other wildlife species (including migratory birds) to the extent these restricted areas overlap with bird breeding seasons. Proposed decisions for limiting motorized camping to designated campsites (and thereby limiting motorized access) would minimize impacts to migratory birds and their habitats since campsites would only be designated where compatible with other resources. This alternative would provide the most protection from impacts related to motorized travel of all the alternatives.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described for Alternative N.

Withdrawals

Alternative D would recommend withdrawing from mineral entry all non-WSA lands with wilderness characteristics, all or parts of several ACECs, suitable wild and scenic river corridors, and developed recreation sites (903,900 acres, or 42% of the RFO), the most under any of the alternatives. Withdrawing these areas from mineral entry would reduce adverse impacts to fish and wildlife species in these areas that could result from mineral developments. Alternative D would reduce potential impacts from mining activity more than any of the other alternatives.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more right-of-way avoidance areas are proposed under

Alternative D (1,203,800 acres closed to oil and gas leasing or open with no surface occupancy, 12 suitable WSR segments, and 16 ACECs). Since NEPA review would be required prior to issuing any land use authorization, impacts to fish and wildlife would be minimized.

Wind and Solar Energy

Impacts would be the same as those described for Alternative C.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

As shown in Table 4-4 through Table 4-8, 3% of bighorn sheep habitat, 12% of bison habitat, 81% of elk habitat, 53% of mule deer habitat and 100% of pronghorn habitat is within areas open under standard lease terms, or timing or controlled surface use restrictions under this alternative. Consequently, these species would experience impacts from oil and gas development (particularly elk, mule deer, and pronghorn since the majority of their habitat would be in these lease categories), although the impacts would be significantly less for most of these species than under any of the other alternatives. Other wildlife that occur within open areas, or open areas with controlled surface use or timing stipulations to leasing, could also be adversely impacted by oil and gas development activities. Potential impacts to fish and wildlife from oil and gas development would be least under this alternative.

Leasable Minerals - Coal

Impacts would be the same as those described for Alternative N.

Geophysical

Under Alternative D, BLM would allow geophysical explorations outside of WSAs, non-WSA lands with wilderness characteristics, wild and scenic river corridors, and ACECs as determined through site-specific NEPA analysis. Potential impacts to fish and wildlife species from geophysical exploration would be least under this alternative because the least amount of land would be available for this type of activity.

Locatable Minerals

The types of impacts that would be experienced from locatable mineral activities would be the same as those described for Alternative N. However, under Alternative D, the location, exploration, and development of locatable minerals could occur throughout the RFO except in areas withdrawn from mineral entry (903,900 acres) including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, Koosharem Picnic Area, Dirty Devil/North Wash ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, Little Rockies ACEC, Rainbow Hills ACEC, and suitable wild and scenic river corridors and non-WSA lands with wilderness characteristics. Fish and wildlife species located in the withdrawn areas would be protected from surface disturbing activities that could result from locatable minerals activities. Potential impacts from locatable mineral development would be least under this alternative.

Salable Minerals

With the implementation of Alternative D, 1,160,500 acres would be closed to disposal of salable minerals (WSAs, non-WSA lands with wilderness characteristics, the Dirty Devil/North Wash ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, Little Rockies ACEC, Rainbow Hills ACEC, and within one-quarter mile of suitable wild and scenic rivers). The exclusion of these areas from surface disturbing mineral materials activities would indirectly benefit fish and wildlife species that are located within these areas. The disposal of mineral

materials on other public lands would be allowed on a case-by-case basis. The potential impact from to fish and wildlife species from mineral material sales would be least under this alternative

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described for Alternative C.

4.3.10 Wild Horses and Burros

The goal of the Wild and Free-Roaming Horse and Burro Act is to manage wild horses and burros, "in the area where presently [1971] found as an integral part of the natural system of the public lands." The Act and subsequent regulations direct that wild horses and burros be managed to ensure a thriving natural ecological balance with the minimum feasible management required to maintain the populations. Managing wild horse and burro populations at a sufficient size to be genetically viable is important to accomplish this. Some management decisions could impact the viability of wild horse or burro populations. Populations that would require long-term intensive management would not comply with the minimum feasible management regulations and would therefore be noted as an impact.

Methods and Assumptions

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources in the RFO, review of existing literature, and information provided by other agencies. Effects are quantified where possible. Spatial analyses were conducted using GIS data and analyses. Impacts are described using ranges of potential impacts or in qualitative terms, if appropriate.

Environmental Consequences

Impacts to wild horses and burros would likely result from actions proposed under the following resource management programs:

- Soil Resources and Water Resources
- Special Status Species
- Wild Horses and Burros
- Non-WSA Lands with Wilderness Characteristics
- Livestock Grazing
- Recreation
- Travel Management
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on wild horses and burros.

Alternative N: No Action

Impacts from Soil Resources and Water Resources

Reducing surface disturbance and erosion (through the application of best management practices such as reclaiming disturbed areas, minimizing the amount of access roads, requiring weed free feed to reduce the potential for spread of noxious weeds, etc., as listed in Appendix 14) would help maintain and improve the quality and quantity of forage available for burros in the Canyonlands HMA.

Impacts from Special Status Species

Actions to preserve special status species could maintain forage resources, but some habitats or specific populations of special status species might be fenced or otherwise protected. In comparison to the HMA acreages, the impacts of these areas would not be significant if the fenced area was not a water source. Within this desert environment, fencing that excluded the burros from water could result in moderate to major impacts depending on the number and locations of water sources involved.

Impacts from Wild Horses and Burros

The preliminary wild burro AML in the Canyonlands HMA would serve to maintain a population of wild burros within the genetically viable range. Although forage would not specifically be allocated to the wild burros, sufficient forage would be available for the AML, so there would be no impacts.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for wild horses and burros.

Impacts from Livestock Grazing

Because forage would not be allocated to livestock on the northeastern portions of the Canyonlands HMA, there would be no impact to wild burros from livestock grazing in these areas. In the remainder of the Canyonlands HMA, competition for habitat resources (specifically forage and water) could continue between livestock and wild horses and burros. In the long-term, this competition could change the distribution patterns and/or reproductive success of the wild burros in these areas. Impacts would be mitigated through monitoring and adjustments in forage use.

Impacts from Recreation

No developments, facilities or areas managed to retain specific recreation opportunities (SRMAs) are proposed within the Canyonlands HMA. Therefore, there would be no impact on wild horses and burros from these types of developments or management. Recreation use in the remote area of the Canyonlands HMA has increased and that trend is expected to continue. In the long-term, unstructured recreation use in this area could result in adverse impacts to the burros from harassment by visitors, passage of motorized vehicles and use of natural water sources.

Impacts from Travel Management

In the Canyonlands HMA, OHV use would be limited to existing routes on more than 50% of the HMA. The remaining acreage is mostly open to cross-country OHV use, with a small portion closed to OHV use on the southwest portion of the HMA where the Dirty Devil WSA overlaps the HMA. The presence of OHV recreation users on 45 miles of designated routes in the HMA could temporarily displace wild burros from the proximity of riders. On those portions of the Canyonlands HMA that would be open to cross-country OHV use, vegetation loss resulting from cross-country travel could reduce available forage for wild horses and burros. Given the size of the HMA, the limited number of routes, and the amount of anticipated use, the wild and free-roaming nature of the herd would not likely be eliminated.

Impacts from Minerals and Energy

The Canyonlands HMA is located within lands predicted to have a low development potential for oil and gas. Impacts to burros would therefore be unlikely. More than 50% of the HMA overlaps portions of the Horseshoe Canyon North, Horseshoe Canyon South, French Springs/Happy Canyon and Dirty Devil WSAs. These areas are managed according to the IMP and are closed to oil and gas leasing, prohibit the leasing of non-energy solid minerals and disposal of mineral materials. Therefore, the potential for impacts to burros from mineral and energy development are minimal.

Impacts from Special Designations

Wilderness Study Areas

Managing the Horseshoe Canyon North, Horseshoe Canyon South, French Springs/Happy Canyon, and Dirty Devil WSAs according to the IMP would preclude most surface disturbing activities in these areas. Portions of these WSAs overlap more than 50% of the Canyonlands HMA. Precluding surface disturbance in these areas would maintain forage levels and preserve the free-roaming nature of the wild burros in the Canyonlands HMA. However, managing according to the IMP could also make direct management, such as gathers, more difficult.

Areas of Critical Environmental Concern

There are no ACECs proposed in this alternative that would overlap with the Canyonlands HMA, resulting in no impacts to wild horses and burros.

Alternative A

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Wild Horses and Burros

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for wild horses and burros.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

The entire Canyonlands HMA lies within the proposed Dirty Devil SRMA. Managing the Dirty Devil SRMA for a high probability of experiencing solitude with low interaction or evidence of other users would result in low levels of surface disturbing developments and human presence, preserving the wild and free-roaming nature of wild burros in the Canyonlands HMA.

Impacts from Travel Management

Under this alternative, no areas within the Canyonlands HMA would be open to cross-country OHV use, eliminating OHV-related impacts to the wild and free-roaming nature of the wild burros. The entire Canyonlands HMA would be limited to designated routes. The presence of OHV recreation users on 45

miles of designated routes in the HMA could temporarily displace wild burros from the proximity of riders. Given the size of the HMA, the limited number of routes, and the amount of anticipated use, the wild and free-roaming nature of the herd would not likely be eliminated.

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

There are no ACECs proposed under this alternative, resulting in no impacts to wild horses and burros.

Alternative B: Preferred Alternative

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Wild Horses and Burros

The proposed wild burro appropriate management level of 60 to 100 burros in the Canyonlands HMA would establish and maintain a genetically viable population of wild burros. Sufficient forage would be allocated to wild burros to meet the AML. The population of wild burros would remain stable with normal population increases for the area. There would be no difference in this impact compared to Alternative N, except that a formal AML would be established. Allowing introductions of wild burros into the HMA would enhance the ability to manage viable populations and decrease the gather frequency.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for wild horses and burros.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Impacts would be the same as those described for Alternative A.

Impacts from Travel Management

Impacts under this Alternative would be similar to those described in Alternative A. No areas within the Canyonlands HMA would be open to cross-country OHV use; more than 50% of the HMA would be closed to OHV use, eliminating OHV-related impacts to the wild and free-roaming nature of the wild burros. OHV use in the remainder of the HMA is limited to designated routes. As in Alternative N and A, the presence of OHV use on 45 miles of routes designated open in the Canyonlands HMA could temporarily displace wild burros from the proximity of use. Given the size of the HMA, the limited number of routes, and the amount of anticipated use, the wild and free-roaming nature would not be eliminated.

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

There are no ACECs proposed in this alternative that would overlap with the Canyonlands HMA, resulting in no impacts to wild horses and burros.

Alternative C

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Wild Horses and Burros

Increasing the appropriate management level to 120-200 wild burros in the Canyonlands HMA would allow wild burros to be the predominant user of the area's resources. This would be a 100% increase compared to Alternative B, which would allow for the population to be maintained well above the level needed for a genetically viable population. Sufficient forage (1,200 AUMs) would be allocated to wild burros to meet the AML. The population of wild burros would be allowed to increase, with water as the main limiting factor in the area.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative resulting in no additional protection for wild horses and burros.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Impacts would be the same as those described for Alternative A.

Impacts from Travel Management

No areas within the Canyonlands HMA would be open to cross-country OHV use; more than 50% of the HMA would be closed to OHV use, eliminating OHV-related impacts to the wild and free-roaming nature of the wild burros. OHV use in the remainder of the HMA would be limited to designated routes. These impacts are the same as Alternative B; however, the presence of OHV use on designated routes would be reduced by 57%. Wild burros could be temporarily displaced by OHV use on only 19 miles of open routes. Given the size of the HMA, the limited number of routes and the amount of anticipated use, the wild and free-roaming nature would not be eliminated.

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

A small portion of the proposed Dirty Devil/North Wash ACEC and almost all of the proposed Horseshoe Canyon ACEC overlaps with the Canyonlands HMA. Management prescriptions for the protection of these ACECs' relevant and important values could impact wild burros. Proposed actions that would reduce surface disturbance (VRM Class II designations, limiting OHV use, oil and gas leasing restrictions) and improve water and riparian resources would benefit the burros. However, fencing of riparian areas to exclude livestock would also exclude burros. Unless water was developed outside of the riparian area prior to fencing, this decision could result in loss of water sources for the burros. Within this desert environment, excluding the burros from water could result in moderate to major impacts depending on the number and location of water sources involved.

Alternative D

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Wild Horses and Burros

Impacts would be the same as those described for Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

The Canyonlands HMA overlaps portions of the Labyrinth Canyon, Horseshoe Canyon South, and Dirty Devil/French Spring non-WSA lands with wilderness characteristics. Because non-WSA lands are closed to oil and gas leasing, closed to OHVs, and generally precluded from surface-disturbing activities, wild burros roaming in these areas would be less apt to encounter human activity. This would reduce stress levels and allow for their free-roaming nature without human intervention and disturbance.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Impacts would be similar to those described for Alternative A. However, under this alternative, the majority of the Dirty Devil SRMA would be closed to OHV use and oil and gas leasing for the protection of WSAs and non-WSA lands with wilderness characteristics. Under Alternative D more acres than would also be managed for primitive to semi-primitive recreation opportunities. This would result in additional acres being protected from surface disturbing activities, resulting in additional benefits to the burros over the other alternatives.

Impacts from Travel Management

Under this alternative the Canyonlands HMA would be closed to OHV use, eliminating all OHV-related impacts to the wild and free-roaming nature of the wild burros.

Impacts from Minerals and Energy

More than 50% of the HMA overlaps portions of the Horseshoe Canyon North, Horseshoe Canyon South, French Springs/Happy Canyon and Dirty Devil WSAs. These areas are managed according to the IMP and are closed to oil and gas leasing, and leasing of non-energy solid minerals and disposal of mineral materials are prohibited. In this alternative, the remainder of the HMA which lies within non-WSA lands with wilderness characteristics would also be closed to oil and gas leasing. There would be no impact to burros from mineral and energy development.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

The impacts under this alternative would be similar to Alternative C. However, additional protection within the ACECs for the protection of non-WSA lands with wilderness characteristics would further reduce the potential for surface disturbance over Alternative C, resulting in increased benefits to wild burros. Fencing of riparian areas to exclude livestock would not be allowed on non-WSA lands within the ACECs, reducing the risk of excluding the burros from water sources. However, if long-term conditions result in these riparian areas failing or functioning at risk, there could still be adverse impacts to the burros from loss of water.

4.3.11 Fire and Fuels Management

This analysis addresses potential impacts on fire and fuels management from implementing the management actions under the alternatives described in Chapter 2. Impacts on resources, resource uses, and designations resulting from implementation of the fire management program are discussed in those particular resource sections in this chapter. This analysis focuses on those management alternatives or actions that affect fire intensity, frequency, and suppression efforts.

Many of the forest, woodland, and rangeland ecosystems in the RFO are not functioning properly due to lack of disturbance such as fire. Decisions proposed in Chapter 2 for managing the various resources and resources uses would impact the BLM's ability to maintain or restore properly functioning vegetation and manage hazardous fuel loads. The alternatives can also impact the ability to manage wildland fire use, wildfires, and prescribed fire programs

Methods and Assumptions

Table 4-9 illustrates the assumptions for each fire management activity by alternative.

Table 4-9. Average Annual Treatment Acreage by Alternative

Fire Management Activity	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternatives C and D
Wildland Fire Use	25,000 acres	5,000 acres	25,000 acres	13,000 acres
Prescribed Fire Treatments	25,000 acres	35,000 acres	25,000 acres	11,000 acres

Fire Management Activity	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternatives C and D
Non-Fire Fuels Treatments	23,600 acres	33,600 acres	23,600 acres	2,000 acres
Total Treatments	73,600 acres	73,600 acres	73,600 acres	26,000 acres
Estimated Wildfire	12,000 acres	4,000 acres	4,000 acres	4,000 acres
Post-Fire Rehabilitation	No annual acreage is listed. ESR would be conducted on any acreage which is determined to have been damaged and in need of rehabilitation.			

This analysis was based on the following assumptions:

- Fire is an important functional, natural disturbance in many of the ecological systems found in the RFO.
- A direct relationship exists between the density of human use within the RFO and the frequency of human-caused fires.
- Fire size and intensity are more likely to increase as fuel loading increases.
- Wildland fire use would be expected to not require rehabilitation. If inadvertent resource damage does occur, rehabilitation will be applied.
- Demand for fuels treatment will continue to increase over the life of the plan.
- All conservation measures pertaining to fire suppression operations would be followed unless firefighter or public safety, or the protection of property, improvements, or natural resources renders them infeasible during a particular operation. All conservation measures pertaining to fuels treatments would be followed when implementing wildland fire use, prescribed fires, and other vegetation treatments.

The analysis of potential impacts to fire and fuels management is based on the expertise of BLM resource specialists at the RFO, the Central Utah interagency fire and fuels management program, information in the Utah Statewide Land Use Plan Amendment for Fire and Fuels Management (BLM 2005e), and scientific literature. Effects are quantified where possible. Best professional judgment was used when quantifiable data were unavailable.

In 2005, a Fire Management Plan (FMP) Environmental Analysis was completed for the Richfield District. The Final FMP amended the existing plans and proposed goals for desired future condition using vegetation treatments including wildfire, prescribed fire, mechanical (including hand-cutting) and chemical treatments. The consequences analysis below discusses the effects of the various plan decisions on fire and fuels management.

Environmental Consequences

Impacts to fire and fuels management would result from actions proposed under the following resource management programs:

- Air Quality
- Vegetation

- Cultural Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on fire and fuels management.

Alternative N: No Action

Impacts from Air Quality

Maintaining State of Utah air quality standards could result in fewer acres burned using prescribed fires or wildland fire use because National Ambient Air Quality Standards (NAAQS) cannot be exceeded. All projects must comply with the Utah Interagency Smoke Management Rule, as enforced which may limit number of acres burned or days available to burn. If the air quality or Class I airsheds were potentially adversely impacted, wildland fire use and prescribed fires could be suspended. Consideration of regional haze could increase the restrictions on wildland fire use or prescribed fire. Potential effects to air quality would be addressed during development of the wildland fire implementation plan for each wildland fire use and in the burn plan for each prescribed fire. Emissions from wildfire are considered acts of nature and are outside the scope of this analysis. Air program management could create minor to moderate impacts to the fire and fuels management program over time.

Impacts from Vegetation

Continuing to manage vegetation as proposed in Alternative N would move vegetation toward a more ecologically sustainable condition over a multiple year period, as disclosed in the 2005 Land Use Plan Amendment. It would also create lower risk of losing key ecosystem components from severe wildfires over time. The need for post-fire stabilization, rehabilitation, and restoration to control soil erosion, the loss of wildlife habitat and other values at risk would decrease. Vegetation management decisions would provide no adverse impacts to fire and fuels management in this alternative.

Impacts from Cultural Resources

Proposed decisions for cultural resources could have some impact on the design of fuels treatment projects that would be determined in site-specific environmental analysis. Projects would be designed with specific mitigations as necessary to inventory and protect cultural resources in the site-specific project analysis, which causes projects to be redesigned and costs to increase.

Cultural resources are often more at risk from impact due to fire suppression activities than from the wildland fire itself. Suppression efforts may be ground disturbing, such as fire line construction (hand and mechanical), the establishment of helicopter bases, safety zones, fire camps, etc., and have the potential to destroy artifacts and the integrity of cultural resource sites. Mitigations for cultural resources could have moderate to major impacts for prescribed fire and mechanical treatments in this alternative.

Impacts from Visual Resources

Because fuels treatments would need to be compatible with VRM classes, the types and scope of fuels treatments would be limited in VRM Classes I and II. Alternative N includes no VRM Class I areas and 529,500 acres (25% of the RFO) in Class II areas. This would have negligible to moderate impacts on fire and fuels management depending on the proposed site.

There may be a direct conflict with VRM Class II areas if the wildland urban interface abuts them. The National Fire Plan directs the agency to reduce hazardous fuels on Federal lands adjacent to or near wildland urban interface areas.

Proposed decisions for visual resource management could have some impact on the design of non-fire fuels treatment projects. Impacts to visual resources would be determined in site-specific environmental analysis. Potential effects to visual resources would be addressed during development of the wildland fire implementation plan for each wildland fire use.

Impacts from Special Status Species

Proposed decisions for special status species could impact the design of vegetation treatment projects that would be determined in site-specific environmental analysis. Potential effects to special status species would be addressed during development of the wildland fire implementation plan for each wildland fire use.

Measures to mitigate fire management actions in special status species habitats could increase suppression costs, limit suppression equipment choices and tactics, require additional effort from firefighters, and limit options for treating hazardous fuels in some areas. Reintroductions of special status species could increase the areas where these measures would be required. Impacts of the measures and reintroductions could range from negligible to minor, depending on the area and frequency and intensity of fires. Implementing species-specific restrictions could impact fire suppression activities and fuels treatment implementation.

Limiting available tools could reduce the effectiveness and efficiency of fuels reduction treatments, potentially resulting in impacts that are negligible to moderate, depending on the type of fuels treated, size of the fuels treatment and the threat of wildfire. A full analysis by vegetation type for each species can be found in the 2005 Utah Land Use Plan Amendment for Fire and Fuels Management (BLM 2005e).

Impacts from Fish and Wildlife

Proposed decisions to protect sage grouse leks would have a minor impact on vegetative treatments in the sagebrush-steppe vegetation type. Project design would be mitigated to accommodate sage grouse, increasing design and survey costs. Projects would be designed to limit introduction of invasive understory species

Building new artificial water sources would provide water for fire suppression activities. Effects would be localized and depend on whether fires occur near the water developments. Impacts range from negligible to minor.

Pronghorn passable fences would reduce some seasonal fuel loads by minimizing tumbleweeds piled along fences. Impacts would be negligible to minor, as this has not been a significant problem in the past.

Impacts from Fire and Fuels Management

Projected annual acreage of fire management activity is shown in Table 4-9. Continuing wildland fire management as proposed in this alternative would (if funded) allow fire to begin to be reintroduced to

fire-adapted ecosystems, reduce hazardous fuels to meet vegetative desired future conditions, suppress wildfires appropriately and support a full emergency site rehabilitation program for ecosystem rehabilitation.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to fire and fuels management.

Impacts from Forestry and Woodland Products

Management actions implemented to support the objectives of the Healthy Forest Restoration Act of 2003 would complement the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels. This assumes activity-created fuels would be treated. Fire and fuels management activities often complement or work in conjunction with forestry and woodland programs to move toward vegetative DFCs, especially in fire-adapted vegetative communities. Much of the current pinyon and juniper cover is more dense than the DFCs. Fires and fuels reduction activities usually reduce density and create cover type conversions to the more desirable sagebrush-grass vegetative communities.

Impacts from Livestock Grazing

Livestock grazing could reduce fine fuel loads and therefore the size and severity of wildland fires; this includes both prescribed fire and wildland fire use. During the planning phases of prescribed fire, non-use or reduced use could be requested to mitigate the lack of fine fuels in necessary areas. This does not address fine fuel usage by wildlife. Impacts would depend on the timing, season and location of the fire.

Impacts from Recreation

Proposed decisions regarding recreation management would have minor to moderate impacts on the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels. Recreational use, such as hunting seasons and off-highway vehicle special events, could limit the timing of prescribed and wildland fire use.

Increased participation in recreation activities and larger areas impacted by recreation would increase the potential for human-ignited fires. More and improved facilities and trailheads could cause an increased suppression workload. This would have a minor to moderate impact on fire and fuels management.

Impacts from Travel Management

The potential for human-ignited wildfires increases with increased human use in the RFO. Areas accessible to motorized vehicles would likely be the most susceptible to human-ignited wildfires, but increased ignitions and acreage burned because of increased access would be difficult to quantify. Maintaining or upgrading designated routes could make these areas more accessible to fire suppression vehicles, but would lead to increased public use. Increased mileage of roads and trails results in less continuous fuels, so fires cannot spread as rapidly as in areas where fuels are more continuous, making it more difficult to restore fire to its historical role in fire-adapted vegetation.

Under Alternative N, 1,636,400 acres (77%) of the RFO would be open to motorized and mechanized vehicles, allowing the potential for human-ignited wildfires over a large portion of the RFO and continued increase of user developed trails. Motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO; and 214,000 acres (10%) of the RFO would be closed to motorized and mechanized vehicle use. Under this alternative, 4,315 miles of unpaved routes in the RFO would be open to motorized use, which is the most of all the alternatives.

Impacts from Minerals and Energy

Development of oil and gas resources could create new facilities that would need to be protected from wild fire and limit the ability to maintain or restore properly functioning vegetation through prescribed fire and wildland fire use and reduce hazardous fuels. Impacts would range from negligible to major, depending on the actual location of the facilities and the type of vegetation on site.

Impacts from Special Designations

Wilderness Study Areas

Managing WSAs under the IMP precludes the use of mechanical (chaining, harrowing) and manual (chainsaw) fuels reduction treatments. This could limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels in some areas, such as parts of the Henry Mountains. Prescribed fire and wildland fire use would still be available for treatments in appropriate areas. Fire may be utilized to move toward DFCs.

If a fire must be suppressed, then the most effective methods of suppression that are least damaging to wilderness values, other resources and the environment, while requiring the least expenditure of public funds including rehabilitation of the area would be utilized. Impacts would depend on the location and vegetation type in the WSA.

Wild and Scenic Rivers

Under this alternative, all eligible river segments (12 segments – 135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification. Proposed treatments in these river corridors would only be allowed if it was determined that they would not result in impacts to the future suitability or classification of the river segment. This management could have some impact on the design of fuels treatment projects and could limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels in these areas.

Areas of Critical Environmental Concern

Alternative N continues the designation of four ACECs (14,780 acres). Vegetation was specifically identified as a relevant and important value in the Beaver Wash, North Caineville Mesa, and South Caineville Mesa ACECs. Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; unavailable for livestock grazing in three of the four ACECs; and acquisition of inholdings) would reduce surface disturbing activities within those areas and protect vegetation resources. However, opportunities for vegetation treatments could be limited, which could inhibit or prevent attainment of ecological objectives and DFCs in these areas. Beaver Wash and South Caineville Mesa ACECs are within WSAs and management prescriptions are directed by the IMP. This would create minor impacts to the fire and fuels management program.

Alternative A

Impacts from Air Quality

Impacts would be similar to those described for Alternative N, due to compliance with State laws. Air quality program management could create minor to moderate impacts to the fire and fuels management program over time.

Impacts from Vegetation

The types of impacts experienced as a result of vegetation management would be similar to those described under Alternative N, although under Alternative A maximum treatment acreage limits would be set (averaging 73,600 annually for all treatment methods), which would complement the ability to

maintain or restore properly functioning vegetation and reduce hazardous fuels. However, differences between the two alternatives would be negligible to minor since vegetation and fire and fuels goals and objectives are similar.

Impacts from Cultural Resources

Impacts would be the same as described under Alternative N.

Impacts from Visual Resources

Impacts would be the same as described under Alternative N.

Impacts from Special Status Species

Impacts would be the same as described under Alternative N.

Impacts from Fish and Wildlife

Impacts would be the same as described under Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced as a result of fire and fuels management would be similar to those described under Alternative N. Projected annual acreage of fire management activity for this alternative is shown in Table 4-9. Proposed decisions for wildland fire management would increase the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels. This alternative would allow the use of a full range of vegetation management tools including mechanical, biological, manual, prescribed and wildland fire use, and chemical (herbicides). However, differences between the two alternatives would be negligible to minor since vegetation and fire and fuels goals and objectives are similar.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to fire and fuels management.

Impacts from Forestry and Woodland Products

Impacts would be the same as described for Alternative N.

Impacts from Livestock Grazing

Impacts would be the same as described for Alternative N.

Impacts from Recreation

This alternative proposes more recreational use and better access which usually creates more human-ignited wildfires. The most new facilities are proposed in this alternative, which would need to be protected from wildfire. This could increase the fire suppression workload.

Increased access, either by trail or road, breaks up the fuel continuity, making it more difficult to restore fire to its historical role in fire-adapted ecosystems. This could have a minor to moderate impact, depending on trail/road density and location.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, this alternative designates 449,000 acres (21%) of the RFO as open to motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,679,000

acres (79%) of the RFO; and 0 acres would be closed to motorized and mechanized vehicle use. The amount of open areas, although greatly reduced as compared to Alternative N, would still result in the potential for human-ignited wildfires over a large portion of the RFO.

The remainder of the RFO would have motorized/mechanized use limited to designated routes, which would limit the potential for human-ignited wildfires in the majority of the RFO. Fuels are more discontinuous with increased mileage of roads and trails in fire-adapted vegetation. The public would have access to 4,312 miles of unpaved routes (slightly less than Alternative N).

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Under this alternative, no eligible river segments would be recommended as suitable. Opportunities for fuels treatments would not be restricted by Wild and Scenic River management, which could assist in attaining ecological objectives and reduction of hazardous fuels in the river corridors. This alternative would allow the greatest flexibility for fuels treatments within the eligible river corridors.

Areas of Critical Environmental Concern

No ACECs would be designated under this alternative. This would result in no impact on the fire and fuels management program.

Alternative B: Preferred Alternative

Impacts from Air Quality

Impacts would be the same as those described for Alternative A.

Impacts from Vegetation

Impacts would be the same as those described for Alternative N.

Impacts from Cultural Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

Because fuels treatments would need to be compatible with VRM classes, the types and scope of fuels treatments would be limited in VRM Classes I and II. Alternative B would designate 446,900 acres as VRM Class I and 209,000 acres as Class II. These designations could have some impact on the design of non-fire fuels treatment projects, particularly in VRM Class II areas in the Henry Mountains and near the towns of Torrey, Grover, and Teasdale. This would make it more difficult to manage fire and fuels to achieve their goals in these areas. Potential effects to visual resources would be addressed during development of the wildland fire implementation plan for each wildland fire use.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Proposed decisions to protect sage grouse leks would have a minor impact on vegetation treatments in the sagebrush-steppe vegetation type. Some of the goals of this alternative are to restore historic habitats and native plant species and to enhance, maintain, and protect ecological resources. Short-term adverse impacts would be offset by long-term effects of rehabilitation activities (built into this alternative for soil disturbing activities), protection of ecological resources (from effective fire suppression), and reduction of fuels (following prescribed fire, non-fire fuel treatment or implementation of wildland fire use). The subsequent, gradual return to a more natural fire regime would result in long-term beneficial effects.

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative N as this alternative most closely resembles the previously amended plans in fire and fuels management. The combination of all types of fire and fuels treatments, if funded appropriately in the future, could lead to increased vegetation function and reduction of hazardous fuel loads to a maintenance level.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to fire and fuels management.

Impacts from Forestry and Woodland Products

Impacts would be the same as those described for Alternative N.

Impacts from Livestock Grazing

Impacts would be the same as described for Alternative N.

Impacts from Recreation

This alternative proposes to manage for a blend of motorized and non-motorized recreation opportunities. Less motorized access would limit the number of human-caused fires, possibly lessening the need for suppression actions. Fewer facilities (as compared to Alternative A) would also create less suppression needs.

Access to complete fuels treatments could be limited by the establishment of SRMAs which emphasize primitive recreation. Currently about half of the fuels treatment program utilizes mechanical applications. This could make it difficult to treat these areas with something other than fire. This alternative would have moderate to major impacts on the fire and fuels management program.

Impacts from Travel Management

The types of impacts from travel management would be similar to those described for Alternative A. However, this alternative designates only 8,400 acres (<1% of the RFO) as open to motorized and mechanized vehicles, which would limit the potential for human-ignited wildfires. This alternative would close 210,400 acres (10% of the RFO) to motorized use, which would eliminate the potential for human-ignited wildfires in those areas. The remainder of the RFO (1,909,200 acres) would have motorized/mechanized use limited to designated routes; the public would have access to 4,176 miles of unpaved routes (slightly less than Alternative N).

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Two suitable segments (59 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. Proposed treatments in these river corridors would only be allowed if it was determined that they would not result in impacts to the suitability or tentative classification of the river segment. This management could have some impact on the design of fuels treatment projects and could limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels in these areas. This alternative would allow flexibility for fuels treatments on fewer miles of eligible river segments than Alternative A, but flexibility on more miles than Alternatives N, C and D.

Areas of Critical Environmental Concern

Proposed management direction for ACECs would have no impact on managing vegetation and reducing hazardous fuels. Management of the Old Woman Front ACEC would provide for fire and fuels management activities. Proposed management would have negligible impact on the fire and fuels management program.

Alternative C

Impacts from Air Quality

Impacts would be similar to those described for Alternative A. Although possibly fewer acres would be treated (both annually and over the life of this RMP), if the air quality or Class I airsheds were potentially adversely impacted, wildland fire use and prescribed fires could be suspended. Air quality program management could create minor to moderate impacts to the fire and fuels management program over time.

Impacts from Vegetation

The types of impacts experienced as a result of vegetation management would be similar to those described under Alternative A, although under Alternative C fewer acres would be treated annually (averaging 26,000 annually for all treatments). In addition, this alternative proposes using only natural processes to manage vegetation, which could be less effective than conventional vegetation treatments and would not be effective in all vegetation communities. This would limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels in some areas. Vegetation management decisions would have moderate to major impacts to fire and fuels management, as acreage treated would be limited.

Impacts from Cultural Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

Impacts would be the same as those described for Alternative B.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Proposed decisions to protect sage grouse leks would have a minor impact on vegetative treatments in the sagebrush-steppe vegetation type as projects would be designed to reduce impacts. Limitations would be greater under this alternative than under Alternatives N, A, or B due to the larger area of no surface disturbance around leks.

Impacts from Fire and Fuels Management

Projected annual acreage of fire management activity is shown in Table 4-9. The types of impacts experienced as a result of fire and fuels management would be similar to those described under Alternative A, although under Alternative C less acres would be treated annually (averaging 26,000 annually for all treatments). In addition, this alternative proposes using only natural processes to manage vegetation, which could be less effective than conventional vegetation treatments and would not be effective in all vegetation communities. This would limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels in some areas as compared to Alternative A, which could create greater threats to life, property, and other resources by allowing larger and more severe wildfires.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to fire and fuels management.

Impacts from Forestry and Woodland Products

Commercial timber harvest would not be allowed under Alternative C, which could result in increased fuel loading. The impact of this would be minor to moderate, as the quantity of forest and woodland products harvested commercially are relatively small in the RFO.

Impacts from Livestock Grazing

Impacts would be the same as described for Alternative N.

Impacts from Recreation

This alternative proposes to manage for primarily primitive and semi-primitive recreation opportunities. Less motorized access would limit the number of human-caused fires, possibly lessening the need for suppression actions. Fewer facilities would also create less suppression needs.

Access to complete fuels treatments could be limited by the establishment of SRMAs. Currently about half of the fuels treatment program utilizes mechanical applications. This could make it difficult to treat areas with something other than fire. This alternative would have moderate to major impacts on the fire and fuels management program.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative B. However, this alternative designates no areas as open to motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,445,000 acres (68%) of the RFO; and 683,000 acres (32%) would be closed to motorized and mechanized vehicle use. The lack of open areas would minimize the potential for human-ignited wildfires, reducing the fire suppression workload. It would also reduce the ability to treat vegetation with non-fire treatment methods. This would have minor to moderate impacts as fire is not always the proper tool to initially treat vegetation.

Impacts from Minerals and Energy

Impacts would be similar to those described for Alternative N but reduced in scope because less area would be available for surface disturbing activities under this alternative.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as discussed under Alternative N. All twelve suitable river segments (135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. Proposed treatments in these river corridors would only be allowed if it was determined that they would not result in impacts to the suitability or tentative classification of the river segment. This management could have some impact on the design of fuels treatment projects and could limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels in these areas.

Areas of Critical Environmental Concern

Some proposed wildlife decisions for managing ACECs could limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels using mechanical means. Proposed management direction outside WSAs for suppressing wildfires in the Fremont Gorge/Cockscomb, Henry Mountains, Kingston Canyon, Parker Mountain, Rainbow Hills, and Sevier Canyon ACECs could limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels. Fire would be limited from playing a natural role due to the wildlife limitations in crucial deer habitat which could be a moderate to major impact. Proposed management direction for other ACECs would have minor to moderate impact on managing vegetation and reducing hazardous fuels.

Alternative D

Impacts from Air Quality

Impacts would be the same as those described for Alternative C.

Impacts from Vegetation

Impacts would be the same as those described for Alternative C.

Impacts from Cultural Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

Because fuels treatments would need to be compatible with VRM classes, fuels treatments would be limited in VRM Classes I and II (in which the existing character of the landscape must be preserved or retained). Alternative D would be the most restrictive to fire and fuels management as it has the most VRM Class I and II acres (1,196,300 acres combined, or 56% of the RFO).

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the same as those described for Alternative C.

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Protecting the non-WSA lands with wilderness characteristics in Alternative D would preclude the use of mechanical (chaining, harrowing) and manual (chainsaw) fuels reduction treatments on these lands. This could limit the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels in some areas, such as parts of the Henry Mountains.

Impacts from Forestry and Woodland Products

Commercial timber harvest would not be allowed under Alternative D, which could result in increased fuel loading. The impact of this would be minor to moderate, as the quantity of forest and woodland products harvested commercially are relatively small in the RFO.

Impacts from Livestock Grazing

Impacts would be the same as described for Alternative N.

Impacts from Recreation

Impacts would be similar to those described for Alternative C, except there would be even less access. This would have moderate to major impacts to the fire and fuels management program.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. However, this alternative designates 972,800 acres (46% of the RFO) as limited to designated routes and 1,155,200 acres (54%) as closed to motorized and mechanized vehicle use. Lack of access would limit the number of human-ignited wildfires, reducing the fire suppression workload, but it would also reduce the ability to treat vegetation with treatment methods other than those that mimic natural processes (fire and biological). This would have moderate to major impacts since fire is not always the proper tool to initially treat vegetation.

Impacts from Minerals and Energy

Impacts would be similar to those described for Alternative N but reduced in scope. The least area would be available for surface disturbing activities under this alternative.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described for Alternative C.

4.3.12 Non-WSA Lands with Wilderness Characteristics

Non-WSA lands with wilderness characteristics consist of areas of 5,000 acres or more, with landscapes generally in a natural or undisturbed condition. These areas also provide outstanding opportunities for

solitude or primitive forms of recreation (non-motorized and non-mechanized activities in undeveloped settings). Generally, actions that create surface disturbance impact the natural character of these areas, and the setting for experiences of solitude and primitive recreational activities. Motorized uses in these areas detract from opportunities for both solitude and primitive forms of recreation.

Lands with wilderness characteristics outside of existing wilderness study areas in the RFO are identified in Chapter 3 and shown on Map 3-9, and include 29 areas within the RFO totaling 682,600 acres or 32% of the RFO lands. These areas are concentrated on the east side of the RFO, with large blocks in the Henry Mountains and Dirty Devil regions and smaller areas immediately west of Capitol Reef National Park, in southeastern Sevier County, and in southern Piute County. (See Chapter 3, Section 3.3.12, Non-WSA Lands with Wilderness Characteristics and Map 3-9). Management decisions under Alternatives N, A, B and C would, to varying degrees, impact the wilderness characteristics of these lands. Proposed decisions under Alternative D would best protect the naturalness and outstanding opportunities for solitude and primitive recreation within these areas. An additive comparison from key proposed decisions under each alternative in Chapter 2 for acres of OHV area designations, miles of designated routes, acres of fluid mineral stipulation areas, acres of visual resource management class designations, and acres of proposed withdrawals that are within non-WSA lands with wilderness characteristics is shown in Table 4-10.

Table 4-10. Comparison of Key Decisions within Non-WSA Lands with Wilderness Characteristics

Resource /Resource Use		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
OHV Area Designations	Open	656,400 ac 96%	221,600 ac 32%	1,100 ac <1%	0 ac 0%	0 ac 0%
	Limited	5,000 ac 1%	461,000 ac 68%	646,900 ac 95%	472,700 ac 69%	0 ac 0%
	Closed	21,200 ac 3%	0 ac	34,600 ac 5%	209,900 ac 31%	682,600 ac 100%
OHV Route Designations	Miles of Designated Routes	51.2	360.7	429.2	99.7	0
Fluid Minerals	Standard	577,600 ac 85%	329,300 ac 48%	239,600 ac 35%	201,700 ac 30%	0 ac 0%
	CSU/Timing	90,000 ac 13%	353,300 ac 52%	350,900 ac 51%	267,200 ac 39%	0 ac 0%
	NSO	6,000 ac 1%	0 ac	86,800 ac 13%	105,600 ac 15%	0 ac 0%
	Closed to Leasing	9,000 ac 1%	0 ac	5,300 ac 1%	108,100 ac 16%	682,600 ac 100%
Visual Resources	VRM Class I	0 ac 0%	0 ac 0%	0 ac 0%	0 ac 0%	682,600 ac 100%
	VRM Class II	161,300 ac 24%	0 ac 0%	148,300 ac 22%	163,900 ac 24%	0 ac 0%
	VRM Class III	144,900 ac 21%	213,300 ac 31%	135,200 ac 20%	153,000 ac 22%	0 ac 0%
	VRM Class IV	376,400 ac 55%	469,300 ac 69%	399,100 ac 58%	365,700 ac 54%	0 ac 0%

Resource /Resource Use	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Proposed Withdrawals	0 ac 0%	0 ac 0%	11,200 ac 2%	110,900 ac 16%	682,600 ac 100%

Methods and Assumptions

The following assumption regarding the future management of non-WSA lands with wilderness characteristics is made:

- For Alternative D, any new surface disturbing activities proposed would be subject to NEPA analysis. Activities proposed that would not initially meet wilderness characteristic objectives for the area would be mitigated to the extent needed to meet the objectives.

Environmental Consequences

Impacts to non-WSA lands with wilderness characteristics would likely result from actions proposed under the following resource management programs:

- Soil Resources and Water Resources
- Vegetation
- Cultural Resources
- Paleontological Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Wild Horses and Burros
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on non-WSA lands with wilderness characteristics.

Alternative N: No Action

Impacts from Soil Resources and Water Resources

No surface disturbance or occupancy would be permitted within the 100-year flood plain (or 500 feet of the bank full line) of perennial streams or perennial reaches of streams (with some exceptions). This protection would prevent soil and vegetation disturbances and placement of structures that would degrade the naturalness of non-WSA lands with wilderness characteristics. Protection of naturalness would

preserve the setting needed to support opportunities for primitive forms of recreation and experiences of solitude.

Under this alternative, no surface disturbance or occupancy would be permitted within 500 feet of natural springs to protect water quality. Prohibiting soil and vegetation disturbance or placement of structures around natural springs in non-WSA lands with wilderness characteristics would maintain or enhance the naturalness of small portions (on approximately 18 acres around each spring) of the non-WSA lands. Protection of the water sources would maintain and enhance the wildlife populations that depend on the water, providing continued opportunities for primitive recreation – wildlife viewing or hunting.

Impacts from Vegetation

Inventory of riparian areas not functioning or functioning at risk would result in the identification and implementation of measures to restore these areas to proper functioning condition, which would enhance the natural condition of the riparian portions of non-WSA lands with wilderness characteristics. Riparian zones are critical to the life cycles of many wildlife species (fish, amphibians, mammals, and birds). They are typically scenic and desired recreation settings. Maintenance and restoration of riparian zones, and retention of these zones in public ownership, would maintain and enhance opportunities for primitive recreation, including hiking, wildlife viewing, camping, nature study, fishing, and other activities dependent upon water courses and riparian ecosystems. Coordination of these efforts with neighboring Federal, State, Tribal, and local governments, and private conservation groups, would expand the benefits cited above to a larger scale and broader reach.

Existing vegetation treatments would be maintained to provide suitable habitat for wildlife and adequate forage for livestock. In the long-term, maintenance of vegetation treatment areas with fire would maintain or enhance wildlife habitat and populations of species dependent on that habitat (deer, elk, bison, sage grouse, Utah prairie dog, song birds). If these treatments occurred in non-WSA lands with wilderness characteristics, healthy wildlife populations would enhance opportunities for primitive recreation – wildlife viewing and hunting. In the short-term, however, burning operations would result in disturbance of the landform and vegetation through fire line construction needed to manage the fire. Furthermore, the presence and noise of people, vehicles, equipment, and aircraft would eliminate opportunities for solitude and primitive and unconfined recreation in proximity to the fire. The impacts on opportunities for solitude and primitive recreation would be temporary, lasting for the duration of the burning operation and reclamation. When the fire and reclamation operations were complete, these opportunities would return. Soil and vegetation disturbance for fire line construction would diminish the natural character of the non-WSA lands, but reclamation would restore the natural conditions in a relatively short period of time.

The use of aircraft for aerial reseeding of vegetation treatment areas, or the use of rangeland drills, would result in the presence and noise of people, vehicles, equipment, and aircraft that would diminish opportunities for solitude and conflict with primitive recreational activities. When reseeding was complete, however, these disruptions of opportunities for solitude and primitive recreation would end, and the opportunities would return.

Under this alternative, vegetation would be manipulated with the full range of treatment tools (including fire, mechanical, chemical, or biological) to achieve and maintain Fundamentals of Rangeland Health and desired vegetation condition. In the long-term, vegetation treatments with fire would restore vegetation communities and a more natural composition of grasses, forbs, shrubs, and/or trees. If these treatments occurred in non-WSA lands with wilderness characteristics, this objective would enhance the natural character of the non-WSA lands. In the short-term, however, a burning operation would result in disturbance of the landform and vegetation through fire line construction needed to manage the fire. Further the presence and noise of people, vehicles, equipment, and aircraft would eliminate opportunities

for solitude and primitive and unconfined recreation in proximity to the fire. The impacts on opportunities for solitude and primitive recreation would be temporary, lasting for the duration of the prescribed burning operation and reclamation. When the fire and reclamation operations were complete, these opportunities would return. Soil and vegetation disturbance for fire line construction would diminish the natural character of the non-WSA lands by introducing an apparent human-made element to the landscape. Reclamation, however, would restore the natural conditions in a relatively short period of time.

Mechanical vegetation manipulation in non-WSA lands with wilderness characteristics would have long-term impacts on the natural character of the non-WSA lands and opportunities for solitude and primitive and unconfined recreation. While restoration of vegetation communities would be beneficial to the natural character of non-WSA lands with wilderness characteristics, the use of chainsaws, bulldozers, brush hogs, etc. to accomplish the objective would leave an obvious imprint of human activity on the land; diminishing the natural character of the non-WSA area(s). Also, in the short-term, the presence and noise of people and equipment would eliminate opportunities for solitude and primitive forms of recreation in proximity to the treatment area. In the long-term, a setting clearly manipulated by humans would reduce the opportunities for experiencing solitude and primitive recreation.

Weed control via mechanical, biological, and chemical methods would have the same effects on naturalness, solitude, and primitive recreation as described for vegetation treatments above. Restoring vegetation communities to a more natural composition of plants would improve the natural character of non-WSA lands with wilderness characteristics. However, mechanical treatments would have similar effects on naturalness as described above. Chemical and biological treatment would appear more natural. The noise and presence of people, vehicles, equipment, and aircraft used during treatment of weeds would temporarily reduce opportunities for solitude and conflict with primitive recreational activities.

Impacts from Cultural Resources

Surface disturbing actions would not be authorized in the Bull Creek Archaeological District (other than archaeological research). This action would protect the natural character of 322 acres of the Mount Ellen non-WSA lands with wilderness characteristics by preventing new disturbance to the land and vegetation that would result from other actions. Since no new actions would be permitted to disturb the surface of the non-WSA lands, there would be no presence or noise of people, vehicle, and equipment needed to implement a future action and thus, no reduction of opportunities for solitude or conflicts with primitive recreational activities.

Mitigation of impacts to cultural resources from activities authorized by the BLM would preserve knowledge of cultural resources and some sites. However, while project stipulations would mitigate impacts to cultural resources, it would not prevent implementation of the activity. Depending on the nature of the activity (surface disturbing, placement of structures, motorized travel, etc.), implementation of the project could still degrade the natural character of non-WSA lands with wilderness characteristics and conflict with opportunities for solitude and primitive recreation if the activity took place in a non-WSA area. Consultation with American Indian Tribes on project mitigation would have the same effects as BLM mitigation of authorized activities on cultural resources, and thus naturalness, solitude, and primitive recreation as described above.

Impacts from Paleontological Resources

Decisions on management of paleontological resources provide for inventory, mitigation of impacts to fossils resulting from BLM-authorized activities, interpretation of and education about fossils, collection of common invertebrate and plant fossils, and protection of significant vertebrate and invertebrate fossils. Like cultural resources, knowing more about the paleontological resources of the area, interpreting the resource in an appropriate fashion, viewing fossil sites in the non-WSA lands with wilderness

characteristics, and protecting significant fossils from collection or damage would add to the enjoyment of these areas for primitive recreational purposes. Protection of fossils adds to the character of the setting that supports these recreational opportunities. However, collection of even common invertebrate fossils, while providing a primitive recreational experience, would remove an element of the natural landscape.

Impacts from Visual Resources

There are four objectives for visual resources management (VRM Classes I – IV) that provide for various levels of landscape protection and change. The objective of Class I is to preserve the characteristic landscape, while the objective of Class IV provides for landscape modifications (see Chapter 3, Section 3.3.7). Land use planning decisions to designate and manage areas by Class I objectives would preserve the characteristic landscape. In non-WSA lands with wilderness characteristics, this objective (Class I) would preserve the natural character of the area. VRM Class II objectives would retain the characteristic landscape, allowing for minor changes to the landform and vegetation. This objective would generally protect the natural condition of the land in non-WSA areas. The objective of VRM Class III is to partially retain the existing character of the landscape, allowing for moderate changes to land and vegetation. This objective is not compatible with preserving the natural character of non-WSA lands. Class IV objectives provide for major modification of the landscape, clearly incompatible with preservation of the natural character of non-WSA lands.

Under Class I and II objectives, preserving the natural character of the non-WSA lands would also preserve the undeveloped setting needed to support opportunities for solitude and primitive forms of recreation. Since Class III and IV VRM objectives would not preserve an undeveloped setting, opportunities for both solitude and primitive recreation would be diminished.

Table 4-11 shows the VRM class designations by non-WSA area, by alternative.

Table 4-11. Visual Resource Management Class Designations by Non-WSA Lands with Wilderness Characteristics Area (Acres)

Non-WSA Area	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Bull Mountain					
Class I	0	0	0	0	3,800
Class II	65	0	65	65	0
Class III	55	0	55	55	0
Class IV	3,680	3,800	3,680	3,680	0
Bullfrog Creek					
Class I	0	0	0	0	33,700
Class II	0	0	0	0	0
Class III	5,700	0	5,700	5,700	0
Class IV	28,000	33,700	28,000	28,000	0
Dirty Devil/French Spring					
Class I	0	0	0	0	133,100
Class II	33,600	0	32,800	33,900	0
Class III	31,100	110,900	31,000	30,900	0
Class IV	68,400	22,200	69,300	68,300	0
Dog Water Creek					
Class I	0	0	0	0	3,500
Class II	3,500	0	3,500	3,500	0
Class III	0	3,500	0	0	0
Class IV	0	0	0	0	0

Non-WSA Area	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Fiddler Butte					
Class I	0	0	0	0	19,700
Class II	10,900	0	11,000	11,000	0
Class III	3,800	6,700	3,800	3,800	0
Class IV	5,000	13,000	4,900	4,900	0
Flat Tops					
Class I	0	0	0	0	23,000
Class II	0	0	0	0	0
Class III	500	0	500	500	0
Class IV	22,5000	23,000	22,500	22,500	0
Fremont Gorge					
Class I	0	0	0	0	16,000
Class II	2,200	0	2,200	3,400	0
Class III	3,400	5,100	3,400	12,600	0
Class IV	10,400	10,900	10,400	0	0
Horseshoe Canyon South					
Class I	0	0	0	0	20,600
Class II	3,600	0	3,600	3,600	0
Class III	16,300	20,600	16,300	16,300	0
Class IV	700	0	700	700	0
Jones Bench					
Class I	0	0	0	0	3,300
Class II	0	0	0	0	0
Class III	0	1,500	0	0	0
Class IV	3,300	1,800	3,300	3,300	0
Kingston Ridge					
Class I	0	0	0	0	10,200
Class II	100	0	100	100	0
Class III	2,700	0	2,700	2,700	0
Class IV	7,400	10,200	7,400	7,400	0
Labyrinth Canyon					
Class I	0	0	0	0	12,300
Class II	0	0	0	0	0
Class III	12,300	12,300	12,300	12,300	0
Class IV	0	0	0	0	0
Limestone Cliffs					
Class I	0	0	0	0	24,800
Class II	0	0	0	0	0
Class III	1,100	24,500	1,100	1,100	0
Class IV	23,700	300	23,700	23,700	0
Little Rockies					
Class I	0	0	0	0	23,200
Class II	13,100	0	13,100	13,500	0
Class III	8,900	0	8,900	8,500	0
Class IV	1,200	23,200	1,200	1,200	0
Long Canyon					
Class I	0	0	0	0	16,600
Class II	0	0	0	0	0
Class III	5,400	0	5,300	5,300	0
Class IV	11,200	16,600	11,300	11,300	0
Mount Ellen /Blue Hills					
Class I	0	0	0	0	49,800
Class II	15,300	0	15,100	15,300	0
Class III	1,800	2,100	200	1,800	0
Class IV	32,700	47,700	34,500	32,700	0

Non-WSA Area	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Mount Hillers					
Class I	0	0	0	0	1,800
Class II	1,200	0	1,200	1,200	0
Class III	300	0	0	300	0
Class IV	300	1,800	600	300	0
Mount Pennell					
Class I	0	0	0	0	65,600
Class II	18,200	0	8,900	18,200	0
Class III	7,700	700	0	7,600	0
Class IV	39,700	64,900	56,700	39,800	0
Muddy Creek/Crack Canyon	0	0	0	0	61,800
Class I	14,500	0	11,600	14,500	0
Class II	11,800	0	11,800	11,800	0
Class III	35,500	61,800	38,400	35,500	0
Class IV					
Mussentuchit Badlands					
Class I	0	0	0	0	700
Class II	0	0	0	0	0
Class III	0	60	0	0	0
Class IV	700	640	700	700	0
Notom Bench					
Class I	0	0	0	0	8,000
Class II	8,000	0	8,000	8,000	0
Class III	0	8,000	0	0	0
Class IV	0	0	0	0	0
Phonolite Hill					
Class I	0	0	0	0	7,900
Class II	1,000	0	1,000	1,000	0
Class III	0	0	0	0	0
Class IV	6,900	7,900	6,900	6,900	0
Pole Canyon/Hunter Spring	0	0	0	0	6,000
Class I	0	0	0	0	0
Class II	0	0	0	0	0
Class III	6,000	6,000	6,000	6,000	0
Class IV					
Ragged Mountain					
Class I	0	0	0	0	25,900
Class II	15,700	0	15,700	15,700	0
Class III	0	15,400	0	0	0
Class IV	10,200	10,500	10,200	10,200	0
Red Desert					
Class I	0	0	0	0	40,700
Class II	1,900	0	1,900	1,900	0
Class III	18,200	0	18,200	18,200	0
Class IV	20,600	40,700	20,600	20,600	0
Rock Canyon					
Class I	0	0	0	0	1,300
Class II	0	0	0	0	0
Class III	0	0	0	0	0
Class IV	1,300	1,300	1,300	1,300	0
Rocky Ford					
Class I	0	0	0	0	6,700
Class II	400	0	400	400	0
Class III	100	0	0	100	0
Class IV	6,200	6,700	6,300	6,200	0

Non-WSA Area	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Sweetwater Reef					
Class I	0	0	0	0	6,200
Class II	0	0	0	0	0
Class III	6,200	0	6,200	6,200	0
Class IV	0	6,200	0	0	0
Wild Horse Mesa					
Class I	0	0	0	0	49,700
Class II	18,000	0	18,000	18,500	0
Class III	7,600	0	7,600	7,200	0
Class IV	24,100	49,700	24,100	24,000	0
Wildcat Knolls					
Class I	0	0	0	0	6,700
Class II	0	0	0	0	0
Class III	0	2,300	0	0	0
Class IV	6,700	4,400	6,700	6,700	0

Under Alternative N, 161,265 acres would be managed by VRM Class I and II objectives in all or parts of 17 non-WSA lands with wilderness characteristics areas, protecting the natural character of those lands. Conversely, 521,335 acres would be managed by Class III and IV objectives. While the focus of these VRM objectives is to provide for activities and uses that would change the landscape, this does not mean every acre would be developed or change. Thus, in those non-WSA lands managed by Class III and IV objectives, the natural character of the affected non-WSA lands could be lost. If the naturalness of these areas is lost, the opportunities for solitude and primitive recreation would be lost, as the setting needed to support these opportunities would be altered.

Impacts from Special Status Species

This alternative (along with all of the other alternatives) includes management actions that focus on maintaining, protecting, and enhancing habitats for special status species. Decisions that could help protect non-WSA lands with wilderness characteristics include prohibiting actions that would destroy, adversely modify, or fragment the habitat of Federally-listed threatened or endangered species, maintaining the integrity of special status species habitats, and generally retaining habitats for Federally-listed and candidate species in Federal ownership. This would help to maintain the natural character of non-WSA lands with wilderness characteristics where they intersect with special status species habitat. Virtually all non-WSA lands with wilderness characteristics have raptors and plants that are special status species.

Conducting habitat improvement treatments for special status species (depending on the method used) could degrade the naturalness of the non-WSA lands. During the time the habitat manipulation is being conducted, the opportunity for solitude and primitive recreation would be disrupted, and the naturalness of the area could be impaired.

Allowing for the introduction, augmentation, translocation, and transplantation of special status species, if done within non-WSA lands with wilderness characteristics, could enhance the wildlife viewing opportunities often associated with primitive recreation experiences.

Impacts from Fish and Wildlife

A variety of actions would be implemented to restore, maintain, and enhance wildlife populations. Improved wildlife populations would augment the natural character of the land in all of the non-WSA lands with wilderness characteristics. Further, larger and healthier wildlife populations would expand opportunities for primitive and unconfined recreation opportunities, including wildlife viewing, and hunting. In addition, strategies to avoid or reduce habitat fragmentation such as collocating facilities,

employing directional drilling, and reducing road densities would be implemented. This would help to maintain the natural character of non-WSA lands with wilderness characteristics where they intersect with wildlife habitat.

Habitat treatments to meet terrestrial, aquatic, and riparian habitat objectives would be accomplished through the use of prescribed fire, chemical, biological, and mechanical methods. The use of fire, biological and chemical treatments would have no apparent evidence of human intervention on the landscape. Thus there would be no noticeable effect on the natural character of the non-WSA lands with wilderness characteristics, if those treatments were necessary in the non-WSA areas that have wilderness characteristics. Restoration of vegetation communities, however, would result in a more natural vegetation community and thus, natural condition of the non-WSA areas. The use of mechanical treatments for vegetation manipulations would leave a noticeable imprint of human work on the landscape, and degrade the natural character of non-WSA lands, if the treatments were to occur on those lands. Depending on the vegetation community treated (grassland and shrub land vs. a woodland or coniferous forest), the length of time the evidence of mechanical treatments remained on the landscape would vary before the surface and vegetation disturbances returned to a more natural or unmodified condition.

Allowing for the introduction, augmentation, translocation, and transplantation of native and/or naturalized fish and wildlife species, if done within non-WSA lands with wilderness characteristics, could enhance the wildlife viewing opportunities often associated with primitive recreation experiences.

The Henry Mountain bison and mule deer range overlays portions of Mount Ellen/Blue Hills, Ragged Mountain, Mount Pennell, Bull Mountain, and Mount Hillers non-WSA lands with wilderness characteristics. No specific management for the Henry Mountain bison and mule deer habitat area is proposed under this alternative; therefore, impacts to those non-WSA lands with wilderness characteristics that overlay the habitat cannot be determined.

Impacts from Wild Horses and Burros

The Canyonlands HMA would be managed to maintain herds for genetic viability. The Canyonlands HMA overlaps portions of the Labyrinth Canyon, Horseshoe Canyon South and Dirty Devil French Spring non-WSA lands with wilderness characteristics. Maintaining this HMA at existing levels would continue to provide opportunities for viewing of wild burros which is often associated with primitive recreation experiences.

Impacts from Fire and Fuels Management

The BLM would attempt to manage fire and fuels, where appropriate, to restore natural systems to their desired future condition, considering the interrelated social and economic components. Restoration of fire to fire-dependent and -adapted ecosystems would restore a more natural vegetation community (in both species and composition), watershed conditions and wildlife populations dependent on those communities. In the short-term, a burned landscape may reduce opportunities for primitive recreation. In the long-term, however, a more natural landscape would benefit the natural character of non-WSA lands with wilderness characteristics and enhance the setting and opportunities for primitive forms of recreation, including hiking, backpacking, hunting, wildlife viewing, and nature study. This would enhance the natural conditions of these areas.

The RFO would base its priorities for all aspects of fire management decisions based on the General Risk Categories (see Appendix 6) to determine where fire is desired and where it is not. Further, following any wildland fire event, ESR actions would be developed and implemented, as appropriate. Fuels treatment and management activities would be consistent with the resource goals and objectives in the RMP and

may include mechanical treatments, manual treatments, prescribed fire, chemical spraying, or biological treatments and seeding.

Setting fire objectives through fire management categories would identify where fire is desired on the land, leading to the same benefits to natural conditions as restoring fire to fire-dependent and adapted ecosystems. When it is necessary to suppress fire in non-WSA lands with wilderness characteristics, development and implementation of the ESR plan would result in restoration of fire suppression related disturbances (e.g., fire line construction), which would also restore the natural character of the non-WSA areas. Fuels treatments in non-WSA lands with wilderness characteristics would aid in restoration of a more natural fire regime in these lands. The use of fire to accomplish this reduction would be compatible with the natural character of these areas. The use of mechanical treatments would leave an apparent imprint of human work on the land that would degrade the natural character of the non-WSA lands with wilderness characteristics.

In the short-term, fire operations (aircraft over-flights, fire line construction, etc.) would degrade the natural landscape and character of the non-WSA lands with wilderness characteristics. The noise and presence of the people, equipment, and operations would also diminish opportunities for solitude and primitive forms of recreation. In the long-term, however, surface disturbance associated with the fire treatment would be restored, with little to no net effect on naturalness. The effects of fire operations on opportunities for solitude and primitive recreation would cease, restoring those opportunities.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative N, there are no specific actions prescribed to directly protect the naturalness and opportunities for solitude or primitive recreation of the non-WSA areas, resulting in no specific benefits to non-WSA lands.

Impacts from Forestry and Woodland Products

Permits for commercial timber harvest would be prohibited east of Capitol Reef National Park, thereby protecting the wilderness characteristics from surface disturbing activities associated with timber harvest within Long Canyon, Bullfrog Creek, Mount Pennell, Dogwater Creek, Notom Bench, Mount Ellen/Blue Hills, Red Desert, Muddy Creek/Crack Canyon, Wild Horse Mesa, Flat Tops, Sweetwater Reef, Labyrinth Canyon, Horseshoe Canyon South, Dirty Devil/French Spring, Fiddler Butte, Little Rockies, Mount Hillers, Ragged Mountain and Bull Mountain non-WSA lands with wilderness characteristics (where timber resources may exist).

Non-WSA lands with wilderness characteristics that would be at risk for commercial timber harvest activities are within the Fremont Gorge, Jones Bench, Limestone Cliffs, Mussentuchit Badlands, Rock Canyon, Wildcat Knolls, Kingston Ridge, Phonolite Hill, Rocky Ford, and Pole Canyon areas, where timber resources may exist. Activities associated with commercial harvest such as heavy equipment or chain saw use, construction of new roads, cutting trees and leaving stumps and debris, and human activity would diminish the wilderness characteristics values of naturalness, solitude, and primitive recreation opportunities within the areas being harvested.

Permits for non-commercial woodland products (primarily firewood cutting) would continue to be sold to the public in all twenty non-WSA areas east of Capitol Reef National Park. These areas would remain open for wood cutting, and where the resources exist, wilderness characteristics may be compromised by surface disturbing activities such as driving cross-country to the trees, cutting the trunks of trees and leaving stumps and debris, and by affecting the solitude and primitive recreation opportunities with the use of chain saws and surface disturbances associated with human activity.

Commercial live plant and seed collection would be allowed in all 29 non-WSA lands with wilderness characteristics areas. If permits are sold within the non-WSA lands, this activity could affect the natural character of these areas from cross-country OHV travel to the specific areas of collection. This would crush vegetation and compact soil, and possibly lead to proliferation of new OHV routes in OHV open areas. In addition, surface disturbance associated with live plant collection could leave unnatural holes in the ground from digging up plant roots. Temporary impacts associated with human activity and potential presence of mechanized equipment would affect solitude and primitive recreation opportunities while the collection crews are in the non-WSA areas.

Impacts from Livestock Grazing

Livestock grazing is guided by objectives set in the *Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration*. Appropriate levels of livestock use are guided by these objectives. Thus, it is not anticipated that livestock grazing would have impacts on non-WSA lands with wilderness characteristics because meeting these objectives would not permit degradation of the lands. When livestock use is properly managed, it does not affect the appearance of naturalness. Grazing assessments completed by RFO staff and any subsequent actions taken to remedy impending issues would enhance the natural character of non-WSA lands with wilderness characteristics. Further, improved natural condition would sustain the setting needed to support opportunities for primitive and unconfined recreation and the experience of solitude that visitors seek.

While there could be some visual evidence of livestock use in the areas (presence of livestock, feces, trampling of soil, fences, and consumption of vegetation), rangeland health and riparian conditions would be maintained through proper management to meet or maintain Rangeland Health Standards and the implementation of Guidelines for Livestock Grazing, and the appearance of natural condition in these areas would continue. For some visitors, the presence of livestock would be an adverse impact on the desired experience (connection with the natural world and experiences of solitude). However, this effect would be seasonal. At other times of the year, livestock would not be present, soils would recover, and vegetation would regrow, reducing the impact on the visitor.

Impacts from Recreation

The decision to limit or control activities where long-term damage is observed or anticipated through designating campsites, providing permits, areas closures and limitations on numbers of users and duration of usage would help protect the naturalness values of wilderness characteristics under all alternatives where such damage is occurring. In addition, encouraging the locations of public land recreational activities near population centers and highway corridors would help maintain the naturalness of the more remote lands with wilderness characteristics.

ERMAs

No specified management for the ERMAs are described under this alternative, therefore wilderness characteristics values could be affected by any number of recreational activities in any of the non-WSA lands with wilderness characteristics.

SRMAs

Under this alternative, there would be no SRMAs established that overlay non-WSA lands with wilderness characteristics, therefore there are no impacts to wilderness characteristics from SRMAs. Recreation activities would continue without focused management provided through establishment of SRMAs. Impacts from cross-county OHV use and other recreational surface disturbing activities would affect naturalness and opportunities for solitude and primitive recreation.

Impacts from Travel Management

Cross-country motorized vehicle travel adversely impacts lands with wilderness characteristics by reducing opportunities for solitude and primitive recreation (caused by the presence and noise of machines) and directly impacting soils and vegetation, which are elements of naturalness. Table 4-12 shows the OHV area designations by alternative within the non-WSA lands with wilderness characteristics.

Table 4-12. OHV Management in Non-WSA Lands with Wilderness Characteristics

OHV Area Designations in Non-WSA Lands with Wilderness Characteristics			Alternative				
Non-WSA Area Name	Acres	OHV Category	N (No Action)	A	B (Preferred)	C	D
Bull Mountain	3,800	Open	3,800	0	0	0	0
		Limited	0	3,800	3,800	3,800	0
		Closed	0	0	0	0	3,800
Bullfrog Creek	33,700	Open	33,700	0	0	0	0
		Limited	0	33,700	33,700	33,700	0
		Closed	0	0	0	0	33,700
Dirty Devil/French Spring	133,100	Open	122,200	13,100	0	0	0
		Limited	0	120,000	105,600	73,100	0
		Closed	10,900	0	27,500	60,000	133,100
Dogwater Creek	3,500	Open	3,500	0	0	0	0
		Limited	0	3,500	3,500	3,500	0
		Closed	0	0	0	0	3,500
Fiddler Butte	19,700	Open	19,700	200	0	0	0
		Limited	0	19,500	19,700	7,700	0
		Closed	0	0	0	12,000	19,700
Flat Tops	23,000	Open	23,000	200	0	0	0
		Limited	0	22,800	23,000	23,000	0
		Closed	0	0	0	0	23,000
Fremont Gorge	16,000	Open	14,200	10,900	0	0	0
		Limited	0	5,100	14,500	9,300	0
		Closed	1,800	0	1,500	6,700	16,000
Horseshoe Canyon South	20,600	Open	20,600	0	0	0	0
		Limited	0	20,600	20,500	17,700	0
		Closed	0	0	100	2,900	20,600
Jones Bench	3,300	Open	3,300	0	0	0	0
		Limited	0	3,300	3,300	3,300	0
		Closed	0	0	0	0	3,300
Kingston Ridge	10,200	Open	10,200	2,900	0	0	0
		Limited	0	7,300	10,200	10,200	0
		Closed	0	0	0	0	10,200
Labyrinth	12,300	Open	12,300	0	0	0	0
		Limited	0	12,300	12,300	12,300	0
		Closed	0	0	0	0	12,300
Limestone Cliffs	24,800	Open	24,800	0	0	0	0
		Limited	0	24,800	24,800	24,400	0

OHV Area Designations in Non-WSA Lands with Wilderness Characteristics			Alternative				
Non-WSA Area Name	Acres	OHV Category	N (No Action)	A	B (Preferred)	C	D
		Closed	0	0	0	400	24,800
Little Rockies	23,200	Open	19,500	200	0	0	0
		Limited	3,700	23,000	23,200	19,600	0
		Closed	0	0	0	3,600	23,200
Long Canyon	16,600	Open	16,600		0	0	0
		Limited	0	16,600	16,600	16,600	0
		Closed	0	0	0	0	16,600
Mount Ellen/Blue Hills	49,800	Open	45,000	21,400	0	0	0
		Limited	800	28,400	49,400	41,600	0
		Closed	4,000	0	400	8,200	49,800
Mount Hillers	1,800	Open	1,800	0	0	0	0
		Limited	0	1,800	1,800	1,800	0
		Closed	0	0	0	0	1,800
Mount Pennell	65,600	Open	64,600	0	0	0	0
		Limited	0	65,600	65,600	20,300	0
		Closed	1,000	0	0	45,300	65,600
Muddy Creek/Crack Canyon	61,800	Open	58,000	61,800	1,000	0	0
		Limited	0	0	56,100	41,600	0
		Closed	3,800	0	4,700	20,200	61,800
Mussentuchit Badlands	700	Open	700	0	0	0	0
		Limited	0	700	700	700	0
		Closed	0	0	0	0	700
Notom Bench	8,000	Open	8,000	0	0	0	0
		Limited	0	8,000	8,000	8,000	0
		Closed	0	0	0	0	8,000
Phonolite Hill	7,900	Open	7,900	7,700	0	0	0
		Limited	0	200	7,900	7,900	0
		Closed	0	0	0	0	7,900
Pole Canyon/Hunter Spring	6,000	Open	5,500	4,400	0	0	0
		Limited	500	1,600	6,000	6,000	0
		Closed	0	0	0	0	6,000
Ragged Mountain	25,900	Open	25,900	0	0	0	0
		Limited	0	25,900	25,900	500	0
		Closed	0	0	0	25,400	25,900
Red Desert	40,700	Open	40,700	40,700	0	0	0
		Limited	0	0	40,700	40,700	0
		Closed	0	0	0	0	40,700
Rock Canyon	1,300	Open	1,300	0	0	0	0
		Limited	0	1,300	1,300	1,300	0
		Closed	0	0	0	0	1,300
Rocky Ford	6,700	Open	6,700	6,700	0	0	0
		Limited	0	0	6,700	6,700	0
		Closed	0	0	0	0	6,700
Sweetwater Reef	6,200	Open	6,200	1,900	0	0	0

OHV Area Designations in Non-WSA Lands with Wilderness Characteristics			Alternative				
Non-WSA Area Name	Acres	OHV Category	N (No Action)	A	B (Preferred)	C	D
		Limited	0	4,300	6,200	6,200	0
		Closed	0	0	0	0	6,200
Wild Horse Mesa	49,700	Open	49,700	49,700	0	0	0
		Limited	0	0	49,700	25,200	0
		Closed	0	0	0	24,500	49,700
Wildcat Knolls	6,700	Open	6,700	0	0	0	0
		Limited	0	6,700	6,700	6,400	0
		Closed	0	0	0	300	6,700

Under Alternative N, 1,637,000 acres of the RFO are open to cross-country travel meaning no restrictions are placed on cross-country motorized use for game retrieval, use off of designated routes for the purposes of parking/staging, or motorized access to campsites. The RFO also has the discretion to authorize cross-country travel for any commercial or organized group events. These actions would continue to degrade the natural character of the non-WSA lands with wilderness characteristics by allowing new surface disturbing activity from motorized vehicles, as well as conflict with solitude and primitive recreation experiences from the sights and sounds of vehicle travel.

Current management designates 656,100 acres (96%) of the 29 non-WSA lands with wilderness characteristic areas as open to cross-country travel. Cross-country motorized travel in these non-WSA lands would result in surface disturbance to soils and vegetation that would alter the landscape and diminish the natural character of these non-WSA lands. Further, the presence and noise of motorized vehicles would degrade a visitor's opportunity for solitude and conflict with opportunities for primitive and unconfined recreation activities.

Under this alternative, OHV use is limited to designated routes in 5,000 acres (1%) within three of the 29 non-WSA lands with wilderness characteristics. In these areas, 51.2 miles of routes would be designated as shown in Table 4-13:

Table 4-13. OHV Route Designations in Non-WSA Lands with Wilderness Characteristics, Alternative N

Non-WSA Area Name	Miles of Routes
Little Rockies	7.8 miles
Mount Ellen/Blue Hills	30.4 miles
Pole Canyon/Hunter Spring	13 miles

Limiting OHV use would confine soil and vegetation disturbance caused by motor vehicles to existing routes, and result in no additional change to the natural character of the non-WSA lands. The presence and noise of vehicles using these routes, however, would reduce the opportunity of visitors to find solitude in the non-WSA areas, especially in proximity to the routes. Motorized uses would conflict with primitive and unconfined recreation opportunities sought in the non-WSA areas.

Currently, 21,500 acres (3%) within five of the 29 non-WSA lands with wilderness characteristics areas are closed to OHV use. These areas are shown in Table 4-14:

Table 4-14. Acres Closed to OHVs in Non-WSA Lands with Wilderness Characteristics, Alternative N

Non-WSA Area Name	Closed Acres
Dirty Devil/French Spring	10,900 acres
Fremont Gorge	1,800 acres
Mount Ellen/Blue Hills	4,000 acres
Mount Pennell	1,000 acres
Muddy Creek/Crack Canyon	3,800 acres

Because these areas are closed, no routes would be designated and surface disturbance caused by motorized travel and the resultant impacts to the natural character of the non-WSA areas would not occur. Furthermore, the opportunities for conflict between primitive forms of recreation and motorized uses in these areas would not occur. The natural character and opportunities for solitude and primitive recreation of these non-WSA areas would be unaffected by OHV travel.

OHV open areas near communities would be considered and encouraged for leasing under authority of the Recreation and Public Purposes Act (R&PP) to allow local management of OHV play areas. Generally these would include previously disturbed areas and would be considered on a case-by-case basis. If an R&PP open area was leased and overlapped non-WSA areas, the action would continue to degrade the natural character of the non-WSA lands with wilderness characteristics by allowing the surface disturbing activity from motorized vehicles to continue, as well as conflict with solitude and primitive recreation experiences from the sights and sounds of vehicle travel.

Impacts from Lands and Realty

Land Tenure Adjustments

Land tenure adjustments (except for FLPMA Section 203 land sales) would be considered if they meet the specific criteria outlined in Chapter 2. Non-WSA lands with wilderness characteristics could be disposed of if there is public demand for any of these lands and if they meet the land disposal criteria. If disposed of, the lands would be outside of BLM's management control and protection of wilderness characteristics could be foregone.

This alternative identifies no lands as available for FLPMA land sales within non-WSA lands with wilderness characteristics, resulting in no impacts to non-WSA lands.

Withdrawals

Under Alternative N, there are no existing or recommended withdrawals within non-WSA lands with wilderness characteristics. The non-WSA lands are open to location and entry under the mining laws, new mining claims can be filed at any time, and new proposals for exploration and development could be submitted and reviewed under the surface management regulations for undue and unnecessary degradation. Therefore, the non-WSA lands could be impacted by denuding the naturalness and creating loss of primitive recreation activities and solitude for those areas where new mining activities may occur. If new mining development does occur within these areas, direct loss of wilderness characteristics would be unavoidable due to major surface disturbing activities associated with mining activities.

Rights-of-Way and Other Land Use Authorizations

No right-of-way corridors are proposed under Alternative N.

Non-WSA lands with wilderness characteristics that would remain open to granting of rights-of-way include all of 21 areas and portions of 8 areas, totaling 658,697 acres. Any surface disturbing activity

and/or placement of permanent facilities would detract from the natural character of the area and disrupt the setting needed to support primitive forms of recreation.

There are 23,903 acres in 8 non-WSA lands with wilderness characteristics areas that would be protected, in part, from surface disturbing actives under this alternative because they would be within right-of-way avoidance areas (see Table 4-15). Portions of the Dirty Devil/French Spring, Flat Tops, Fremont Gorge, Little Rockies, Mount Ellen/Blue Hills, Muddy Creek/Crack Canyon, Red Desert and Wildcat Knolls non-WSA lands with wilderness characteristics would be within the right-of-way avoidance areas. These areas are to be avoided but may be available for location of rights-of-way with special stipulations if the proposal meets the goals and objectives of other resources and uses in the land use plan. It is expected and assumed that the avoidance areas would protect the natural character of the non-WSA lands in these areas.

Table 4-15. Acres of Avoidance or Exclusion for Rights-of-Way in Non-WSA Lands with Wilderness Characteristics

Name of Non-WSA Land with Wilderness Characteristics	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D (all acres are exclusion areas)
Bull Mountain	0	0	72	2821	3,800
Bullfrog Creek	0	0	0	0	33,700
Dirty Devil/French Spring	8495	0	61392	69912	133,100
Dogwater Creek	0	0	0	3438	3,500
Fiddler Butte	0	0	0	17283	19,700
Flat Tops	3	0	3	12	23,000
Fremont Gorge	2230	6	1485	15941	16,000
Horseshoe Canyon South	0	0	3606	3310	20,600
Jones Bench	0	0	0	43	3,300
Kingston Ridge	0	0	0	2126	10,200
Labyrinth Canyon	0	0	0	1	12,300
Limestone Cliffs	0	0	0	387	24,800
Little Rockies	8116	0	0	15596	23,200
Long Canyon	0	0	0	0	16,600
Mount Ellen/Blue Hills	165	0	2261	33981	49,800
Mount Hillers	0	0	1236	1758	1,800
Mount Pennell	0	0	2309	52217	65,600
Muddy Creek/Crack Canyon	4037	0	3840	17735	61,800
Mussentuchit Badlands	0	0	0	0	700
Notom Bench	0	0	0	7968	8,000
Phonolite Hill	0	0	0	7900	7,900
Pole Canyon/Hunter Spring	0	0	0	0	6,000
Ragged Mountain	0	0	15735	24408	25,900
Red Desert	728	0	0	2296	40,700
Rock Canyon	0	0	0	0	1,300
Rocky Ford	0	0	0	6429	6,700
Sweetwater Reef	0	0	0	0	6,200
Wildhorse Mesa	0	0	3	26375	49,700

Name of Non-WSA Land with Wilderness Characteristics	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D (all acres are exclusion areas)
Wildcat Knolls	129	0	0	231	6,700
Total Acres of Avoidance and Exclusion Areas	**23,903**	**6**	**91,939**	**312,168**	**682,600**
Total Acres Open for Rights-of-Way	**658,697**	**682,594**	**590,661**	**370,432**	**0**

The RFO is available for other land use authorizations (such as film permits, leases, and easements) if the use associated with this authorization is compatible with other decisions throughout the RMP. Activities authorized under a permit, lease, or easement must be in conformance with OHV area designations, VRM management classes, etc. It is difficult to speculate where these activities might occur in the future and what the proposed activity would entail. If the proposal is for a minimally impactful activity, it is likely that no impacts to wilderness characteristics would occur from that activity. If, however, the proposed activity involves ground disturbance and use of motorized vehicles, then wilderness characteristics would likely be affected by impacting naturalness of the area, and creating loss of primitive recreation activities and solitude.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Lands open to oil and gas leasing within non-WSA lands with wilderness characteristics are illustrated in Table 4-16 and existing leases are discussed in the area-by-area analysis. Exploration and development activities could impact wilderness characteristics through the direct disturbance of the natural terrain and consequent impacts on solitude and opportunities for primitive recreation. Virtually all of the lands with wilderness characteristics would be open to oil and gas leasing under this alternative.

Table 4-16. Non-WSA Lands with Wilderness Characteristics and Leasing Stipulations by Alternative

Area Name	Total Acres	Currently Leased	Stipulation	Alt. N (No Action)	Alt. A	Alt. B (Preferred)	Alt. C	Alt. D
Bull Mountain	3,800	0	Standard	3,300	1,000	1,000	1,000	0
			CSU/TL	500	2,800	2,800	2,800	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	3,800
Bullfrog Creek	33,700	0	Standard	33,700	33,700	33,700	33,700	0
			CSU/TL	0	0	0	0	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	33,700
Dirty Devil/ French Spring	133,100	30,099	Standard	120,400	22,200	22,100	22,100	0
			CSU/TL	11,700	110,900	49,700	48,500	0
			NSO	0	0	56,000	34,900	0
			Closed	1,000	0	5,300	27,600	133,100
Dogwater Creek	3,500	0	Standard	3,000	0	0	0	0
			CSU/TL	500	3,500	3,500	0	0

Area Name	Total Acres	Currently Leased	Stipulation	Alt. N (No Action)	Alt. A	Alt. B (Preferred)	Alt. C	Alt. D
			NSO	0	0	0	3,500	0
			Closed	0	0	0	0	3,500
Fiddler Butte	19,700	0	Standard	18,200	11,700	8,800	2,400	0
			CSU/TL	1,500	8,000	10,900	0	0
			NSO	0	0	0	9,100	0
			Closed	0	0	0	8,200	19,700
Flat Tops	23,000	21,202	Standard	23,000	23,000	23,000	23,000	0
			CSU/TL	0	0	0	0	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	23,000
Fremont Gorge	16,000	0	Standard	10,900	0	0	0	0
			CSU/TL	2,900	16,000	14,500	13,000	0
			NSO	2,200	0	1,500	1,500	0
			Closed	0	0	0	1,500	16,000
Horseshoe Canyon South	20,600	0	Standard	20,600	0	0	0	0
			CSU/TL	0	20,600	17,000	17,300	0
			NSO	0	0	3,600	3,300	0
			Closed	0	0	0	0	20,600
Jones Bench	3,300	0	Standard	2,400	1,900	1,700	1,700	0
			CSU/TL	900	1,400	1,600	1,600	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	3,300
Kingston Ridge	10,200	0	Standard	6,000	10,200	0	0	0
			CSU/TL	4,200	0	10,200	10,200	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	10,200
Labyrinth	12,300	0	Standard	12,300	0	0	0	0
			CSU/TL	0	12,300	12,300	12,300	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	12,300
Limestone Cliffs	24,800	0	Standard	17,400	300	100	0	0
			CSU/TL	7,400	24,500	24,700	24,800	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	24,800
Little Rockies	23,200	0	Standard	12,900	20,200	10,100	7,600	0
			CSU/TL	2,200	3,000	23,100	0	0
			NSO	100	0	0	15,200	0
			Closed	8,000	0	0	400	23,200
Long Canyon	16,600	0	Standard	16,600	16,600	16,600	16,600	0
			CSU/TL	0	0	0	0	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	16,600
Mount Ellen/ Blue Hills	49,800	0	Standard	36,600	31,800	18,900	16,000	0

Area Name	Total Acres	Currently Leased	Stipulation	Alt. N (No Action)	Alt. A	Alt. B (Preferred)	Alt. C	Alt. D
			CSU/TL	13,000	18,000	28,600	16,000	0
			NSO	200	0	2,300	9,000	0
			Closed	0	0	0	8,800	49,800
Mount Hillers	1,800	0	Standard	1,700	0	0	0	0
			CSU/TL	100	1,800	500	700	0
			NSO	0	0	1,300	1,100	0
			Closed	0	0	0	0	1,800
Mount Pennell	65,600	0	Standard	61,900	20,000	13,300	13,200	0
			CSU/TL	3,700	45,600	50,000	34,500	0
			NSO	0	0	2,300	17,400	0
			Closed	0	0	0	500	65,600
Muddy Creek/ Crack Canyon	61,800	0	Standard	36,800	61,800	47,600	32,900	0
			CSU/TL	21,500	0	10,400	11,200	0
			NSO	3,500	0	3,800	17,700	0
			Closed	0	0	0	0	61,800
Mussentuchit Badlands	700	0	Standard	700	650	600	0	0
			CSU/TL	0	50	100	700	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	700
Notom Bench	8,000	0	Standard	6,400	100	0	0	0
			CSU/TL	1,600	7,900	8,000	0	0
			NSO	0	0	0	8,000	0
			Closed	0	0	0	0	8,000
Phonolite Hill	7,900	0	Standard	4,800	6,200	0	0	0
			CSU/TL	3,100	1,700	7,900	6,900	0
			NSO	0	0	0	1,000	0
			Closed	0	0	0	0	7,900
Pole Canyon/ Hunter Spring	6,000	0	Standard	5,600	0	0	0	0
			CSU/TL	400	6,000	6,000	6,000	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	6,000
Ragged Mountain	25,900	0	Standard	15,400	1,500	1,500	1,500	0
			CSU/TL	10,500	24,400	8,700	9,000	0
			NSO	0	0	15,700	0	0
			Closed	0	0	0	15,400	25,900
Red Desert	40,700	0	Standard	39,700	1,200	1,200	900	0
			CSU/TL	1,000	39,500	39,500	37,500	0
			NSO	0	0	0	1,300	0
			Closed	0	0	0	1,000	40,700
Rock Canyon	1,300	0	Standard	1,300	1,300	800	0	0
			CSU/TL	0	0	500	1,300	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	1,300
Rocky Ford	6,700	0	Standard	3,900	4,000	10	0	0

Area Name	Total Acres	Currently Leased	Stipulation	Alt. N (No Action)	Alt. A	Alt. B (Preferred)	Alt. C	Alt. D
			CSU/TL	2,800	2,700	6,700	6,300	0
			NSO	0	0	0	400	0
			Closed	0	0	0	0	6,700
Sweetwater Reef	6,200	195	Standard	6,200	6,200	6,200	6,200	0
			CSU/TL	0	0	0	0	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	6,200
Wild Horse Mesa	49,700	80	Standard	49,400	49,700	31,700	23,300	0
			CSU/TL	300	0	18,000	0	0
			NSO	0	0	0	0	0
			Closed	0	0	0	26,400	49,700
Wildcat Knolls	6,700	0	Standard	6,700	4,400	800	0	0
			CSU/TL	0	2,300	5,900	6,500	0
			NSO	0	0	0	0	0
			Closed	0	0	0	200	6,700

The mineral assumptions for analysis and the RFD scenarios were used in the analysis of impacts to non-WSA lands with wilderness characteristics. The Mineral Potential Report (BLM 2005b) for the RFO describes the oil and gas occurrence potential and serves as the basis for the RFD. The RFD assumes that all potentially productive areas are open under standard lease terms and conditions except those areas designated as closed to leasing by law, regulations, or executive order. In the RFO, non-WSA lands with wilderness characteristics fall within two RFD areas.

The largest RFD area (Areas 1 and 2 of the RFD Report) incorporates the majority of non-WSA lands with wilderness characteristics (25 areas). This RFD area includes all of the lands within Piute, Wayne and Garfield Counties within the Richfield planning area. These non-WSA areas total 645,800 acres within the 2,618,000 acres of this RFD area, or 25% of the RFD area (see Table 4-17). This acreage does not include the acres closed to leasing by law, regulation, or executive order, including WSAs and NPS lands, among others. The RFD scenario for oil and gas development in this RFD area predicts that over the next 15 years approximately 45 exploratory wells (or 3 wells/year) would disturb a total of 540 acres (12 acres/well), and an additional 240 acres would be minimally disturbed by geophysical operations. There are four non-WSA areas with existing leases that total 51,510 acres. Most notable is the Flat Tops non-WSA area that has 92% of its lands under existing leases.

Table 4-17. Non-WSA Lands with Wilderness Characteristics in Piute, Wayne and Garfield Counties within RFD Areas 1 and 2

Name of Non-WSA Lands With Wilderness Characteristics Area	Percent of RFD Areas 1 & 2	Acres of Non-WSA Lands with Existing Leases and Percent Leased
Bull Mountain	<1 %	0
Bullfrog Creek	1 %	0
Dirty Devil/French Spring	5 %	30,099 (23%)
Dogwater Creek	<1 %	0
Fiddler Butte	<1 %	0
Flat Tops	1 %	21,202 (92%)
Fremont Gorge	<1 %	0

Name of Non-WSA Lands With Wilderness Characteristics Area	Percent of RFD Areas 1 & 2	Acres of Non-WSA Lands with Existing Leases and Percent Leased
Horseshoe Canyon South	1 %	0
Kingston Ridge	<1 %	0
Labyrinth Canyon	<1 %	0
Little Rockies	1 %	0
Long Canyon	<1 %	0
Mount Ellen/Blue Hills	2 %	0
Mount Hillers	<1 %	0
Mount Pennell	2.5 %	0
Muddy Creek/Crack Canyon	2.5 %	0
Notom Bench	<1 %	0
Phonolite Hill	<1 %	0
Pole Canyon/Hunter Spring	<1 %	0
Ragged Mountain	1 %	0
Red Desert	1.5 %	0
Rocky Ford	<1 %	0
Sweetwater Reef	<1 %	195 (3%)
Wild Horse Mesa	2 %	80 (<1%)

The other RFD area (Area 3 of the RFD Report) incorporates the remaining five non-WSA lands with wilderness characteristics (Wildcat Knolls, Rock Canyon, Mussentuchit Badlands, Limestone Cliffs, and Jones Bench) in Sevier County. These non-WSA areas total 36,800 acres within the 702,400 acres of this RFD area, or about 5% of the RFD area (see Table 4-18). The RFD scenario for oil and gas activity in RFD Area 3 predicts that over the next 15 years approximately 49 exploratory wells (or about 3 wells/year) would disturb a total of 1,100 acres (22 acres/well), and an additional 360 acres would be minimally disturbed by geophysical operations. There are no existing leases within the five non-WSA areas.

Table 4-18. Non-WSA Lands with Wilderness Characteristics in Sevier County within RFD Area 3

Name of Non-WSA Lands With Wilderness Characteristics Area	Percent of RFD Area 3	Acres of unit with Existing Leases
Jones Bench	<1 %	0
Limestone Cliffs	3.5 %	0
Mussentuchit Badlands	<1 %	0
Rock Canyon	<1 %	0
Wildcat Knolls	1 %	0

A number of variables would determine the degree of impact to non-WSA lands with wilderness characteristics, including where surface-disturbing activities occur, landform or topography, vegetation type, oil and gas potential as determined by exploration, sequence of exploration and development, and reclamation time. Soil types and climate would affect the time it takes to reclaim disturbances.

Construction and operation of oil and gas wells and associated support facilities, including roads, surface and buried pipelines, power lines, and compressor stations would create soil and vegetation disturbance and the presence of permanent structures that would degrade the naturalness and opportunities for

primitive recreation and solitude of non-WSA lands with wilderness characteristics. In addition to site-specific surface disturbance, the cumulative number of wells would change the appearance of naturalness.

The noise of construction and drilling wells, including the presence of work crews, vehicles, and equipment, would degrade opportunities for solitude and conflict with primitive recreational opportunities in proximity to these activities. Such activities could affect wildlife distribution in addition to physical disturbances on the ground. As recreational visitors seeking solitude move away from the oil and gas activity, the sights and sounds of activity would diminish. If oil and gas is discovered, then the oil and gas activity would be longer term. However, it can be expected that sights and sounds from exploration and development would reduce opportunities for solitude and primitive and unconfined recreation up to one-half mile beyond the area of surface disturbance and direct loss of natural character.

The RFD for combined Areas 1 & 2 and Area 3 are 45 wells and 49 wells respectively. Although a wildcat well could discover producible oil or gas, the RFD addresses wells without a prediction of production. Thus, the RFD is for well pads and access, not necessarily for facilities needed for production.

Under Alternative N, all or portions of the 29 non-WSA lands with wilderness characteristics areas would remain open to leasing under standard oil and gas stipulations or under controlled surface use or timing limitation stipulations. There are 682,600 acres of non-WSA lands with wilderness characteristics within the RFD areas. Of these, there are 667,600 acres that are open under standard terms or minor constraints. This comprises about 98% of non-WSA areas. Two percent (15,000 acres) of the non-WSA lands with wilderness characteristics spread between five areas would have a no surface occupancy stipulation on future leases, or would be closed to leasing.

In the RFD Areas 1 & 2, all or portions of 24 non-WSA lands with wilderness characteristics areas would remain open to leasing under standard stipulations or under controlled surface use or timing limitation stipulations. There are 645,800 acres of non-WSA lands with wilderness characteristics within this combined RFD area. Of these, there are 630,800 acres that are open under standard terms or minor constraints. The other 15,000 acres are either closed to leasing or open under a no surface occupancy stipulation: 1,000 acres (1%) in Dirty Devil/French Spring, 8,100 acres (35%) in Little Rockies, 2,200 acres (14%) in Fremont Gorge, 200 acres (<1%) in Mount Ellen/Blue Hills, and 3,500 acres (6%) in Muddy Creek/Creek Canyon. There are no waivers, exceptions, or modifications to the NSO stipulation under this alternative.

The non-WSA lands with wilderness characteristics with the greatest percentage leased at this time are in the Flat Tops and Dirty Devil/Crack Canyon non-WSA areas. As stated above, the projection for drilling for oil and gas is 45 wells over the 15 year RFD scenario. The non-WSA lands with wilderness characteristics where surface disturbing activities associated with oil and gas exploration would be allowed under Alternative N comprise 24% of the RFD area. Assuming the predicted wells are evenly distributed in the RFD area, then one-fourth of the predicted RFD (3 wells/year), or one well per year – 15 wells over a 15 year period – could be drilled within any of these non-WSA areas. This could disturb up to 12 acres per year, or up to 180 acres over the life of the plan in non-WSA areas. Leasing and subsequent exploration within these non-WSA areas would cause that portion of the non-WSA area to lose its natural character and opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources. However, it is not anticipated that any of these non-WSA areas would lose their wilderness characteristics in totality because of the small amount of acreage projected to be disturbed and the number of projected wells in this RFD area over the 15 year scenario.

In RFD Area 3, all of the 5 non-WSA lands with wilderness characteristics would remain open to leasing under standard stipulations or under controlled surface use or timing limitation stipulations. There are

36,800 acres of non-WSA lands with wilderness characteristics in the RFD area. Given that the projection for drilling for oil and gas is 3 wells/year for the whole RFD area, and that only 5% of the RFD area encompasses non-WSA lands with wilderness characteristics, two of the 49 wells (5% of 49) would be drilled within the 5 non-WSA areas with wilderness characteristics over the 15 year RFD scenario. This could disturb up to 44 acres in the non-WSA lands over the life of the RMP. Given the size of the Limestone Cliffs non-WSA area, the two wells projected on non-WSA lands are assumed most likely to be within this area. However, it only represents 3.5% of the whole RFD area. Exploration and development within these non-WSA areas would cause that portion to lose their natural character and opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources. However, it is not anticipated that any of the areas would lose their wilderness characteristics in totality because of the small amount of acreage projected to be disturbed and the number of projected wells in this RFD area over the 15 year scenario.

Geophysical exploration activities would be authorized for all non-WSA lands with wilderness characteristics, subject to the oil and gas leasing categories. Geophysical activities would have short-term, minimal impacts on naturalness due to crushed vegetation, tire tracks, and small drill holes and their cuttings. Solitude and primitive recreation opportunities would be impacted in the short-term by the presence of equipment, man, noise, and work associated with geophysical exploration activities. When the geophysical activity ceases, solitude and primitive recreation opportunities would resume and disturbances to the naturalness would be restored in the short-term.

Leasable Minerals - Geothermal

About two-thirds of the Kingston Ridge non-WSA lands with wilderness characteristics overlies a high potential area for geothermal resources. Under this alternative, this non-WSA area remains open for geothermal leasing either under standard or minor stipulations. If leased and developed, impacts to the wilderness value would occur. Loss of naturalness and opportunities for solitude and primitive recreation would result from drilling activities, pipeline development, road construction, power plants and other infrastructure.

Leasable Minerals - Coal

Coal resources suitable for leasing are within the Henry Mountains coal field and underlie portions of the Mount Pennell, Wild Horse Mesa, and Mount Ellen/Blue Hills non-WSA lands with wilderness characteristics. This coal field includes both surface and subsurface coal resources. Other coal resources suitable for leasing are within the Emery coal field and include the Limestone Cliffs and Rock Canyon non-WSA lands with wilderness characteristics. All of this coal has been determined suitable for subsurface coal mining only.

All non-WSA lands with wilderness characteristics underlain by coal resources suitable for leasing could potentially be leased and mined, pending a leasing EIS and further analysis. If leased, 4,925 acres in Mount Ellen/Blue Hills, 4,930 acres in Mount Pennell, 82 acres in Wild Horse Mesa non-WSA lands could be available for leasing by surface mining methods. Surface mining for the coal resources would entail strip mining operations. The naturalness of those areas within the mining operations would be foregone, as vegetation would be stripped, soil and earth removed, and the coal resources mined. Heavy equipment and infrastructure support for mining operations, motorized equipment noise and human activity would degrade, if not preclude, opportunities for solitude and primitive recreation within those immediate areas. Up to 10% of the Mount Ellen/Blue Hills non-WSA area, up to 8% of the Mount Pennell, and less than 1% in Wild Horse Mesa non-WSA areas could forego their wilderness characteristics if the total surface coal resource is mined.

In addition to the surface coal resource, both Mount Pennell and Mount Ellen/Blue Hills have subsurface coal resources found suitable for mining. If leased, an additional 4,980 acres in Mount Ellen/Blue Hills,

and 25,200 acres in Mount Pennell non-WSA lands could be available for leasing by subsurface mining methods. In the Emery coal field, underground coal resources suitable for leasing by underground mining methods encompass 3,970 acres in Limestone Cliffs and 64 acres in Rock Canyon non-WSA lands with wilderness characteristics. Sub-surface mining for the coal resources would entail surface disturbance associated with portals, ventilation shafts, access roads, and other necessary facilities and infrastructure. None of these disturbances are of large scale or encompass many acres. The naturalness in these disturbed areas would be impacted, but to a much smaller extent than that of surface mining operations. The most significant impact would be from access roads. In addition, within these areas, opportunities for solitude and primitive recreation would be foregone. It is important to note that although extensive acreage could be leased and mined for underground coal resources, relatively minor surface impacts would occur compared to surface mining.

Exploration activities for coal resources could be authorized within any of the non-WSA lands with wilderness characteristics. These activities include the use of cross-county travel with drilling rigs and field crews for not more than two years in an identified area. This could cause tracks from motorized use, crushed vegetation and compacted soil, and other surface disturbances. Pad construction may be an outcome from deep drilling. This disturbance would be temporary and reclamation would be required, however, during the time that the exploratory activities are occurring, opportunities for solitude and primitive recreation would be affected in the short-term, and naturalness would be impacted until the area is reclaimed.

Non-Energy Solid Leasable Minerals

Non-energy solid leasable minerals are under the same restrictions as oil and gas resources. The same non-WSA lands with wilderness characteristics that are open under standard stipulations or minor constraints would be available for exploration and development, just as those non-WSA lands either closed to leasing or under NSO would be unavailable for exploration and development (see Table 4-16). The non-WSA lands with wilderness characteristics with the highest potential for sodium or potassium occurrence are within portions of the Labyrinth Canyon, Horseshoe Canyon South, and Dirty Devil/French Spring areas. Where mining these resources would occur, impacts to wilderness characteristics would include drilling, road construction, evaporation ponds, human activities, and other necessary infrastructure. This would degrade the wilderness characteristics through loss of naturalness and opportunities for primitive recreation and solitude.

Locatable Minerals

All 29 non-WSA lands with wilderness characteristics areas are located within high potential areas for uranium and vanadium. Existing mining claims as of May 2007 have been located within Mount Pennell, Mount Hillers, Bull Mountain, Ragged Mountain, Little Rockies, Dirty Devil/French Spring, Wild Horse Mesa, Muddy Creek/Crack Canyon, Mount Ellen/Blue Hills, Fremont Gorge, Rock Canyon, Limestone Cliffs, and Kingston Ridge areas. As of May 2007, there have been no surface disturbing actions within the non-WSA lands from recent mining related activity. If new mining development does occur within these areas, direct loss of wilderness characteristics would be unavoidable due to major surface disturbing activities associated with mining activities. Under this alternative, there are no existing or recommended withdrawals within non-WSA lands with wilderness characteristics. (See withdrawal discussion under the Lands and Realty section of this alternative.)

Salable Minerals

Salable minerals are under the same restrictions as oil and gas resources. The same non-WSA lands with wilderness characteristics that are open under standard stipulations or minor constraints would be available for salable mineral disposal, just as those non-WSA lands either closed to leasing or under no surface occupancy stipulations would be unavailable for salable mineral disposal (see Table 4-16). The

non-WSA lands with wilderness characteristics with the highest potential for sand and gravel occurrence overlie portions of the Little Rockies, Mount Hillers, Ragged Mountain, Bull Mountain, Mount Ellen/Blue Hills, Wild Horse Mesa, Fremont Gorge, and Rocky Ford areas. The non-WSA lands with wilderness characteristics with the highest potential for stone occurrence overlie all of the Fremont Gorge area. The non-WSA lands with wilderness characteristics with the highest humate occurrence potential overlie portions of the Wild Horse Mesa, Muddy Creek/Crack Canyon and Limestone Cliffs areas.

All or portions of the 29 non-WSA lands with wilderness characteristics areas would remain open to salable mineral disposal. Of the 682,600 acres of non-WSA lands with wilderness characteristics, there are 667,600 acres that are open under standard conditions or minor constraints. This comprises about 98% of non-WSA areas. Where surface disturbance would occur, naturalness and opportunities for primitive recreation and solitude would be foregone. If the gravel pits or building rock quarries have associated support facilities, including roads and power lines, soil and vegetation disturbance and the presence of permanent structures would degrade the natural characteristics of non-WSA lands with wilderness characteristics. The noise of the operations of sand and gravel pits or rock quarries, including the presence of work crews, vehicles, and equipment, would degrade opportunities for solitude and conflict with primitive recreational opportunities in proximity to industrial development. As recreational visitors move away from the sources of development, the sights and sounds of development would diminish. It can be expected that sights and sounds from development would reduce opportunities for solitude and primitive and unconfined recreation up to one-half mile beyond the direct area of loss of natural character, depending on topography.

Two percent (15,000 acres) of the non-WSA lands with wilderness characteristics spread between 5 areas would have a no surface occupancy stipulation or would be closed to salable mineral disposal. It is assumed that the various waivers, exceptions, and modifications under the no surface occupancy stipulation would not be granted because they would not be in concert with other resource goals and objectives in these areas, thus, the wilderness characteristics of the areas would be maintained.

Impacts from Special Designations

Wild and Scenic Rivers

Under this alternative, four of the 29 non-WSA land areas intersect with eligible wild and scenic river segments, totaling 33.35 miles in those four areas. There are 19.31 miles of Dirty Devil River, 0.12 miles of No Man's Canyon, 2.83 miles of Robbers Roost Canyon, 0.13 miles of Sam's Mesa Box Canyon, 1.39 miles of Twin Corral Box Canyon, 4.9 miles of Fremont River (Fremont Gorge), 3.26 miles of Fremont River (Capital Reef National Park to Caineville Ditch Diversion) and 1.4 miles of Maidenwater Creek that would be managed to preserve their wild and scenic river eligibility. Protection of river values (pending future suitability studies) would prevent uses and surface disturbances that would detract from the natural character of the Dirty Devil/French Spring, Fremont Gorge, Red Desert and Little Rockies non-WSA lands with wilderness characteristics within the half-mile river corridor (one-quarter mile on each side of the river segment).

Areas of Critical Environmental Concern

Under this alternative, ACEC designation and management would continue for the four existing ACECs to protect a variety of relevant and important values. Three of the four ACECs would overlay non-WSA lands with wilderness characteristics. Those ACECs are North Caineville Mesa, South Caineville Mesa and Beaver Wash Canyon. The management prescriptions for these ACECs would protect naturalness and opportunities for solitude and primitive recreation in all of the non-WSA lands within the ACEC.

A portion of the Muddy Creek/Crack Canyon (2,200 acres) non-WSA lands with wilderness characteristics lies within the existing 2,200 acre North Caineville Mesa ACEC. These non-WSA lands

with wilderness characteristics would be: closed to OHV use; open for oil and gas leasing with no surface occupancy; unavailable for livestock grazing; identified as unsuitable for surface coal mining; inholdings would be acquired from willing sellers; and recommended for withdrawal from mineral entry as a result of the management prescriptions for the ACEC. These prescriptions would prevent surface disturbances and limit motorized uses and protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation.

A small portion of the Mt. Ellen/Blue Hills (4 acres) non-WSA lands with wilderness characteristics area lies within the existing 4,100 acre South Caineville Mesa ACEC. These non-WSA lands with wilderness characteristics would be: closed to OHV use; open for oil and gas leasing with no surface occupancy; unavailable for livestock grazing; and identified as unsuitable for surface coal mining. These ACEC management prescriptions would prevent surface disturbances, limit motorized uses and protect the natural character and opportunities for solitude and primitive recreation of the non-WSA lands with wilderness characteristics.

A portion of the Dirty Devil/French Spring (68 acres) non-WSA lands with wilderness characteristics lies within the existing 4,800 acre Beaver Wash Canyon ACEC. These non-WSA lands with wilderness characteristics would be: closed to OHV use; closed to oil and gas leasing; land tenure adjustment pursued including acquisition of all state sections within the ACEC; and recommended for withdrawal from mineral entry as a result of the management prescriptions for the ACEC. These prescriptions would prevent surface disturbances, limit motorized uses and protect the natural character and opportunities for solitude and primitive recreation of the non-WSA lands with wilderness characteristics.

Alternative A

Impacts from Soil Resources and Water Resources

Impacts would be similar to those described under Alternative N, except that no surface disturbance or occupancy would be permitted within 330 feet of natural springs to protect water quality and riparian vegetation. The effects on the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics would therefore occur on fewer acres as compared to Alternative N.

Impacts from Vegetation

Impacts would be similar to those described under Alternative N, except that no surface disturbance or occupancy would be permitted within approximately 330 feet (based on geo-hydrological, riparian, and other factors) of natural springs to protect riparian vegetation. The effects on the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics would therefore occur on fewer acres.

Compensatory off-site mitigation, where disturbance cannot be avoided or mitigated on-site, would maintain the total acreage of riparian vegetation in the RFO, but protection of riparian zones would not necessarily occur in non-WSA lands, or result in the benefits to the naturalness or opportunities for solitude or primitive recreation of the non-WSA lands. Compensation may occur either inside or outside the non-WSA lands.

Under Alternative A, maximum treatment acreage limits would be set (averaging 73,600 annually for all treatments). Since no target treatment acreage limits (maximum or minimum) are set under Alternative N, it is likely (based on historic trends) that in some years fewer acres would be treated under Alternative N while in other years (when there are numerous wildland fires) more acres could be treated.

Precise locations for vegetation treatments are not known at this time, but if these treatments were to occur in non-WSA lands, the types of impacts experienced would be similar to those described under Alternative N.

Impacts from Cultural Resources

Impacts would be similar to those described under Alternative N for the Bull Creek Archaeological District. In addition, allocation of cultural sites to scientific, public, conservation, traditional, and experimental uses under this alternative would increase knowledge of cultural resources and would enhance opportunities for primitive forms of recreation. Knowing more about the cultural resources of an area, interpreting the resource in an appropriate fashion, and viewing cultural resource sites in the non-WSA areas add to the enjoyment of these areas for primitive recreational purposes. Protection of cultural resources adds to the character of the setting that supports these recreational opportunities.

Providing access for American Indian Tribes to public lands for traditional purposes may impact wilderness characteristics of non-WSA lands. If access is provided by motorized vehicle, the noise and presence of vehicles would reduce opportunities for solitude and conflict with primitive forms of recreation.

Impacts from Paleontological Resources

Impacts would be the same as described under Alternative N.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management would be similar to those described under Alternative N. Under Alternative A, no non-WSA lands would be designated as VRM Class I or II to retain the landscape character. All lands would be managed for uses and activities that may result in changes to the landscape. However, this does not mean every acre would be developed or change. Thus, the natural character of the non-WSA lands could be lost. If the naturalness of these areas is lost, the opportunities for solitude and primitive recreation would be lost, as the setting needed to support these opportunities would be altered.

Impacts from Special Status Species

The types of impacts experienced as a result of special status species management would be similar to those described under Alternative N. In addition, under Alternative A, strategies would be employed that would avoid or reduce fragmentation of special status species habitat including collocating communication and other facilities, employing directional drilling for oil and gas, and closing and reclaiming roads. If a proposed project were located on non-WSA lands with wilderness characteristics, these strategies would help to consolidate surface disturbing activities and protect additional acres from loss of naturalness. However, any surface disturbing activities would still impair the naturalness of the areas and could affect solitude and primitive recreation opportunities in the areas where the strategies are employed.

Impacts from Fish and Wildlife

Impacts would be the same as described under Alternative N.

Impacts from Wild Horses and Burros

Impacts would be the same as described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, there are no specific actions prescribed to directly protect the naturalness and opportunities for solitude or primitive recreation of the non-WSA areas, resulting in no impacts to non-WSA lands.

Impacts from Forestry and Woodland Products

Under Alternative A, commercial and non-commercial timber harvest would be allowed where feasible, sustainable, and compatible with restoring, maintaining, or improving forest health. All non-WSA lands with wilderness characteristics that have timber would be open to timber harvest permitting. Activities associated with timber harvest such as use of heavy equipment and chain saws, new road construction, cutting trees and leaving stumps and debris, and human activity would diminish the wilderness characteristics values of naturalness, solitude, and primitive recreation opportunities within the areas being harvested.

Permits for commercial and non-commercial woodland products (primarily fire-wood cutting) would continue to be sold to the public in all 29 non-WSA areas (where the resources exist), as they would remain open for such activities. If permits are sold within non-WSA lands, wilderness characteristics would be compromised by surface disturbing activities such as driving cross-country to the trees, cutting the trunks of trees and leaving stumps and debris, and by affecting the solitude and primitive recreation opportunities with the use of chain saws and surface disturbances associated with human activity.

Commercial live plant and seed collection impacts would be the same as that described under Alternative N.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative N.

Impacts from Recreation

ERMAs

Public lands in the Fiddler Butte, Labyrinth Canyon, Mt. Ellen/Blue Hills, and Little Rockies non-WSA areas would be managed in a primitive, naturally appearing setting for a high probability of experiencing solitude and closeness to nature. This would be accomplished by preserving resources, managing access primarily as non-motorized, providing minimum improvements and no on-site interpretive facilities. This would protect the wilderness characteristics values of naturalness and enhance opportunities for solitude and primitive recreation in portions of these non-WSA lands with wilderness characteristics.

Designating campsites and areas appropriate for large group events and camping at Sandy Creek Overlook would impact the naturalness and opportunities for solitude and primitive recreation in the northernmost portion of the Mount Pennell non-WSA lands with wilderness characteristics. This would affect less than 1% of this 65,600 acre non-WSA area.

SRMAs

Three of the proposed SRMAs would overlap portions of 8 non-WSA lands with wilderness characteristics. There would be 317,010 acres of non-WSA lands that are within the three SRMAs (or 46% of non-WSA lands).

The 290,000 acre Dirty Devil/Robber's Roost SRMA would encompass 110,860 acres within the Dirty Devil/French Spring non-WSA area, 20,640 acres of the Horseshoe Canyon South non-WSA area, and 12,283 acres of the Labyrinth Canyon non-WSA area. Because this SRMA would be managed for its primitive values and no competitive events would be permitted, the wilderness characteristics of this area

would be maintained and opportunities for solitude and a primitive recreation experience would be protected.

The 199,700 acre Factory Butte SRMA and the 12,300 acre Sahara Sands SRMA would encompass 173,215 acres of the Mount Ellen/Blue Hills non-WSA area, 61,680 acres in the Muddy Creek/Crack Canyon non-WSA area, 40,550 acres of the Red Desert non-WSA area, 49,640 acres of the Wild Horse Mesa non-WSA area, and 25 acres of the Fiddler Butte non-WSA area. Both SRMAs would be managed as OHV open (cross-country) areas with developed facilities. This would be in conflict with wilderness characteristic values, as naturalness would be compromised through surface disturbing activities, and opportunities for solitude and primitive recreation would be foregone due to OHV cross-country travel and associated noise. Facility development would also impair wilderness characteristics through surface disturbing activities and reduction of natural values.

Impacts from Travel Management

Alternative A would designate 18 areas managed as open OHV play areas. Nine of the 18 open areas would include 221,800 acres (32%) within 14 of the 29 non-WSA lands with wilderness characteristics areas as open to cross-country travel.

- A portion of the Little Rockies (200 acres) non-WSA lands with wilderness characteristics lies within the 19,500 acre proposed Ticaboo Play Area.
- A portion of the Fiddler Butte (200 acres) non-WSA lands with wilderness characteristics lies within the 12,700 acre proposed Sahara Sands Play Area.
- Portions of the Dirty Devil/French Spring (13,100 acres), Flat Tops (200 acres) and Sweetwater Reef (1,900 acres) non-WSA lands with wilderness characteristics lie within the 19,700 acre proposed Roost Play Area.
- Portions of the Mt. Ellen/Blue Hills (21,400 acres), Muddy Creek/Crack Canyon (61,800 acres), Red Desert (40,700 acres) and Wild Horse Mesa (49,700 acres) non-WSA lands with wilderness characteristics lies within the 200,100 acre proposed Factory Butte Play Area.
- Portions of the Fremont Gorge (10,900 acres) non-WSA lands with wilderness characteristics lie within the 9,800 acre proposed Miners Mountain and 5,000 acre proposed Beas Lewis Flat Play Areas.
- A portion of the Pole Canyon/Hunter Spring (4,400 acres) non-WSA lands with wilderness characteristics lies within the 4,600 acre proposed Hunter Spring Play Area.
- Portions of the Kingston Ridge (2,900 acres) and Phonolite Hill (7,700 acres) non-WSA lands with wilderness characteristics lie within the 102,700 acre proposed Antelope Range/Kingston Canyon Play Area.
- A portion of the Rocky Ford (6,700 acres) non-WSA lands with wilderness characteristics lies within the 12,900 acre proposed Rocky Ford Play Area.

Cross-country motorized travel in these non-WSA lands would result in surface disturbance to soils and vegetation that would alter the landscape and diminish the natural character of these non-WSA lands. Further, the presence and noise of motorized vehicles would degrade a visitor's opportunity for solitude and conflict with opportunities for primitive and unconfined recreation activities.

Under Alternative A, OHV use is limited to designated routes in 460,600 acres (68%) within 25 of the 29 non-WSA lands with wilderness characteristics. In these areas, 360.7 miles of routes would be designated as shown in Table 4-19:

Table 4-19. OHV Route Designations in Non-WSA Lands with Wilderness Characteristics, Alternative A

Non-WSA Area Name	Miles of Routes
Bull Mountain	1.8 miles
Bullfrog Creek	20.7 miles
Dirty Devil/French Spring	146.2 miles
Dogwater Creek	0.1 miles
Fiddler Butte	3.3 miles
Flat Tops	26.2 miles
Fremont Gorge	11.5 miles
Horseshoe Canyon South	10.9 miles
Jones Bench	0.9 miles
Kingston Ridge	6.6 miles
Labyrinth	2.2 miles
Limestone Cliffs	14.1 miles
Little Rockies	8.3 miles
Long Canyon	2 miles
Mount Ellen/Blue Hills	30.4 miles
Mount Hillers	1.9 miles
Mount Pennell	30.8 miles
Mussentuchit Badlands	0 miles
Notom Bench	3.6 miles
Phonolite Hill	10.1 miles
Pole Canyon/Hunter Spring	13 miles
Ragged Mountain	11.1 miles
Rock Canyon	1.2 miles
Sweetwater Reef	3.8 miles
Wildcat Knolls	0 miles

Limiting OHV use would confine soil and vegetation disturbance caused by motor vehicles to designated routes, and result in no additional change to the natural character of the non-WSA lands. The presence and noise of vehicles using these routes, however, would reduce the opportunity of visitors to find solitude in the non-WSA areas, especially in proximity to the routes. Motorized uses would conflict with primitive and unconfined recreation opportunities sought in the non-WSA areas.

Under this alternative, motor vehicles would be allowed to pull off of a designated route up to 100 feet of either side of the centerline for the purposes of parking/staging. Motor vehicles would be allowed to use existing spur routes for ingress and egress to established campsites within 300 feet of the centerline of designated routes, but would be prohibited from traveling between multiple campsites, establishment of motorized play areas, race tracks, or traveling across wet meadows or riparian areas. These actions would allow for parking and camping while confining the area where soil and vegetation disturbance would occur and would result in limited change to the natural character of the non-WSA lands.

OHV open areas near communities would be considered and encouraged for leasing under authority of the Recreation and Public Purposes Act to allow local management of OHV play areas. Generally these would include previously disturbed areas and would be considered on a case-by-case basis. If an R&PP open area was leased and overlapped non-WSA areas, the action would continue to degrade the natural character of the non-WSA lands with wilderness characteristics by allowing the surface disturbing activity from motorized vehicles to continue, as well as conflict with opportunities for solitude and primitive recreation experiences away from the sights and sounds of vehicle travel.

Impacts from Lands and Realty

Land Tenure Adjustments

This alternative identifies 600 acres of land in the Notom Bench and Dogwater Creek non-WSA lands with wilderness characteristics as available for FLPMA Section 203 sales. Two parcels are in the Notom Bench non-WSA area; one parcel is 160 acres and the other is 80 acres. Both parcels are on the west side of the non-WSA area and are interspersed with private lands adjoining the Capitol Reef National Park boundary. The other non-WSA lands identified as available for sale lie within the Dogwater Creek non-WSA area and are two contiguous parcels comprising 360 acres, also interspersed with private lands and adjoin the Capitol Reef National Park boundary. Disposal of these lands would take them out of public ownership and allow for development and surface disturbing activities out of BLM's control. The wilderness characteristics could be foregone because the lands would no longer be under BLM control.

Withdrawals

Impacts would be the same as described under Alternative N.

Rights-of-Way and Other Land Use Authorizations

Four proposed right-of-way corridors which would be 800 feet wide (400 feet on each side of the centerline) would overlay small slivers of the exterior boundaries of nine non-WSA lands with wilderness characteristics areas. The proposed State Highway 24 right-of-way corridor would overlay the Wild Horse Mesa, Red Desert, Fremont Gorge, and Notom Bench non-WSA lands with wilderness characteristics. The proposed State Highway 95 and 276 right-of-way corridors would overlay slivers of Little Rockies and Fiddler Butte non-WSA lands with wilderness characteristics. The proposed State Highway 62 right-of-way corridor would overlay slivers of Rocky Ford, Phonolite Hill, and Kingston Ridge non-WSA lands with wilderness characteristics. Placement of future utility rights-of-way within these corridors would diminish the wilderness characteristics in these areas by creating surface disturbing activities (and possibly placing surface facilities) that would no longer maintain the wilderness characteristics values in those linear corridors.

Non-WSA lands with wilderness characteristics that would remain available for granting of rights-of-way include all of 28 areas and portions of 1 area, totaling 682,594 acres. Any surface disturbing activity and/or placement of permanent facilities would detract from the natural character of the area and disrupt the setting needed to support primitive forms of recreation.

There are six acres in one non-WSA lands with wilderness characteristics area that would be protected, in part, from surface disturbing actives under this alternative because they would be within right-of-way avoidance areas (see Table 4-15). Portions of the Fremont Gorge non-WSA lands with wilderness characteristics would be within the right-of-way avoidance areas. These areas are to be avoided but may be available for location of rights-of-ways with special stipulations if the proposal meets the goals and objectives of other resources and uses in the land use plan. It is expected and assumed that the avoidance areas would protect the natural character of the non-WSA lands in these areas.

Impacts from issuance of other land use authorizations would be the same as described for Alternative N.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Lands open to oil and gas leasing within non-WSA lands with wilderness characteristics are illustrated in Table 4-16. Exploration and development activities could impact wilderness characteristics through the direct disturbance of the natural terrain and consequent impacts on solitude and opportunities for primitive recreation. Virtually all of the lands with wilderness characteristics would be open to oil and

gas leasing under this alternative. The types of impacts experienced as a result of oil and gas activities would be the same as those described for Alternative N.

All of the 29 non-WSA lands with wilderness characteristics areas would remain open to leasing under standard oil and gas stipulations or under controlled surface use or timing limitation stipulations. There are 682,600 acres of non-WSA lands with wilderness characteristics within the RFD areas. All of these acres are open under standard terms or minor constraints.

As described under Alternative N, the RFD scenario for oil and gas development in the RFD combined Areas 1 & 2 predicts that over the next 15 years approximately 45 exploratory wells (or 3 wells/year) would disturb a total of 540 acres (12 acres/well), and an additional 240 acres would be minimally disturbed by geophysical operations. In the RFD Areas 1 & 2, 24 non-WSA wilderness characteristics areas would remain open to leasing under standard stipulations or under controlled surface use or timing limitation stipulations. There are 645,800 acres of non-WSA lands with wilderness characteristics within this combined RFD area. All acres are open under standard terms or minor constraints. The non-WSA lands with wilderness characteristics with the greatest percentage leased at this time would be in the Flat Tops and Dirty Devil/French Spring areas. The non-WSA lands open with standard terms or minor constraints is 25% of the RFD area. This percentage is generally the same as in Alternative N. Thus, the same analysis as in Alternative N, portraying one well per year in the non-WSA areas (12 wells over the 15 year RFD scenario) would be applicable for Alternative A.

The RFD scenario for oil and gas activity in the RFD Area 3 predicts that over the next 15 years approximately 49 exploratory wells (or about 3 wells/year) would disturb a total of 1,100 acres (22 acres/well), and an additional 360 acres would be minimally disturbed by geophysical operations. In this RFD area, five non-WSA wilderness characteristics areas would remain open to leasing under standard stipulations or under controlled surface use or timing limitation stipulations. There are 36,800 acres of non-WSA lands with wilderness characteristics within this RFD area. All acres are open under standard terms or minor constraints. Because well projections under this alternative are the same as in Alternative N, and the same percentage of lands in the RFD area generally encompass non-WSA lands with wilderness characteristics, the same analysis portraying 2 wells over the 15 year RFD scenario would be applied.

Impacts for geophysical activities would be the same as Alternative N.

Leasable Minerals - Geothermal

Impacts would be the same as described under Alternative N.

Leasable Minerals - Coal

Impacts would be the same as described under Alternative N.

Non-Energy Solid Leasable Minerals

Impacts would be the same as described under Alternative N.

Locatable Minerals

Impacts would be the same as described under Alternative N.

Salable Minerals

Impacts would be similar to those described for Alternative N, except that all of the 682,600 acres within the 29 non-WSA lands with wilderness characteristics areas would remain open to disposal of salable minerals under standard conditions or minor constraints.

Impacts from Special Designations

Wild and Scenic Rivers

Under Alternative A there would be no ACECs designated. Therefore, management prescriptions to protect relevant and important values would not be applied and would not afford protection of wilderness values in non-WSA lands with wilderness characteristics. This alternative would provide the lowest level of protection to non-WSA lands as no eligible river segments are recommended for suitability.

Areas of Critical Environmental Concern

Under this alternative, no wild and scenic river segments would be found suitable for inclusion in the National Wild and Scenic River System. Therefore, management prescriptions to protect the suitable river segments would not be applied and would not afford protection of wilderness values in non-WSA lands with wilderness characteristics. This alternative would provide the lowest level of protection to non-WSA lands as no ACECs are designated

Alternative B: Preferred Alternative

Impacts from Soil Resources and Water Resources

Impacts would be the same as described under Alternative A.

Impacts from Vegetation

Impacts would be the same as described under Alternative A.

Impacts from Cultural Resources

Impacts would be similar to those described under Alternative N for the Bull Creek Archaeological District. In addition, allocation of cultural sites to scientific, public, conservation, traditional, and experimental uses under this alternative would increase knowledge of cultural resources and would enhance opportunities for primitive forms of recreation. Knowing more about the cultural resources of an area, interpreting the resource in an appropriate fashion, and viewing cultural resource sites in the non-WSA areas all add to the enjoyment of these areas for primitive recreational purposes. Protection of cultural resources adds to the character of the setting that supports these recreational opportunities. Conducting resource inventories in the Trough Hollow area and Bull Creek Archaeological District would increase knowledge of cultural resources in the Wildcat Mesa and Mt. Ellen/Blue Hills non-WSA lands with wilderness characteristics.

Providing access for American Indian Tribes to public lands for traditional purposes may impact wilderness characteristics of non-WSA lands. If access is provided by motorized vehicle, the noise and presence of vehicles would reduce opportunities for solitude and conflict with primitive forms of recreation.

Impacts from Paleontological Resources

Impacts would be the same as described under Alternative N.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management would be similar to those described under Alternative N. Under Alternative B, 148,165 acres would be designated as VRM Class I or II in all or parts of 18 non-WSA lands with wilderness characteristics, protecting the natural character of those lands. In addition, 534,435 acres would be designated as VRM Class III or IV, which may adversely impact the wilderness characteristics by allowing moderate or major modification to the characteristic landscape.

Impacts from Special Status Species

Impacts would be the same as described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as described under Alternative N, with the exception that habitat manipulations would be allowed to benefit bison and mule deer in the Henry Mountains bison and mule deer range that overlays portions of Mount Ellen/Blue Hills, Ragged Mountain, Mount Pennell, Bull Mountain, and Mount Hillers non-WSA lands with wilderness characteristics. These vegetation treatments, depending on the method used, could impact the naturalness of the non-WSA areas and affect the solitude and primitive recreation opportunities in these areas, especially during the time of employment. Mechanical treatments would have the most long-term impacts due to the use of motorized equipment and surface disturbing effects of the treatment. In addition, construction of new range projects that benefit wildlife such as water developments and fencing of riparian areas would impair small areas (generally less than five acres) of the natural character in the non-WSA lands with wilderness characteristics.

Impacts from Wild Horses and Burros

Alternative B would have similar impacts to wilderness characteristics as Alternative N, although herd size may be augmented in the Canyonlands HMA due to higher allocations of AUMs for wild burros.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, there are no specific actions prescribed to directly protect the naturalness and opportunities for solitude or primitive recreation of the non-WSA areas.

Impacts from Forestry and Woodland Products

Impacts would be the same as described under Alternative A.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative N.

Impacts from Recreation

ERMAs

Impacts would be the same as described under Alternative A.

SRMAs

Four of the proposed SRMAs would overlap portions of 14 non-WSA lands with wilderness characteristics. There would be 311,640 acres of non-WSA lands that are within the four SRMAs (or 46% of non-WSA lands).

The Dirty Devil/Robber's Roost SRMA would be managed the same as in Alternative A; therefore, the acres and subsequent analysis of impacts of non-WSA lands would be the same.

Approximately 1,000 acres of the Muddy Creek/Crack Canyon non-WSA area would fall within the Factory Butte SRMA. Because this SRMA promotes motorized recreation opportunities and opens the SRMA land to cross-county OHV use, that portion of the non-WSA area (less than 2% of the total) could have its natural values impaired by resultant surface disturbance (trails), and would compromise opportunities for solitude and primitive recreation by OHV activities.

Both the 12,800 acre Capitol Reef Gateway SRMA and the 533,900 Henry Mountains SRMA have mixed management strategies for recreational opportunities. Some areas would be managed for their primitive opportunities while some would be managed for group camping areas, developed facilities, and semi-primitive motorized recreation. Approximately 7,770 acres of non-WSA lands (Fremont Gorge) fall within the Capitol Reef Gateway SRMA, while 159,235 acres of non-WSA lands within the Bull Mountain, Bullfrog Creek, Dogwater Creek, Mount Ellen/Blue Hills, Mount Hillers, Mount Pennell, Notom Bench, Ragged Mountain, and Red Desert areas fall within the Henry Mountains SRMA. OHV activities would be limited to designated routes in both SRMA areas overlain by non-WSA lands which would temporarily affect solitude and opportunities for primitive recreation when vehicles are in the area. Wilderness characteristics values could be compromised by construction of recreational facilities, placement of signs, constructed trails and staging areas. However, wilderness characteristics would continue to be maintained within the immediate area of Fremont Gorge itself because it would be closed to OHV use, as well as within large areas of the Henry Mountains SRMA due to its sheer size and interrelationship with existing WSAs.

Impacts from Travel Management

Alternative B would designate 5 areas managed as open OHV play areas which would include 1,000 acres (>1%) within 1 of the 29 non-WSA lands with wilderness characteristics. The proposed Factory Butte Play Area (2,600 acres) would include 1,000 acres of the Muddy Creek/ Crack Canyon non-WSA lands with wilderness characteristics area. Cross-country motorized travel in these non-WSA lands would continue to result in surface disturbance to soils and vegetation that would alter the landscape and diminish the natural character of these non-WSA lands. Further, the presence and noise of motorized vehicles would degrade a visitor's opportunity for solitude and conflict with opportunities for primitive and unconfined recreation activities.

Under this alternative, OHV use would be limited to designated routes in 647,400 acres (95%) of the 29 non-WSA lands with wilderness characteristics. In these areas, 429.2 miles of routes would be designated as shown in Table 4-20:

Table 4-20. OHV Route Designations in Non-WSA Lands with Wilderness Characteristics, Alternative B

Non-WSA Area Name	Miles of Routes
Bull Mountain	1.8 miles
Bullfrog Creek	20.7 miles
Dirty Devil/French Spring	117.5 miles
Dogwater Creek	0.1 miles
Fiddler Butte	2.1 miles
Flat Tops	26.2 miles
Fremont Gorge	11.5 miles
Horseshoe Canyon South	10.2 miles
Jones Bench	1 mile
Kingston Ridge	6.6 miles
Labyrinth	2.2 miles
Limestone Cliffs	14.1 miles
Little Rockies	8.3 miles
Long Canyon	2 miles
Mount Ellen/Blue Hills	30.4 miles
Mount Hillers	1.9 miles
Mount Pennell	30.8 miles
Muddy Creek/Crack Canyon	31.9 miles

Non-WSA Area Name	Miles of Routes
Mussentuchit Badlands	0 miles
Notom Bench	3.6 miles
Phonolite Hill	9.7 miles
Pole Canyon/Hunter Spring	12.3 miles
Ragged Mountain	11.1 miles
Red Desert	29.3 miles
Rock Canyon	1.2 miles
Rocky Ford	3.9 miles
Sweetwater Reef	3.8 miles
Wild Horse Mesa	35 miles
Wildcat Knolls	0 miles

Limiting OHV use would confine soil and vegetation disturbance caused by motor vehicles to designated routes, and result in no additional change to the natural character of the non-WSA lands. The presence and noise of vehicles using these routes, however, would reduce the opportunity of visitors to find solitude in the non-WSA areas, especially in proximity to the routes. Motorized uses would conflict with primitive and unconfined recreation opportunities sought in the non-WSA areas.

Under this alternative, motor vehicles would be allowed to pull off of a designated route up to 50 feet of either side of the centerline for the purposes of parking/staging. Motor vehicles would be allowed to use existing spur routes for ingress and egress to established campsites within 150 feet of the centerline of designated routes, but would be prohibited from traveling between multiple campsites, establishment of motorized play areas and race tracks, or travel across wet meadows or riparian areas. These actions would allow for parking and camping while confining the area where soil and vegetation disturbance would occur and would result in limited change to the natural character of the non-WSA lands.

This alternative would designate 34,200 acres (5%) within five of the 29 non-WSA lands with wilderness characteristic areas as closed to OHV use. These areas are shown in Table 4-21:

Table 4-21. Acres Closed to OHVs in Non-WSA Lands with Wilderness Characteristics, Alternative B

Non-WSA Area Name	Acres Closed
Dirty Devil/French Spring	27,500 acres
Fremont Gorge	1,500 acres
Horseshoe Canyon South	100 acres
Mount Ellen/Blue Hills	400 acres
Muddy Creek/Crack Canyon	4,700 acres

Because these areas are closed, no routes would be designated; surface disturbance caused by motorized travel and the resultant impacts to the natural character of the non-WSA areas would not occur. Further, the opportunities for conflict between primitive forms of recreation and motorized uses in these areas would not occur. The natural character and opportunities for solitude and primitive recreation of these non-WSA areas would be unaffected by OHV travel.

OHV open areas near communities would be considered and encouraged for leasing under authority of the Recreation and Public Purposes Act to allow local management of OHV play areas. Generally these would include previously disturbed areas and would be considered on a case-by-case basis. If an R&PP

open area was leased and overlapped non-WSA areas, the action would continue to degrade the natural character of the non-WSA lands with wilderness characteristics by allowing the surface disturbing activity from motorized vehicles to continue, as well as conflict with solitude and primitive recreation experiences from the sights and sounds of vehicle travel.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as described under Alternative A.

Withdrawals

Portions of three non-WSA lands with wilderness characteristics are recommended for withdrawal from mineral entry: Dirty Devil/French Spring (5,900 acres), Fremont Gorge (1,500 acres), and Muddy Creek/Crack Canyon (3,800 acres). These 11,200 acres recommended for withdrawal comprise 2% of all non-WSA lands. The withdrawal would continue to preserve the naturalness and opportunities for both solitude and primitive forms of recreation in each of these areas by preventing mining claims and the noise and presence of surface disturbance, people, vehicles, and equipment associated with mining. Wilderness characteristics would be preserved, and naturalness would not be impacted because mining activities would be precluded on these lands. The other 98% that would be open to mineral entry would have the same impacts as described for Alternative N.

Rights-of-Way and Other Land Use Authorizations

Impacts from right-of-way corridors would be the same as those described for Alternative A.

Non-WSA lands with wilderness characteristics that would remain available for granting of rights-of-way include all of 18 areas and portions of 11 areas, totaling 590,661 acres. Any surface disturbing activity and/or placement of permanent visible facilities would detract from the natural character of the area and disrupt the setting needed to support primitive forms of recreation.

There are 91,939 acres in 11 non-WSA lands with wilderness characteristics areas that would be protected, in part, from surface disturbing actives under this alternative because they would be within right-of-way avoidance areas (see Table 4-15). Portions of the Bull Mountain, Dirty Devil/French Spring, Flat Tops, Fremont Gorge, Horseshoe Canyon South, Mount Ellen/Blue Hills, Mount Hillers, Mount Pennell, Muddy Creek/Crack Canyon, Ragged Mountain and Wildhorse Mesa non-WSA lands with wilderness characteristics would be within the rights-of-way avoidance areas. These areas are to be avoided but may be available for location of rights-of-way with special stipulations if the proposal meets the goals and objectives of other resources and uses in the land use plan. It is expected and assumed that the avoidance areas would protect the natural character of the non-WSA lands in these areas.

Impacts from issuance of other land use authorizations would be the same as described for Alternative N.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Lands open to oil and gas leasing within non-WSA lands with wilderness characteristics are illustrated in Table 4-16. Exploration and development activities could impact wilderness characteristics through the direct disturbance of the natural terrain and consequent impacts on solitude and opportunities for primitive recreation. Under Alternative B, 14% of the non-WSA lands with wilderness characteristics would be protected by no surface occupancy stipulations or closed to leasing. The types of impacts experienced as a result of oil and gas activities would be the same as those described for Alternative N.

All or portions of the 29 non-WSA lands with wilderness characteristics areas would remain open to leasing and exploration and development under standard oil and gas stipulations or under controlled surface use or timing limitation stipulations. There are 682,600 acres of non-WSA lands with wilderness characteristics within the RFD areas. Of these, there are 590,500 acres that are open under standard terms or minor constraints. This comprises about 86% of non-WSA areas in the RFD areas. Fourteen percent (92,100 acres) of the non-WSA lands with wilderness characteristics spread between 9 areas would have a no surface occupancy stipulation on the future leases, or would be closed to leasing.

In the RFD Areas 1 & 2, all or portions of 24 non-WSA wilderness characteristics areas would remain open to leasing under standard stipulations or under controlled surface use or timing limitation stipulations. There are 645,800 acres of non-WSA lands with wilderness characteristics within the combined RFD areas. Of these, there are 561,100 acres that are open under standard terms or minor constraints. The other 84,700 acres are either closed to leasing or under a no surface occupancy stipulation: 61,300 acres in Dirty Devil/French Spring (46% of the total of this non-WSA area), 1,500 acres in Fremont Gorge (9%), 3,600 acres in Horseshoe Canyon South (17%), 2,300 acres in Mount Ellen/Blue Hills (5%), 1,300 acres in Mount Hillers (72%), 2,300 acres in Mount Pennell (4%), and 3,800 acres in Muddy Creek/Crack Canyon (6%). It is assumed that the various waivers, exceptions, and modifications under the no surface occupancy stipulation would not be granted because they would not be compatible with other resource goals and objectives in these areas.

The non-WSA lands with wilderness characteristics with the greatest percentage leased at this time would be in the Flat Tops and Dirty Devil/French Spring areas. Given that the projection for drilling for oil and gas is 3 wells/year for the entire RFD area, and the non-WSA lands with wilderness characteristics that are open with standard or minor leasing constraints are 21% of the RFD area, one well per year – 15 wells over a 15 year period - could be drilled within any of these open non-WSA areas. Because well projections under this alternative are the same as in Alternative N, and the same percentage of lands in the RFD area generally encompass non-WSA lands with wilderness characteristics, the same analysis portraying 1 well per year in this area, or 12 wells over the 15 year RFD scenario would be applied. One difference with this alternative, however, is that about half of the acreage for Dirty Devil/French Spring and around 72% of the Mount Hillers non-WSA areas would be closed to leasing or available for leasing with no surface occupancy. This management for the protection of other resources would indirectly protect these non-WSA areas from surface disturbing activities associated with oil and gas activities. Therefore wilderness characteristics values of naturalness and outstanding opportunities for solitude and primitive recreation would be preserved in these areas.

In RFD Area 3, all of the 5 non-WSA lands with wilderness characteristics would remain open to leasing under standard stipulations or under controlled surface use or timing limitation stipulations. Because well projections under this alternative are the same as in Alternative N, and the same percentage of lands in the RFD area generally encompass non-WSA lands with wilderness characteristics, the same analysis portraying 2 wells over the 15 year RFD scenario would be applied.

Impacts for geophysical activities would be the same as Alternative N.

Leasable Minerals - Geothermal

Impacts would be the same as described under Alternative N.

Leasable Minerals - Coal

Impacts would be the same as described under Alternative N.

Non-Energy Solid Leasable Minerals

Impacts would be the same as described under Alternative N.

Locatable Minerals

Impacts would be the same as described under Alternative N.

Salable Minerals

Impacts would be similar to those described for Alternative N, except that all or portions of the 29 non-WSA lands with wilderness characteristics areas would remain open to salable mineral disposal under standard conditions or minor constraints. Of the 682,600 acres of non-WSA lands with wilderness characteristics, there are 590,500 acres that are open under standard terms or minor constraints; this comprises about 86% of the non-WSA areas. Where surface disturbance would occur, naturalness and opportunities for primitive recreation and solitude would be foregone.

Fourteen percent (92,100 acres) of the non-WSA lands with wilderness characteristics spread between 9 areas would have no surface occupancy stipulations or would be closed to salable mineral disposal. It is assumed that the various waivers, exceptions, and modifications under the no surface occupancy stipulation would not be granted because they would not be compatible with other resource goals and objectives in these areas.

Impacts from Special Designations

Wild and Scenic Rivers

Under Alternative B, two of the 29 non-WSA lands areas intersect with eligible wild and scenic river segments, totaling 24.21 miles in those two areas. There are 19.31 miles of the Dirty Devil River and 4.9 miles of the Fremont River (Fremont Gorge) that would be managed to preserve their wild and scenic river eligibility. Protection of river values (pending future suitability studies) would prevent uses and surface disturbances that would detract from the natural character of the Dirty Devil/French Spring and Fremont Gorge non-WSA lands with wilderness characteristics within the half-mile river corridor (one-quarter mile on each side of the river segment).

Areas of Critical Environmental Concern

Under Alternative B, 2 ACECs would be designated to protect the relevant and important value of relict vegetation. One of these ACECs (North Caineville Mesa) would overlay non-WSA lands with wilderness characteristics. The management prescriptions for this ACEC would protect naturalness and opportunities for solitude and primitive recreation in all of the non-WSA lands within the ACEC.

A portion of the Muddy Creek/Crack Canyon (3,800 acres) non-WSA lands with wilderness characteristics area lies within the 3,800 acre potential North Caineville Mesa ACEC. These non-WSA lands with wilderness characteristics would be: closed to OHV use; open for oil and gas leasing with no surface occupancy; unavailable for livestock grazing; identified as unsuitable for surface coal mining; identified to acquire inholdings from willing sellers; and recommended for withdrawal from mineral entry as a result of the management prescriptions for the ACEC. These prescriptions would prevent surface disturbances, limit motorized uses and protect the natural character and opportunities for solitude and primitive recreation of the non-WSA lands with wilderness characteristics.

Alternative C

Impacts from Soil Resources and Water Resources

Impacts would be similar to those described under Alternative N, except that no surface disturbance or occupancy would be permitted within 660 feet of natural springs to protect water quality and riparian

vegetation. The effects on the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics would therefore occur on less acres as compared to Alternatives N, A, or B.

Impacts from Vegetation

Impacts would be similar to those described under Alternative N, except that no surface disturbance or occupancy would be permitted within approximately 660 feet (based on geo-hydrological, riparian, and other factors) of natural springs to protect riparian vegetation. The effects on the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics would therefore occur on less acres as compared to Alternatives N, A, or B.

Alternative C proposes to treat an average of 26,000 acres of vegetation annually, using only natural processes. The types of impacts to naturalness and opportunities for solitude and primitive recreation of the non-WSA lands with wilderness characteristics as a result of natural vegetation treatments methods would be similar to those described under Alternative N, although potential areas affected under Alternative C would be less. This alternative would not result in enough disturbance applied over time to support disturbance-based ecosystems.

Impacts from Cultural Resources

Impacts would be the same as described under Alternative B.

Impacts from Paleontological Resources

Impacts would be the same as described under Alternative N.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management would be similar to those described under Alternative N. Under Alternative C, 163,765 acres would be designated as VRM Class I or II in all or parts of 18 non-WSA lands with wilderness characteristics areas, protecting the natural character of those lands. Conversely, 518,835 acres would be designated as VRM Classes III or IV, which may adversely impact the wilderness characteristics due to the objectives of these classes which allow moderate or major modification to the landscape.

Impacts from Special Status Species

Impacts would be the same as described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as described under Alternative A, with the exception that habitat manipulations to benefit bison and mule deer would use only prescribed fire and biological methods, thereby continuing to protect the naturalness of the non-WSA areas and the opportunities for solitude and primitive recreation. Construction of new range projects that benefit wildlife such as water developments and fencing of riparian areas could impair small areas (generally less than five acres) of the natural character in the non-WSA lands with wilderness characteristics.

Under this alternative 41,600 acres in the Mount Ellen/Blue Hills non-WSA area and 25,400 acres in the Ragged Mountain non-WSA area would be closed to off-highway vehicle use to protect crucial bison habitat. This would help to maintain the opportunities for solitude and primitive recreation within the non-WSA lands with wilderness characteristics.

Impacts from Wild Horses and Burros

The types of impacts experienced as a result of wild horse and burro management would be similar to those described for Alternative B except that herd size would be doubled (as would AUM allocations) in the Canyonlands HMA. This would provide greater opportunities for viewing wild burros, which could enhance primitive recreation experiences.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, there are no specific actions prescribed to directly protect the naturalness and opportunities for solitude or primitive recreation of the non-WSA areas, resulting in no specific benefits to non-WSA lands.

Impacts from Forestry and Woodland Products

Alternative C would preclude commercial timber harvest within all non-WSA lands with wilderness characteristics, so impacts associated with these activities would not occur in the non-WSA lands. However, commercial and non-commercial use of forest and woodland products and commercial live plant and seed collection would continue to be allowed on all non-WSA lands with wilderness characteristics. Impacts associated with such permitted activities would be the same as described under Alternative A.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative N.

Impacts from Recreation

ERMAs

Impacts would be the same as described under Alternative A.

SRMAs

Three of the proposed SRMAs would overlap portions of 14 non-WSA lands with wilderness characteristics areas. There would be 327,560 acres of non-WSA lands that are within the four SRMAs (or 48% of non-WSA lands).

The Dirty Devil/Robber's Roost SRMA would be managed the same as in Alternative A, except that an additional 16,930 acres within the Fiddle Butte non-WSA lands with wilderness characteristics would be incorporated into the SRMA. The subsequent analysis of impacts and protection of the non-WSA lands would be the same as Alternative A, although the acreage would be augmented.

Under Alternative C, management of the Capitol Reef Gateway SRMA would be different than Alternative B in that the interior of the SRMA would be managed to protect its naturalness and primitive recreation opportunities. The 7,770 acres of the Fremont Gorge non-WSA lands with wilderness characteristics that fall within this SRMA would be complemented by this management. The wilderness characteristics values of these non-WSA lands would be protected.

The 533,900 Henry Mountains SRMA has mixed management strategies for recreational opportunities, as in Alternative B. The same non-WSA lands and acreage would overlap this SRMA, and the same general management would be prescribed. Therefore, the same impacts described for Alternative B would be applicable for Alternative C.

Impacts from Travel Management

Under Alternative C, no non-WSA lands with wilderness characteristics would be designated open for cross-country travel. OHV use would be limited to designated routes in 473,100 acres (69%) of the 29 non-WSA lands with wilderness characteristics areas. In these areas, 99.7 miles of routes would be designated as shown in Table 4-22:

Table 4-22. OHV Route Designations in Non-WSA Lands with Wilderness Characteristics, Alternative C

Non-WSA Area Name	Miles of Routes
Bull Mountain	0.5 miles
Bullfrog Creek	6.6 miles
Dirty Devil/French Spring	13.3 miles
Dogwater Creek	0.1 miles
Fiddler Butte	0 miles
Flat Tops	7.5 miles
Fremont Gorge	11.3 miles
Horseshoe Canyon South	0 miles
Jones Bench	0 miles
Kingston Ridge	2.6 miles
Labyrinth	0 miles
Limestone Cliffs	14 miles
Little Rockies	3.9 miles
Long Canyon	2 miles
Mount Ellen/Blue Hills	2.2 miles
Mount Hillers	0 miles
Mount Pennell	1.8 miles
Muddy Creek/Crack Canyon	2.7 miles
Mussentuchit Badlands	0 miles
Notom Bench	0.8 miles
Phonolite Hill	8.2 miles
Pole Canyon/Hunter Spring	9.6 miles
Ragged Mountain	1.1 miles
Red Desert	1.6 miles
Rock Canyon	1.2 miles
Rocky Ford	2.3 miles
Sweetwater Reef	2.8 miles
Wild Horse Mesa	3.6 miles
Wildcat Knolls	0 miles

Limiting OHV use would confine soil and vegetation disturbance caused by motor vehicles to designated routes, and result in no additional change to the natural character of the non-WSA lands. The presence and noise of vehicles using these routes, however, would reduce the opportunity of visitors to find solitude in the non-WSA areas, especially in proximity to the routes. Motorized uses would conflict with primitive and unconfined recreation opportunities sought in the non-WSA areas.

Under this alternative, motor vehicles would be allowed to pull off of a designated route up to 25 feet of either side of the centerline for the purposes of parking/staging. Campsites would be designated for motor vehicle use where compatible with other resources and resource uses. Motorized travel between multiple campsites, establishment of motorized play areas, race tracks, and travel across wet meadows or riparian areas would be prohibited. These actions would allow for parking and camping while confining the area

where soil and vegetation disturbance would occur and would result in limited change to the natural character of the non-WSA lands.

This alternative would designate 209,500 acres (31%) within 12 of the 29 non-WSA lands with wilderness characteristic areas as closed to OHV use. These areas are shown in Table 4-23:

Table 4-23. Acres Closed to OHVs in Non-WSA Lands with Wilderness Characteristics, Alternative C

Non-WSA Area Name	Acres Closed
Dirty Devil/French Spring	60,000 acres
Fiddler Butte	12,000 acres
Fremont Gorge	6,700 acres
Horseshoe Canyon South	2,900 acres
Limestone Cliffs	400 acres
Little Rockies	3,600 acres
Mount Ellen/Blue Hills	8,200 acres
Mount Pennell	45,300 acres
Muddy Creek/Crack Canyon	20,200 acres
Ragged Mountain	25,400 acres
Wild Horse Mesa	24,500 acres
Wildcat Knolls	300 acres

Because these areas would be closed, no routes would be designated and surface disturbance caused by motorized travel and the resultant impacts to the natural character of the non-WSA areas would not occur. Furthermore, the opportunities for conflict between primitive forms of recreation and motorized uses in these areas would not occur. The natural character and opportunities for solitude and primitive recreation of these non-WSA areas would be unaffected by OHV travel.

Under this alternative, requests for R&PP leases for OHV open play areas would not be considered, and use of game carriers would not be allowed off of designated routes. These actions would protect the natural character of the non-WSA lands with wilderness characteristics because no new surface disturbing activity would be allowed from motorized vehicles.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be similar to those described for Alternative N. No lands would be considered for FLPMA Section 203 sales under this alternative.

Withdrawals

Portions of 12 non-WSA lands with wilderness characteristics would be recommended for withdrawal from mineral entry: Dirty Devil/French Spring (34,100 acres), Fiddler Butte (10,800 acres), Fremont Gorge (3,400 acres), Little Rockies (11,600 acres), Mount Ellen/Blue Hills (6,200 acres), Mount Hillers (1,200 acres), Mount Pennell (11,400 acres), Muddy Creek/Crack Canyon (14,300 acres), Ragged Mountain (15,700 acres), Red Desert (600 acres), Wild Horse Mesa (1,600 acres) and Wildcat Knolls (100 acres). These 110,900 acres that would be recommended for withdrawal from mineral entry comprise 16% of all non-WSA lands with wilderness characteristics. The withdrawal would continue to preserve the naturalness and opportunities for both solitude and primitive forms of recreation in each of these areas by preventing mining claims and the noise and presence of surface disturbance, people, vehicles, and equipment associated with mining. Wilderness characteristics would be preserved, and naturalness would not be impacted because mining activities would be precluded on these lands. The

other 84% of the non-WSA lands that would be open to mineral entry would have the same impacts as described for Alternatives N.

Rights-of-Way and Other Land Use Authorizations

Impacts from right-of-way corridors would be the same as those described for Alternative A.

Non-WSA lands with wilderness characteristics that would remain available for granting of rights-of-way include all of 6 areas and portions of 22 areas, totaling 370,432 acres. Any surface disturbing activity and/or placement of permanent facilities would detract from the natural character of the area and disrupt the setting needed to support primitive forms of recreation.

There are 312,168 acres in 23 non-WSA lands with wilderness characteristics areas that would be protected, in whole or in part, from surface disturbing actives under this alternative because they would be within right-of-way avoidance areas (see Table 4-15). All or portions of the Bull Mountain, Dirty Devil/French Spring, Dogwater Creek, Fiddler Butte, Flat Tops, Fremont Gorge, Horseshoe Canyon South, Jones Bench, Kingston Ridge, Labyrinth Canyon, Limestone Cliffs, Little Rockies, Mount Ellen/Blue Hills, Mount Hillers, Mount Pennell, Muddy Creek/Crack Canyon, Notom Bench, Phonolite Hill, Ragged Mountain, Red Desert, Rocky Ford, Wildhorse Mesa, and Wildcat Knolls non-WSA lands with wilderness characteristics would be within the right-of-way avoidance areas. These areas are to be avoided but may be available for location of rights-of-way with special stipulations if the proposal meets the goals and objectives of other resources and uses in the land use plan. It is expected and assumed that the avoidance areas would protect the natural character of the non-WSA lands in these areas.

Impacts from issuance of other land use authorizations would be the same as described for Alternative N.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Lands open to oil and gas leasing within non-WSA lands with wilderness characteristics are illustrated in Table 4-16. Exploration and development activities could impact wilderness characteristics through the direct disturbance of the natural terrain and consequent impacts on opportunities for primitive recreation and solitude. Under Alternative C, 69% of non-WSA lands would be open to leasing under standard stipulations or controlled surface use or timing restrictions and 31% would be open subject to no surface occupancy or closed. The types of impacts experienced as a result of oil and gas activities are the same as those described for Alternative N.

All or portions of 27 non-WSA lands with wilderness characteristics areas would remain open to leasing and development under standard oil and gas stipulations or under controlled surface use or timing limitation stipulations. There are 682,600 acres of non-WSA lands with wilderness characteristics within the RFD areas. Of these, there are 468,900 acres that are open under standard terms or minor constraints. This comprises about 69% of non-WSA areas. Thirty-one percent (213,700 acres) of the non-WSA lands with wilderness characteristics spread between 18 areas would have a no surface occupancy stipulation on the future leases, or be closed to leasing. Two of those non-WSA areas (Dogwater Creek and Notom Bench) would be completely closed to leasing, thus fully protecting the wilderness characteristics values from surface disturbance associated with oil and gas exploration and development.

In the RFD Areas 1 & 2, all or portions of 22 non-WSA land with wilderness characteristics areas would remain open to leasing under standard stipulations or under controlled surface use or timing limitation stipulations. There are 645,800 acres of non-WSA lands with wilderness characteristics within the combined RFD areas. Of these, there are 432,600 acres in 16 non-WSA areas that are open under standard terms or minor constraints. The remaining 213,200 acres would be closed to leasing or under a

no surface occupancy stipulation: 62,500 acres in Dirty Devil/French Spring (47% of this non-WSA area), 3,500 acres in Dog Water Creek (100%), 17,300 acres in Fiddler Butte (88%), 3,000 acres in Fremont Gorge (19%), 3,300 acres in Horseshoe Canyon South (16%), 15,600 acres in Little Rockies (67%), 17,800 acres in Mount Ellen/Blue Hills (36%), 1,100 acres in Mount Hillers (61%), 17,900 acres in Mount Pennell (27%), 17,700 acres in Muddy Creek/Crack Canyon (29%), 8,000 acres in Notom Bench (100%), 1,000 acres of Phonolite Hill (13%), 15,400 acres in Ragged Mountain (59%), 2,300 acres in Red Desert (6%), 400 acres in Rocky Ford (6%), and 26,400 acres in Wild Horse Mesa (53%). These non-WSA lands subject to major constraints or closure to leasing comprise approximately 33% of the non-WSA lands with wilderness characteristics in this combined RFD area. It is assumed that the various waivers, exceptions, and modifications under the no surface occupancy stipulation would not be granted because they would not be compatible with other resource goals and objectives in these areas.

The non-WSA lands with wilderness characteristics with the greatest percentage leased at this time would be in Flat Tops and Dirty Devil/French Spring non-WSA areas. Given that the projection for drilling for oil and gas is 3 wells/year for the whole RFD area, and the non-WSA lands with wilderness characteristics that are open with standard or minor leasing constraints are 17% of the RFD area; one well per year –15 wells over a 15 year period - could be drilled within the 22 non-WSA areas that are under standard leasing stipulations or controlled surface use stipulations. Although well projections under this alternative are the same as in Alternative N, the percentage of non-WSA lands available for oil and gas surface occupancy is 8% less. Thirty-three percent of the non-WSA areas would be protected from surface disturbing activities associated with oil and gas exploration and development, thereby preserving the naturalness and outstanding opportunities for solitude and primitive recreation in these areas. Sixty-six percent of the lands would be available for oil and gas exploration and development, but because this area has a low activity level (development potential), the same analysis as Alternative N portraying 1 well per year in these non-WSA areas, or 12 wells over the 15 year RFD scenario would be applied. One difference with this alternative, however, is that two areas are completely protected because they are closed to leasing, and five areas have well over 50% of their acreage protected (see above).

In RFD Area 3, all of 5 non-WSA lands with wilderness characteristics areas would remain open to leasing under standard stipulations or under controlled surface use or timing limitation stipulations, with the exception of 200 acres in Wildcat Knolls that would be closed to leasing. Because well projections under this alternative are the same as in Alternative N, and the same percentage of lands in the RFD area generally encompass non-WSA lands with wilderness characteristics, the same analysis portraying 2 wells over the 15 year RFD scenario would be applicable.

Impacts for geophysical activities would be the same as Alternative N.

Leasable Minerals - Geothermal

Impacts would be the same as described under Alternative N.

Leasable Minerals - Coal

Under this alternative, 9,270 acres of non-WSA lands with wilderness characteristics underlain by coal resources suitable for leasing would be closed to leasing. This acreage includes 8,120 acres within the Mount Pennell non-WSA area (1,690 acres identified for surface mining, and 6,430 acres identified for subsurface mining), and 1,150 acres within the Mount Ellen/Blue Hills non-WSA area (610 acres identified for surface mining, and 540 acres identified for subsurface mining). All other non-WSA areas with coal resources suitable for leasing could be leased and mined, pending a leasing EIS and further analysis. If leased, 3,230 acres in Mount Ellen/Blue Hills, 4,320 acres in Mount Pennell, and 82 acres in Wild Horse Mesa non-WSA lands could be available for leasing by surface mining methods. Surface mining for the coal resources would entail strip mining operations. Impacts to the wilderness characteristics values would be the same as described under Alternatives N, A, and B. Up to 6% of the

Mount Ellen/Blue Hills non-WSA area, up to 7% of the Mount Pennell, and less than 1% in Wild Horse Mesa non-WSA areas could forego their wilderness characteristics if the total surface coal resource is mined.

In addition to the surface coal resource, both Mount Pennell and Mount Ellen/Blue Hills have sub-surface coal resources found suitable for mining. If leased, an additional 4,440 acres in Mount Ellen/Blue Hills, and 18,770 acres in Mount Pennell non-WSA lands could be available for leasing by subsurface mining methods. In the Emery coal field, underground coal resources suitable for leasing by underground mining methods encompass 3,970 acres in Limestone Cliffs and 64 acres in Rock Canyon non-WSA lands with wilderness characteristics. The same impacts described in Alternative N for subsurface mining would occur in areas available for coal leasing.

Exploration activities for coal resources could be authorized within any of the non-WSA lands with wilderness characteristics. These activities include the use of cross-county travel with drilling rigs and field crews for not more than two years in an identified area. This could cause tracks from motorized use, crushed vegetation and compacted soil, and other surface disturbances. Pad construction may be an outcome from deep drilling. This disturbance would be temporary and reclamation would be required; however, during the time that the exploratory activities are occurring, opportunities for solitude and primitive recreation would be affected in the short-term, and naturalness would be impacted until the area is reclaimed.

Non-Energy Solid Leasable Minerals

Impacts would be the same as described under Alternative N.

Locatable Minerals

Impacts would be the same as described under Alternative N.

Salable Minerals

Impacts would be similar to those described for Alternative N, except that all or portions of 27 non-WSA lands with wilderness characteristics areas would remain open to salable mineral disposal under standard conditions or minor constraints. Of the 682,600 acres of non-WSA lands with wilderness characteristics, there are 468,900 acres that are open under standard terms or minor constraints. This comprises about 69% of non-WSA areas.

Thirty-one percent (213,700 acres) of the non-WSA lands with wilderness characteristics spread between 18 areas would have a no surface occupancy stipulation on the future leases, or be closed to leasing. It is assumed that the various waivers, exceptions, and modifications under the no surface occupancy stipulation would not be granted because they would not be compatible with other resource goals and objectives in these areas. Two of the non-WSA areas (Dogwater Creek and Notom Bench) would be completely closed to leasing, thus fully protecting the wilderness characteristics values from surface disturbance associated with mineral material disposal.

Impacts from Special Designations

Wild and Scenic Rivers

Under this alternative, four of the 29 non-WSA lands areas intersect with eligible wild and scenic river segments, totaling 33.35 miles in those four areas. There are 19.31 miles of Dirty Devil River, 0.12 miles of No Man's Canyon, 2.83 miles of Robbers Roost Canyon, 0.13 miles of Sam's Mesa Box Canyon, 1.39 miles of Twin Corral Box Canyon, 4.9 miles of Fremont River (Fremont Gorge), 3.26 miles of Fremont River (Capitol Reef National Park to Caineville Ditch Diversion) and 1.4 miles of Maidenwater Creek that would be managed to preserve their wild and scenic river eligibility. Protection of river values

(pending future suitability studies) would prevent uses and surface disturbances that would detract from the natural character of the Dirty Devil/French Spring, Fremont Gorge, Red Desert and Little Rockies non-WSA lands with wilderness characteristics within the half-mile river corridor (one-quarter mile on each side of the river segment).

Areas of Critical Environmental Concern

Under Alternative C, 16 ACECs would be designated to protect a variety of relevant and important values; 11 of those ACECs would overlay non-WSA lands with wilderness characteristics. Those ACECs are Badlands, Bull Creek Archaeological District, Dirty Devil/North Wash, Fremont Gorge/Cockscomb, Henry Mountains, Horseshoe Canyon, Kingston Canyon, Little Rockies, Lower Muddy Creek, Quitchupah and Thousand Lakes Bench. The management prescriptions for these ACECs would protect naturalness and opportunities for solitude and primitive recreation in all of the non-WSA lands within the ACEC.

Portions of the Mount Ellen/Blue Hills (6,214 acres), Muddy Creek/Crack Canyon (17,719 acres), Red Desert (834 acres) and Wild Horse Mesa (10,597 acres) non-WSA lands with wilderness characteristics lie within the 88,900 acre potential Badlands ACEC. These non-WSA lands with wilderness characteristics would be unavailable for grazing in the areas of North and South Caineville Mesas, Class A scenery would be managed as VRM Class II, the mesa tops would be closed to OHV use with the remainder of the ACEC limited to designated routes, closed to oil and gas leasing and the Class A scenery outside the Mount Ellen/Blue Hills WSA recommended for withdrawal from mineral entry. These ACEC management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation. The occasional presence and noise of motorized use would reduce opportunities for solitude and conflict with primitive forms of recreation when vehicles were traveling the designated routes.

A small portion of the Mount Ellen/Blue Hills (321 acres) non-WSA lands with wilderness characteristics lie within the 4,800 acre potential Bull Creek Archaeological District ACEC. Within the non-WSA lands with wilderness characteristics that overlap the ACEC, motorized use would be limited to designated routes. This prescription would limit motorized uses. However, the occasional presence and noise of motorized use would reduce opportunities for solitude and conflict with primitive forms of recreation. This conflict would only occur if routes were designated near the non-WSA lands and when vehicles were traveling the designated routes. The management prescriptions would allow fencing for the protection of important cultural sites. These improvements would affect the natural character if placed within the non-WSA lands with wilderness characteristics areas.

Portions of the Dirty Devil/French Spring (58,051 acres), Fiddler Butte (12,027 acres), Flat Tops (8 acres) and Little Rockies (3,190 acres) non-WSA lands with wilderness characteristics lie within the 205,300 acre potential Dirty Devil/North Wash ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class II in any areas containing Class A scenery, be unavailable for livestock grazing in Beaver Wash, closed to OHV use or limited to designated trails to protect scenic values, VRM Class I or II areas would be right-of-way avoidance areas, inholdings would be acquired from willing sellers, Class A scenery would be recommended for withdrawal from mineral entry, and VRM Class II areas would be open for oil and gas leasing with NSO. These ACEC management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation. The management prescriptions would allow fencing of riparian areas to exclude livestock, fencing for the protection of important cultural sites, water developments that would benefit desert bighorn sheep, and camping facilities. These improvements could affect the natural character if placed within the non-WSA lands with wilderness characteristics areas. In areas where OHV use would

be limited to designated routes, the occasional presence and noise of motorized use would reduce opportunities for solitude and conflict with primitive forms of recreation. This conflict would occur where routes were designated near or within non-WSA lands and when vehicles were traveling the designated routes.

The Fremont Gorge (15,941 acres) non-WSA lands with wilderness characteristics lie within the 34,300 acre potential Fremont Gorge/Cockscomb ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class II in any areas containing Class A scenery, OHV use would be limited to designated routes to protect scenic values, Class A scenery would be recommended for withdrawal from mineral entry, and VRM Class II areas would be open for oil and gas leasing with NSO. These ACEC management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation. The management prescriptions would allow fencing for the protection of important cultural sites which could affect the natural character if placed within the non-WSA lands with wilderness characteristics areas. In areas where motorized use is limited to designated routes, the occasional presence and noise of motorized use would reduce opportunities for solitude and conflict with primitive forms of recreation. This conflict would occur when vehicles were traveling the designated routes.

All of the Mount Hillers (1,757 acres) and portions of the Bull Mountain (2,821 acres), Mount Ellen/Blue Hills (17,771 acres), Mount Pennell (45,731 acres) and Ragged Mountain (24,408 acres) non-WSA lands with wilderness characteristics lie within the 288,200 acre potential Henry Mountains ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class II in any areas containing Class A scenery, closed to OHV use or limited to designated routes, No Man's Mesa would be closed to OHV use, VRM Class I or II areas would be right-of-way avoidance areas, and inholdings would be acquired from willing sellers. The ACEC prescriptions also recommend withdrawing No Man's Mesa and Class A scenery from mineral entry and VRM Class II areas and No Man's Mesa to be closed for oil and gas leasing. These management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation. The management prescriptions would allow for maintenance of erosion control structures, fencing for the protection of important cultural sites, and manipulation of habitat and range improvements to benefit wildlife which could affect the natural character if placed within the non-WSA lands with wilderness characteristics areas. In areas where motorized use is limited to designated routes, the occasional presence and noise of motorized use would reduce opportunities for solitude and conflict with primitive forms of recreation. This conflict would occur where routes were designated near or within non-WSA lands and when vehicles were traveling the designated routes.

A portion of the Horseshoe Canyon South (2,934 acres) and Labyrinth Canyon (1 acre) non-WSA lands with wilderness characteristics lie within the 40,900 acre (RFO portion only) potential Horseshoe Canyon ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class II in any areas containing Class A scenery, closed to OHV use or limited to designated routes, no new rights-of-way would be authorized in VRM Class I and II areas, inholdings would be acquired from willing sellers, Class A scenery would be recommended for withdrawal from mineral entry, and VRM Class II areas would be managed as NSO for oil and gas leasing. These ACEC management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation. The management prescriptions would allow fencing for the protection important cultural sites and fencing of riparian areas to exclude livestock which could affect the natural character if placed within the non-WSA lands with wilderness characteristics areas. In areas where motorized use is limited to designated trails, the occasional presence and noise of motorized use would reduce opportunities for solitude and

conflict with primitive forms of recreation. This conflict would occur where routes were designated near or within non-WSA lands and when vehicles were traveling the designated routes.

All of the Phonolite Hill (7,908 acres) and portions of the Kingston Ridge (2,126 acres) and Rocky Ford (6,429 acres) non-WSA lands with wilderness characteristics lies within the 22,100 acre potential Kingston Canyon ACEC. Within the non-WSA lands with wilderness characteristics areas, inholdings in the riparian corridor would be acquired from willing sellers, and motorized use would be limited to designated routes and limited seasonally to protect wildlife habitat. This prescription would limit motorized uses. However, the occasional presence and noise of motorized use would reduce opportunities for solitude and conflict with primitive forms of recreation. This conflict would only occur if routes were designated near the non-WSA lands and when vehicles were traveling the designated routes.

A portion of the Little Rockies (8,692 acres) non-WSA lands with wilderness characteristics lies within the 49,200 acre potential Little Rockies ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class II in any areas containing Class A scenery, OHV use would be limited to designated routes, no new rights-of-way would be authorized in Class A scenery, inholdings would be acquired from willing sellers, areas with Class A scenery would be recommended for withdrawal from mineral entry, and VRM Class II areas would be managed as NSO for oil and gas leasing. These ACEC management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation. The management prescriptions would allow range improvements, primarily water developments, to benefit wildlife which could affect the natural character if placed within the non-WSA lands with wilderness characteristics areas. The management prescriptions would limit motorized uses. However, the occasional presence and noise of motorized use would reduce opportunities for solitude and conflict with primitive forms of recreation. This conflict would only occur if routes were designated near the non-WSA lands and when vehicles were traveling the designated routes.

A portion of the Wild Horse Mesa (15,778 acres) non-WSA lands with wilderness characteristics lies within the 16,200 acre (RFO portion only) potential Lower Muddy Creek ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class II in any areas containing Class A scenery, closed to OHV use or limited to designated routes, rights-of-way would be authorized consistent with VRM Class II objectives, inholdings would be acquired from willing sellers, and closed to oil and gas leasing. These ACEC management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation. The management prescriptions would limit motorized uses. However, the occasional presence and noise of motorized use would reduce opportunities for solitude and conflict with primitive forms of recreation. This conflict would only occur if routes were designated near the non-WSA lands and when vehicles were traveling the designated routes.

A portion of the Wildcat Knolls (27 acres) non-WSA lands with wilderness characteristics lie within the 180 acre potential Quitchupah ACEC. Within the non-WSA lands with wilderness characteristics that overlap the ACEC, motorized use would be limited to designated routes. This prescription would limit motorized uses. However, the occasional presence and noise of motorized use would reduce opportunities for solitude and conflict with primitive forms of recreation. This conflict would only occur if routes were designated near the non-WSA lands and when vehicles were traveling the designated routes. The management prescriptions would allow fencing for the protection of important cultural sites. These improvements could affect the natural character if placed within the non-WSA lands with wilderness characteristics areas.

A portion of the Jones Bench (43 acres) and Limestone Cliffs (385 acres) non-WSA lands with wilderness characteristics lie within the 500 acre potential Thousand Lakes Bench ACEC. These non-WSA lands with wilderness characteristics would be designated as closed or limit OHV use to designated routes. These prescriptions would limit motorized uses. However, the occasional presence and noise of motorized use would reduce opportunities for solitude and conflict with primitive forms of recreation. This conflict would only occur when vehicles were traveling the designated routes. The management prescriptions would allow fencing for the protection of important cultural sites. These improvements could affect the natural character if placed within the non-WSA lands with wilderness characteristics areas.

Alternative D

Impacts from Soil Resources and Water Resources

Impacts would be the same as described under Alternative C.

Impacts from Vegetation

Impacts would be the same as described under Alternative C.

Impacts from Cultural Resources

Impacts would be the same as described under Alternative B.

Impacts from Paleontological Resources

Impacts would be the same as described under Alternative N.

Impacts from Visual Resources

Under Alternative D, 682,600 acres would be designated as VRM Class I in all of the 29 non-WSA lands with wilderness characteristics, protecting the natural character of those lands, and the settings required to support opportunities for solitude and primitive forms of recreation.

Impacts from Special Status Species

Impacts would be similar to those described for Alternative A, with the exception that surface disturbing activities would not be permitted on non-WSA lands with wilderness characteristics, thereby protecting those values.

Impacts from Fish and Wildlife

Impacts would be similar to those described for Alternative C, with the exception that habitat manipulations would be limited to fire or biological methods that would not impact the naturalness of the non-WSA areas and affect the opportunities for solitude and primitive recreation in these areas. In addition, construction of new range projects that benefit wildlife would not be considered unless they meet VRM Class I objectives and meet the goals and objectives of protecting wilderness characteristics values. This would continue to protect the natural values of the non-WSA lands with wilderness characteristics.

Under this alternative, all lands within the Mount Ellen/Blue Hills, Bull Mountain, Ragged Mountain, Mount Hillers, and Mount Pennell would be closed to off-highway vehicle use to protect crucial bison habitat. This would help to maintain the opportunities for solitude and primitive recreation within these non-WSA lands with wilderness characteristics.

Impacts from Wild Horses and Burros

Impacts would be the same as described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, all non-WSA lands with wilderness characteristics would be managed by the following prescriptions:

- VRM Class I;
- Managed for primitive and semi-primitive non-motorized recreation;
- Closed to OHV use;
- Not available for disposal;
- Right-of-way exclusion areas;
- Recommended for withdrawal from mineral entry;
- Closed to oil and gas leasing;
- Closed to disposal of salable minerals (mineral materials);
- Unavailable for further consideration for coal leasing.

These prescriptions would prevent surface disturbances that would degrade the natural character of the non-WSA areas, prevent surface disturbances and uses that would be incompatible with primitive recreation activities, and protect the setting needed to support the experience of solitude.

Impacts from Forestry and Woodland Products

Under this alternative, all 682,600 acres of non-WSA lands with wilderness characteristics in the 29 areas within the RFO would be restricted from commercial and non-commercial timber harvest, commercial and non-commercial use of forest and woodland products, and commercial live plant and seed collection. All wilderness characteristics values would therefore be protected from this activity and maintain the natural character and opportunities for solitude and primitive recreation.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative N.

Impacts from Recreation

ERMAs

Impacts would be similar to those described for Alternative A, except that no large group areas would be designated for campsites and group events in the Mount Pennell non-WSA area, thereby protecting the naturalness and opportunities for solitude and primitive recreation in this area.

SRMAs

Seven of the proposed SRMAs would overlap portions of 24 non-WSA lands with wilderness characteristics areas. There would be 634,070 acres of non-WSA lands that are within the seven SRMAs (or 93% of non-WSA lands). The Capitol Reef, Dirty Devil/French Spring, East Fork Sevier River, Henry Mountains, Labyrinth Canyon, Little Rockies and San Rafael Swell SRMAs overlap all of Bullfrog Creek, Dogwater Creek, Long Canyon, Mount Ellen/Blue Hills, Mount Pennell, Notom Bench, Red Desert, Dirty Devil/French Spring, Fiddler Butte, Flat Tops, Sweetwater Reef, Jones Bench, Kingston Ridge, Phonolite Hill, Rocky Ford, Bull Mountain, Mount Hillers, Ragged Mountain, Horseshoe Canyon South, Labyrinth Canyon, Little Rockies, Muddy Creek/Crack Canyon, and Wildhorse Mesa non-WSA lands with wilderness characteristics, and about half of the Fremont Gorge non-WSA area.

Under each of the SRMAs, management objectives would be to protect and preserve the wilderness characteristics values of the non-WSA lands. This would include closing lands to OHV use and

providing for primitive recreational experiences. All wilderness characteristics values would therefore be maintained under this alternative.

Travel Management

This alternative would designate all 682,600 acres (100%) of the 29 non-WSA lands with wilderness characteristic areas as closed to OHV use. Because these areas would be closed, no routes would be designated and surface disturbance caused by motorized travel and the resultant impacts to the natural character of the non-WSA areas would not occur. Further, the opportunities for conflict between primitive forms of recreation and motorized uses in these areas would not occur. The natural character and opportunities for solitude and primitive recreation of these non-WSA areas would be unaffected by OHV travel.

Alternative D would provide the most protection for the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics by closing all of these lands to OHV travel.

Impacts from Lands and Realty

Land Tenure Adjustments

Under this alternative, no non-WSA lands would be considered for sale or other land tenure adjustments because this would not be in conformance with the RMP decisions to protect non-WSA lands with wilderness characteristics. This would continue to protect and preserve the wilderness characteristics values of these areas.

Withdrawals

Under this alternative, all 682,600 acres within non-WSA lands with wilderness characteristics would be recommended for withdrawal from mineral entry. This would preclude surface disturbing activities associated with mining that would impact wilderness characteristics. The withdrawal would continue to preserve the naturalness and opportunities for both solitude and primitive forms of recreation in each of these areas by preventing mining claims and the noise and presence of surface disturbance, people, vehicles, and equipment associated with mining.

Should exploration and/or development be proposed on the existing mining claims in the 13 non-WSA lands with wilderness characteristics, then those values would be impacted as described under Alternative N.

Rights-of-Way and Other Land Use Authorizations:

Under this alternative, no right-of-way corridors that would impact non-WSA lands with wilderness characteristics would be designated and all non-WSA lands would be managed as right-of-way exclusion areas (see Table 4-15. Exclusion from future rights-of-way would protect the natural character in all these lands. Protection of the natural landscape would also preserve the setting needed to support primitive forms of recreation and experiences of solitude. The same protections would prevent corridor designations within any of the non-WSA lands with wilderness characteristics, thus protecting those values.

Under this alternative, only land use authorizations that meet the RMP objective of this alternative to protect non-WSA lands with wilderness characteristics would be authorized. Thus, the natural character of these lands would be protected and the setting needed to support primitive forms of recreation and experiences of solitude would be preserved.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas Resources

Lands open to oil and gas leasing within non-WSA lands with wilderness characteristics are illustrated in Table 4-16. Exploration and development activities could impact wilderness characteristics through the direct disturbance of the natural terrain and consequent impacts on opportunities for solitude and primitive recreation.

Under Alternative D, all non-WSA lands with wilderness characteristics would be closed to leasing. However, existing leases still remain in 4 of the 29 non-WSA lands with wilderness characteristics areas. All of these leases are within RFD Areas 1 & 2. Development of these leases could compromise wilderness characteristics values in these areas. Below is a breakdown of how or where that may occur based on the RFD area and the predicted surface disturbance for oil and gas activity for this alternative. Those non-WSA lands with wilderness characteristics that are not currently leased (which include all of 20 areas in RFD Areas 1 & 2 and all of the areas in RFD Area 3) would be fully protected under the leasing closure of this alternative. This would preserve the naturalness of the areas and maintain the outstanding opportunities for primitive recreation and solitude. When the leases within the four non-WSA areas expire, then those lands would be closed to any new leasing.

In the RFD Areas 1 & 2, four non-WSA wilderness characteristics areas have portions of the areas under existing leases comprising 51,510 acres. There are 645,800 acres of non-WSA lands with wilderness characteristics within this combined RFD area. The non-WSA lands with the greatest percentage leased at this time are Flat Tops and Dirty Devil/French Spring. Given that the projection for drilling for oil and gas is 45 wells (or about 3 wells/year) for the whole RFD area under this alternative, and that 8% of the lands the RFD area encompasses are in non-WSA lands with wilderness characteristics that are leased (or 2% of the RFD area), one well could be drilled within the currently leased non-WSA areas. This could disturb up to 12 acres over the life of the plan for the one well. The leases, if not developed or held in production, will expire after 10 years. Development of any leases within the non-WSA areas could cause that portion to lose their natural character and opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources. Because of the small amount of acreage projected to be disturbed and the one well projected for the non-WSA leased lands in this RFD, it is anticipated that only a small portion of a non-WSA area could lose its wilderness characteristics in any of the non-WSA lands with wilderness characteristics. Far less than one-percent of any of the non-WSA areas would be at risk of loss of wilderness characteristics.

In the RFD Area 3, all 36,800 acres of non-WSA lands with wilderness characteristics would be closed to leasing. No oil and gas related surface disturbing activities would be allowed and wilderness values would be protected.

All non-WSA lands with wilderness characteristics would be closed to geophysical exploration, thereby protecting the wilderness characteristics of these areas.

Leasable Minerals - Geothermal

All non-WSA lands with wilderness characteristics would be closed to geothermal leasing, thereby protecting the wilderness characteristics from surface disturbing activities.

Leasable Minerals - Coal

Under this alternative, coal leasing and/or exploratory activities would not be considered within any non-WSA lands with wilderness characteristics. This would protect those non-WSA lands with coal resources suitable for leasing (Mount Pennell, Mount Ellen/Blue Hills, Limestone Cliffs, and Rock Canyon) from

surface disturbing activities related to coal resources. Naturalness and opportunities for solitude and primitive recreation would be maintained.

Non-Energy Solid Leasable Minerals

Leasing would not be authorized for non-energy solid leasable minerals, thereby protecting the wilderness characteristics values.

Locatable Minerals

Impacts would be the same as described under Alternative N.

Salable Minerals

Under Alternative D, all lands within the non-WSA lands with wilderness characteristics would be closed to salable mineral disposal. These areas would be fully protected under the leasing closure under this alternative. This would preserve the naturalness of the areas and maintain the outstanding opportunities for primitive recreation and solitude.

Impacts from Special Designations

Wild and Scenic Rivers

Under this alternative, four of the 29 non-WSA land areas intersect with eligible wild and scenic river segments, totaling 33.35 miles in those four areas. There are 19.31 miles of Dirty Devil River, 0.12 miles of No Man's Canyon, 2.83 miles of Robbers Roost Canyon, 0.13 miles of Sam's Mesa Box Canyon, 1.39 miles of Twin Corral Box Canyon, 4.9 miles of Fremont River (Fremont Gorge), 3.26 miles of Fremont River (Capitol Reef National Park to Caineville Ditch Diversion) and 1.4 miles of Maidenwater Creek that would be managed to preserve their wild and scenic river eligibility. Protection of river values (pending future suitability studies) would prevent uses and surface disturbances that would detract from the natural character of the Dirty Devil/French Spring, Fremont Gorge, Red Desert and Little Rockies non-WSA lands with wilderness characteristics within the half-mile river corridor (one-quarter mile on each side of the river segment).

This alternative would provide the most long-term protection of the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics because it recommends the most miles of waterways for protection in the National WSR System. However, Alternative D would also allow for specific management to protect non-WSA lands with wilderness characteristics in addition to management of the suitable WSRs.

Areas of Critical Environmental Concern

Under Alternative D, 16 ACECs would be designated to protect a variety of relevant and important values; 11 of these ACECs would overlay non-WSA lands with wilderness characteristics. Those ACECs are Badlands, Bull Creek Archaeological District, Dirty Devil/North Wash, Fremont Gorge/Cockscomb, Henry Mountains, Horseshoe Canyon, Kingston Canyon, Little Rockies, Lower Muddy Creek, Quitchupah and Thousand Lakes Bench. The management prescriptions for these ACECs would protect naturalness and opportunities for solitude and primitive recreation in all of the non-WSA lands within the ACEC.

Portions of the Mount Ellen/Blue Hills (6,214 acres), Muddy Creek/Crack Canyon (17,719 acres), Red Desert (834 acres) and Wild Horse Mesa (10,597 acres) non-WSA lands with wilderness characteristics lie within the 88,900 acre potential Badlands ACEC. These non-WSA lands with wilderness characteristics would be unavailable for grazing in the areas of North and South Caineville Mesas, no fencing or other surface disturbing activities would be allowed, designated as VRM Class I, the mesa tops and wilderness characteristics lands would be closed to OHV use with the remainder of the ACEC limited

to designated routes, closed to oil and gas leasing, and the wilderness characteristic lands and Class A scenery outside the Mount Ellen/Blue Hills WSA recommended for withdrawal from mineral entry. These management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation.

A small portion of the Mount Ellen/Blue Hills (321 acres) non-WSA lands with wilderness characteristics lie within the 4,800 acre potential Bull Creek Archaeological District ACEC. The non-WSA lands with wilderness characteristics would be closed to OHV use and no fencing or other surface disturbing activities would be allowed. These management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation.

Portions of the Dirty Devil/French Spring (58,051 acres), Fiddler Butte (12,027 acres), Flat Tops (8 acres) and Little Rockies (3,190 acres) non-WSA lands with wilderness characteristics lie within the 205,300 acre potential Dirty Devil/North Wash ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class I, be unavailable for livestock grazing in Beaver Wash, closed to OHV use, VRM Class I or II areas would be right-of-way avoidance areas, inholdings would be acquired from willing sellers, recommended for withdrawal from mineral entry, and closed to oil and gas leasing. No fencing of riparian areas or cultural sites, water developments or camping facilities would be allowed within the wilderness characteristics lands. These management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation.

The Fremont Gorge (15,941 acres) non-WSA lands with wilderness characteristics lie within the 34,300 acre potential Fremont Gorge/Cockscomb ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class I, closed to OHV use, recommended for withdrawal from mineral entry, closed to oil and gas leasing, and no fencing or other surface disturbing activities would be allowed. These management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation.

All of the Mount Hillers (1,757 acres) and portions of the Bull Mountain (2,821 acres), Mount Ellen/Blue Hills (17,771 acres), Mount Pennell (45,731 acres) and Ragged Mountain (24,408 acres) non-WSA lands with wilderness characteristics lie within the 288,200 acre potential Henry Mountains ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class I, closed to OHV use, VRM Class I or II areas would be right-of-way avoidance areas, and inholdings would be acquired from willing sellers. The ACEC prescriptions also recommend withdrawal of non-WSA lands with wilderness characteristics, No Man's Mesa and areas with Class A scenery from mineral entry and wilderness characteristic lands, VRM Class II areas and No Man's Mesa to be closed for oil and gas leasing. No maintenance of erosion control structures, fencing of cultural sites, manipulation of habitat or range improvements would be allowed within the wilderness characteristic lands. These management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation.

A portion of the Horseshoe Canyon South (2,934 acres) non-WSA lands with wilderness characteristics lies within the 40,900 acre (RFO portion only) potential Horseshoe Canyon ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class I, closed to OHV use, new rights-of-way in VRM Class I and II areas would not be authorized, inholdings would be acquired from willing sellers, recommended for withdrawal from mineral entry, and closed to oil and gas leasing. No

fencing of cultural sites or riparian areas would be allowed within the wilderness characteristics lands. These management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character and opportunities for solitude and primitive recreation of the non-WSA lands with wilderness characteristics.

All of the Phonolite Hill (7,908 acres) and portions of the Kingston Ridge (2,126 acres) and Rocky Ford (6,429 acres) non-WSA lands with wilderness characteristics lie within the 22,100 acre potential Kingston Canyon ACEC. Within the non-WSA lands with wilderness characteristics areas, inholdings within the riparian corridor would be acquired from willing sellers, and the wilderness characteristics lands would be closed to OHV use. These management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation.

A portion of the Little Rockies (8,692 acres) non-WSA lands with wilderness characteristics lies within the 49,200 acre potential Little Rockies ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class I, closed to OHV use, new rights-of-way in areas with Class A scenery or wilderness characteristics lands would not be authorized, inholdings would be acquired from willing sellers, recommended for withdrawal from mineral entry, closed to oil and gas leasing, and no surface disturbing activities would be allowed. These management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character and opportunities for solitude and primitive recreation of the non-WSA lands with wilderness characteristics.

A portion of the Wild Horse Mesa (15,778 acres) non-WSA lands with wilderness characteristics lie within the 16,200 acre (RFO portion only) potential Lower Muddy Creek ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class I, closed to OHV use, new rights-of-way avoided, inholdings acquired from willing sellers, and closed to oil and gas leasing. These management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation.

A portion of the Wildcat Knolls (27 acres) non-WSA lands with wilderness characteristics lies within the 180 acre potential Quitchupah ACEC. These non-WSA lands with wilderness characteristics would be closed to OHV use and no fencing or other surface disturbing activities would be allowed for the protection of cultural sites. These management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation. A portion of the Jones Bench (43 acres) and Limestone Cliffs (385 acres) non-WSA lands with wilderness characteristics lie within the 500 acre potential Thousand Lakes Bench ACEC. These non-WSA lands with wilderness characteristics would be designated as closed to OHV use, and no fencing or other surface disturbing activities would be allowed for the protection of cultural sites. These management prescriptions would reduce surface disturbances and limit motorized uses, which would protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation.

This alternative would provide the most long-term protection to the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics because it designates the most acres as ACECs. However, Alternative D would also allow for specific management to protect non-WSA lands with wilderness characteristics in addition to management of the ACECs.

4.4 IMPACTS TO RESOURCE USES

4.4.1 Forestry and Woodland Products

This analysis addresses potential impacts on forest and woodland products harvest from implementing the management actions under the alternatives described in Chapter 2. This analysis focuses on those management actions that place limitations and/or affect the quantity or quality of products within the RFO. Impacts on forest and woodland health are discussed in the Impacts to Vegetation section of this chapter. In the absence of quantitative data, best professional judgment was used, and impacts are sometimes described using ranges of potential impacts or in qualitative terms, if appropriate.

Methods and Assumptions

The analysis is based on the following assumptions:

- Several traditional woodland products (e.g., Christmas trees, posts, poles) may be harvested from tree species growing on sites not classified as forest or woodland.
- Demand for forest and woodland products is not anticipated to grow substantially over the planning period.
- Supply of forestry and woodland products would continue to substantially exceed demand.

Environmental Consequences

Impacts to forestry and woodlands would likely result from actions proposed under the following resource programs:

- Air Quality
- Soil Resources and Water Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Recreation
- Travel Management
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on forestry and woodland products.

Alternative N: No Action

<u>Impacts from Air Quality</u>

Proposed decisions for air would have minimal effect on harvesting of forest and woodland products. Burning of slash piles could be necessary following some harvesting projects. Air quality requirements would need to be considered and smoke management implemented to meet air quality standards.

Impacts from Soil Resources and Water Resources

Current demand for forest and woodland products is low and demand is expected to remain stable due to remoteness of resources. In general, decisions proposed for managing soil and water resources would also improve forest and woodland health by providing for overall ecosystem health through the continued implementation of the Fundamentals of Rangeland Health. Based on current levels of forest and woodland harvest and limited areas available for harvest, road and trail construction (which would result in new soil disturbance) is not expected. Therefore, there would be minimal impacts to forest and woodland products harvesting from soils and water decisions under this alternative.

Impacts from Visual Resources

Under Alternative N, 529,500 acres would be managed to meet VRM Class II objectives, of which 446,900 acres are within WSAs where forest and woodland harvest is prohibited. Managing the 82,600 acres outside of the WSAs to meet VRM Class II objectives could alter the size, type, and location of forest and woodland product harvest or forest health projects. However, not all of these 82,600 acres have forest and woodland resources. The remainder of the RFO (1,598,500 or 75%) would be managed as VRM Classes III and IV, which allow for moderate (Class III) or major (Class IV) changes to the landscape. This would allow flexibility for forest and woodland products harvest and management of forests and woodlands to meet the objectives of the Healthy Forest Restoration Act of 2003 in most of the RFO lands.

Impacts from Special Status Species

Proposed management for special status species habitats could limit forest and woodland product harvest, but acreage amounts would be minimal. The majority of special status species present in the lands managed by the RFO either do not inhabit forest and woodland areas, are protected by topography, or inhabit WSAs where harvest would not be allowed. Any forest management activities would necessarily be designed to avoid, mitigate, or improve the habitat for special status species.

Impacts from Fish and Wildlife

Proposed decisions for fish and wildlife could restrict some harvest by location or season. Seasonal or spatial restrictions for bison, mule deer, and elk could impact the success of commercial product harvest and forest health projects. Prohibiting surface disturbing activities from November 1 through May 15 (6½ months each year) could make it difficult to complete some projects. Seasonal or spatial restrictions for other wildlife species would not affect the harvesting of forest and woodland products since few resources are located in these habitat areas. Habitat treatment projects could indirectly improve forest and woodland health and increase the availability of some woodland products, depending on the treatment method used. Overuse of wildland or prescribed fire as a treatment method could result in a reduction of woodland products for the public due to the uncontrollable nature of fire and the possible elimination of prime woodland product areas that could otherwise be protected. In some cases, forest management could be used as a tool for improving wildlife habitat which would result in a benefit for both resources.

Impacts from Fire and Fuels Management

Suppressing all wildland fires could increase seedling/sapling survival, increasing stand density. The existing trend of pinyon-juniper woodland encroachment would continue with full fire suppression and fewer hazardous fuels treatment acres. Overall, this could lead to increasing fuel loading and the potential for uncharacteristically large or intense wildfires that would reduce the availability of forest and woodland products.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative.

Impacts from Forestry and Woodland Products

Management actions implemented to support the objectives of the Healthy Forest Restoration Act of 2003 would increase the long-term health and productivity of forest and woodlands and indirectly increase resistance to insect pest infestations. Current management of timber and woodland products has not effectively improved forest and woodland health and has restricted areas available to harvest. The current trends would continue which could lead to hazardous fuels, insect infestations, and continued encroachment of pinyon-juniper. This is due primarily to low program activity resulting from low demand for products, remoteness of the resource, and limited resources to complete needed actions.

Impacts from Recreation

The current recreation management would not affect the harvest of forest and woodland products. Developed recreation sites are not located in woodland harvest areas and the majority of current recreation activity is of a dispersed nature, with little occurring in woodland zones.

Impacts from Travel Management

Proposed decisions for OHV area and route designations could impact casual collection of forest and woodland products by limiting off-road access. However, restrictions are the least under this alternative – 1,636,400 acres (77%) of the RFO would be open to motorized and mechanized vehicles; motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO; and 214,000 acres (10%) of the RFO would be closed to motorized and mechanized vehicle use. The public would have access to 4,315 miles of unpaved routes in the RFO. Access for commercial activities, non-commercial permitted activities (firewood and Christmas tree cutting), and forest health projects is an administrative use that would be addressed in the permitting process.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Although some acres of the lands managed by the RFO having forest and woodland resources would be open for leasing, potential for impact is minimal because although there has historically been oil and gas exploration, no production in forested areas of the RFO has occurred. The same trend is expected to continue. If some production in woodland areas does take place, little impact is expected due to the limited amount of disturbance that would occur. New roads built to wells could improve access to woodland areas for those harvesting woodland products.

Leasable Minerals – Coal

Development of a surface coal mine is unlikely during the life of the plan and therefore is not anticipated to affect forest and woodland products. Development of a subsurface coal mine is also unlikely during the life of the plan, and if developed would affect a much smaller surface area than a surface mine.

Locatable Minerals

Little mining of locatable minerals is expected within the RFO during the next 15 to 20 years. Although it cannot be determined if any potential mining would preclude harvest of forest and woodland products, the potential for impacts to forest and woodland products would be small. Most locatable minerals have historically been found in locations not conducive to woodland product harvest (e.g., high in the Henry Mountains).

Impacts from Special Designations

Wild and Scenic Rivers

Eligibility of wild and scenic rivers would not impact harvesting of forest and woodland products because these resources are either not present or very limited within the eligible wild and scenic river corridors.

Areas of Critical Environmental Concern

Management actions for protection of relevant and important values of ACECs may affect the availability of forest and woodland products harvest. Management prescriptions associated with ACEC designation that would affect visual resources include managing oil and gas leasing as closed or open with no surface occupancy; more restrictive VRM designations; restricting livestock grazing; and travel limitations. Alternative N continues the designation of four ACECs (14,780 acres). Scenery was not one of the relevant and important values identified for these ACECs. However, allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC; unavailable for livestock grazing in three of the four ACECs; and acquisition of inholdings) would reduce surface disturbing activities within those areas and protect visual resources.

Along with continuing the designations of Beaver Wash Canyon, North Caineville Mesa and South Caineville Mesa ACECs, proposals under Alternative N would allow no uses that would cause irreparable damage to relevant and important values, would be closed to OHV use and would be proposed for withdrawal from mineral entry. In addition to the above, Gilbert Badlands would be recommended to have no surface disturbing activities allowed. However, because these areas are small in extent and do not have economically important forestry and woodland resources there would be no effect on these resources.

Alternative A

Impacts from Air Quality

Impacts would be the same as those described for Alternative N.

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

Under this alternative, all acreage outside WSAs would be designated as VRM Classes III and IV (1,681,100 acres, or 79% of the RFO), which allow for moderate (Class III) or major (Class IV) changes to the landscape. This would allow slightly more flexibility than Alternative N for forest and woodland products harvest and management of forests and woodlands to meet the objectives of the Healthy Forest Restoration Act of 2003. This increased flexibility would result from the increased land area available to implement management actions that would create visual changes on the landscape (e.g., cuttings, thinnings, and harrow treatments).

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the similar to those described for Alternative N except that there are fewer restricted areas under Alternative A. For example, activities within sage grouse brooding habitat would be restricted from April 1 through June 15 in Alternative N but no restrictions apply in Alternative A. This would result in increased opportunities for harvesting of forest and woodland products under Alternative A.

Impacts from Fire and Fuels Management

Using non-fire treatment methods to reduce hazardous fuels would increase the amount of biomass available. The use of prescribed fire and non-fire treatments would increase the opportunities for fuelwood and biomass harvest. Hazardous fuel reductions could alter the structure of forest and

woodland areas by removing fire susceptible individuals and reducing stand density. Overall, these management actions could increase the economic value of forest products in some areas and reduce the risk of uncharacteristically large or intense wildfires. This would increase the availability of forest and woodland products in comparison to Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to forestry and woodlands.

Impacts from Forestry and Woodland Products

Management actions implemented to support the objectives of the Healthy Forest Restoration Act of 2003 would increase the long-term health and productivity of forest and woodlands and indirectly increase resistance to insect pest infestations. Forestry management actions under this alternative would provide for commercial and non-commercial timber and woodland product harvest where feasible, sustainable, and compatible with restoring, maintaining, and improving forest health. Availability of timber and woodland products would be increased over Alternative N or C and would allow for more flexibility towards meeting the objectives of the Healthy Forest Restoration Act of 2003.

Impacts from Recreation

Proposed decisions regarding recreation management would not affect the harvest of forest and woodland products because proposed facilities which could preclude harvest would be expected to be minimal, and only where necessary to protect resources. Special recreation management areas are proposed but do not include prescriptions to close the areas to harvest. If deemed in conflict with SRMA management, harvest restrictions would be addressed during completion of the individual SRMA activity plans.

Impacts from Travel Management

The type of impacts would be similar to those described for Alternative N, except that under this alternative less area would be open to motorized and mechanized vehicles (449,000 acres – 21% of the RFO); motor vehicles would be limited to existing, designated, and maintained routes on 1,679,000 acres (79% of the RFO); and no areas would be closed to motorized and mechanized vehicle use. The public would have access to 4,312 miles of unpaved routes in the RFO. Access is restricted more under this alternative than under Alternative N, but less restricted than Alternatives B, C or D.

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

No river segments are recommended as suitable wild and scenic rivers under this alternative.

Areas of Critical Environmental Concern

No ACECs are proposed for designation under this alternative.

Alternative B: Preferred Alternative

Impacts from Air Quality

Impacts would be the same as those described for Alternative N.

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

Under this alternative, 209,000 (10%) of the RFO would be designated as VRM Class II, which means that only low levels of changes to the landscape can occur. Although designating these areas as VRM Class II could alter the size, type, and location of forest and woodland product harvest or forest health projects in order to meet the associated management objectives, forest and woodland products are not present on all of these acres. Seventy percent of the RFO (1,472,100 acres) would be designated as VRM Classes III and IV, which allow for moderate (Class III) or major (Class IV) changes to the landscape and thus would allow more opportunities for forest and woodland product harvest. Acres designated as VRM Classes III and IV are slightly less in this alternative than Alternatives N or A.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be similar to those described for Alternative N except that there are different restrictions between the two alternatives. For example, activities within sage grouse brooding habitat would be restricted from April 1 through June 15 in Alternative N, but under Alternative B activities would be restricted from April 1 through July 15 unless the activity is completed to improve sage grouse brooding habitat. These restrictions could result in decreased opportunities for harvesting of forest and woodland products under Alternative B as compared to Alternative N.

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative A.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to forestry and woodlands.

Impacts from Forestry and Woodland Products

Impacts would be the same as those described for Alternative A.

Impacts from Recreation

Impacts would be the same as those described for Alternative A.

Impacts from Travel Management

The types of impacts would be similar to those described for Alternative N, except that under this alternative substantially less area would be open to motorized and mechanized vehicles (8,400 acres – less than 1% of the RFO); motor vehicles would be limited to existing, designated, and maintained routes on 1,909,200 acres (90% of the RFO); and 210,400 acres (10% of the RFO) would be closed to motorized and mechanized vehicle use. The public would have access to 4,176 miles of unpaved routes in the RFO. Access is restricted more under this alternative than under Alternatives N or A, but less restricted than Alternatives C or D.

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

Under this alternative, 2 ACECs (2,530 acres) would be designated – North Caineville and Old Woman Front. Special management prescriptions for North Caineville ACEC include closing the area to OHV use; prescriptions for Old Woman Front include prohibiting the harvesting of forest and woodland products and closing the area to OHV use. These prescriptions would affect the availability of these resources to the public, but since the total area involved is so small, the overall effect to the program would be negligible.

Alternative C

Impacts from Air Quality

Impacts would be the same as those described for Alternative A.

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described for Alternative A, except that the acreage designated as VRM Class II would increase to 230,600 or 11% of the RFO, which is only slightly more than under Alternative A. VRM Classes III and IV would be designated on 1,450,500 acres (68%) of the RFO, which would allow more opportunities for forest and woodland product harvest.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the similar to those described for Alternative N except that there are additional restrictions for protection of wildlife habitat areas under Alternative C. For example, OHV use on 142,000 acres of deer and elk crucial winter range and 189,000 acres of crucial bison habitat would be closed under this alternative. This could limit opportunities for harvesting of forest and woodland products under Alternative B as compared to Alternative N.

Impacts from Fire and Fuels Management

The management actions included in this alternative (such as allowing only fire and biological treatment methods) to limit fuels treatments would allow increased ladder fuels, stand density, and pinyon-juniper encroachment. Indirectly, this could increase the amount of biomass available from pinyon-juniper woodlands. However, with current demands for biomass being low, this could make the forest and woodland areas more vulnerable to mortality from wildfire, insects, and disease. Overall, this could lead to increasing fuel loading and the potential for uncharacteristically large or intense wildfires that could reduce the availability of forest and woodland products in the long-term.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to forestry and woodlands.

Impacts from Forestry and Woodland Products

Management actions implemented to support the objectives of the Healthy Forest Restoration Act of 2003 would increase the long-term health and productivity of forest and woodlands and indirectly increase resistance to insect pest infestations. Under this alternative, effects to woodland areas would be the same as in Alternative A. However, prohibiting commercial timber harvest could limit the ability to treat timbered acres and might not effectively improve forest and woodland health.

Impacts from Recreation

Impacts would be the same as those described for Alternative A.

Impacts from Travel Management

Under Alternative C, no areas would be open to motorized and mechanized vehicles. This proposed decision could impact casual collection and non-commercial harvest of forest and woodland products by limiting off-road access. Motor vehicles would be limited to designated routes on 1,445,000 acres (68% of the RFO); and 683,000 acres (32% of the RFO) would be closed to motorized and mechanized vehicle use. The public would have access to 3,192 miles of unpaved routes. This alternative would result in greater access restrictions making it more difficult to harvest forest and woodland products than under Alternatives N, A and B, but would be less restrictive than Alternative D. Access for commercial activities and forest health projects is an administrative use that would be addressed during permitting or project development.

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

Under this alternative, 16 ACECs (886,810 acres) would be designated. Special management prescriptions for ACEC include (depending on the particular ACEC) closing the area(s) to OHV use and prohibiting the harvesting of forest and woodland products. These prescriptions would affect the availability of these resources to the public, but since the ACECs tend to be in remote areas away from population centers (where little forestry and woodland products harvesting occurs), the overall effect to the program would be minimal.

Alternative D

Impacts from Air Quality

Impacts would be the same as those described for Alternative N.

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resource Management

The types of impacts experienced under this alternative would be similar to those described for Alternative A, except that all non-WSA lands with wilderness characteristics (682,600 acres – 32% of the RFO) would be designated as VRM Class I which would preclude harvesting of forest and woodland products in order to meet the VRM management class objective of preserving the existing character of the

landscape. Additionally, acres designated as VRM Classes III and IV would decrease to 931,700 acres. Together, this would limit the opportunities for forest and woodland product harvest although the VRM Class I areas tend to be in remote areas away from population centers (where little forestry and woodland products harvesting occurs).

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the similar to those described for Alternative C except that there are additional restrictions for protection of wildlife habitat areas under Alternative D. For example, OHV use on 258,000 acres of deer and elk crucial winter range and 207,000 acres of crucial bison habitat would be closed under this alternative. This could limit opportunities for harvesting of forest and woodland products more than under any of the other alternatives.

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, protecting the wilderness characteristics on 682,600 acres (32% of the RFO) would generally preclude the harvesting of forest and woodland products where they are present within these areas. Non-WSA lands with wilderness characteristics would be closed to woodland products harvesting, closed to OHVs, and designated as VRM Class I. These management actions would have beneficial and adverse impacts on woodland resources: closing non-WSA areas with wilderness characteristics to woodland products harvesting and OHV access would preserve the resource by beneficially reducing direct and indirect impacts from surface disturbances within these areas (e.g., soil compaction and erosion, increased fire risks from OHVs, an increased potential of invasive species invasion and replacement of woodland resources); long-term, adverse impacts would be produced by the reduced opportunities for woodland harvesting for products use, and the restrictions on vegetation removal and treatments that could otherwise reduce understory fire risks and improve woodland ecological conditions.

Impacts from Forestry and Woodland Products

Impacts would be the same as those described for Alternative C.

Impacts from Recreation

Impacts would be the same as those described for Alternative A.

Impacts from Travel Management

Impacts would be similar to Alternative C, except that fewer acres would be limited to designated routes (972,800 acres), fewer miles of routes would be open to provide access to harvest areas (3,043 miles) and more acres would be closed to motorized and mechanized vehicle use (1,155,200 acres). This alternative would result in the greatest access restrictions of all the alternatives and the greatest potential for impacts to forestry and woodland resources.

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

Impacts would be the same as those described for Alternative C

4.4.2 Livestock Grazing

This section describes potential impacts on livestock grazing resulting from the implementation of management actions for other resource programs. Impacts on resources and resource uses resulting from implementation of the livestock grazing program are discussed in those particular resource sections of this chapter. Impacts on livestock grazing activities are generally the result of activities that affect forage levels, land-use restrictions that affect the ability to construct range improvements, and human disturbance/harassment of livestock within grazing allotments. Conducting vegetation treatments would likely have the greatest effect on livestock grazing, as such treatments could increase vegetation production and forage available for livestock. Activities that result in surface disturbance (e.g., mineral development, ROW construction, and recreation) or management of resources that results in limiting surface disturbance (e.g., fish and wildlife, vegetation, and visual resources) would also impact livestock grazing by affecting forage levels. Management of fire and fuels and forest and woodlands products harvesting would affect livestock grazing by either preserving or increasing available forage for livestock over the long-term. Impacts to livestock grazing operations also come from interaction with visitors, access provisions, and other management factors that limit or restrict livestock grazing in certain areas.

Methods and Assumptions

This analysis was based on the following assumptions:

- Livestock grazing would occur throughout the majority of the RFO.
- Livestock grazing would be managed in accordance with the *Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration*, and *Utah*'s *Standards for Rangeland Health and Guidelines for Livestock Grazing*.
- The type and amount of grazing use would be expected to remain approximately the same.
- Range improvements would continue to occur at current rates to reach rangeland improvement goals.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources in the RFO, review of existing literature, and information provided by other agencies. Effects are quantified where possible. Spatial analyses were conducted using GIS data and analyses. Impacts are described using ranges of potential impacts or in qualitative terms, if appropriate.

Environmental Consequences

Impacts to livestock grazing would likely result from actions proposed under the following resource management programs:

- Soil Resources and Water Resources
- Vegetation and Fire and Fuels Management
- Cultural Resources
- Visual Resources

- Special Status Species and Fish and Wildlife
- Wild Horses and Burros
- Non-WSA Lands with Wilderness Characteristics
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on livestock grazing.

Alternative N: No Action

Impacts from Soil Resources and Water Resources

Implementing appropriate BMPs (see Appendix 14) to minimize detrimental impacts to soils from ground-disturbing activities and maintaining and/or enhancing riparian areas (Utah Riparian Management Policy, 2005) through project design features and/or stipulations would help to reduce soil erosion, surface runoff, and sedimentation of streams. This would help to maintain and enhance vegetation and water quality and increase channel stability, which would indirectly provide forage and water for livestock.

Impacts from Vegetation and Fire and Fuels Management

Management of vegetation resources would generally enhance vegetative conditions and indirectly affect livestock grazing by increasing forage production. Applying the *Fundamentals of Rangeland Health* under the vegetation management program would help to manage surface uses and thereby enhance rangeland conditions and increase long-term forage production. However, managing rangelands according to the *Fundamentals of Rangeland Health* could also affect livestock operators on those allotments not meeting Standards for reasons attributed to grazing. Such adjustments could include season-of-use changes, forage allocation adjustments, implementation of grazing management practices (e.g., growing season deferment, riparian pastures, or exclosures), forage utilization limits, or conversions in kind or type of livestock. Management changes such as these could result in increased operating costs to the livestock operator. Over the long-term, achieving the standards would result in increased water availability and forage production, which would benefit livestock through improved animal distribution, increased weight gain and improved animal health.

Treatment of invasive species and noxious weeds would serve to control and contain weed species infestations, thereby maintaining forage production, diversity, and vigor. These actions could temporarily displace livestock and reduce available forage. Best management practices for livestock grazing (such as requiring use of weed-free feed) would be implemented to discourage the introduction and spread of weeds.

Conducting vegetation treatments, particularly livestock rangeland treatments, would enhance vegetation conditions and indirectly affect livestock grazing by increasing forage production. These treatments would have a short-term effect on livestock grazing through forage removal and by excluding livestock use for two growing seasons on treated areas, but enhanced rangeland conditions would be realized over the long-term. Conducting land treatments to reduce soil loss on identified areas and improve watershed health and implementing erosion control measures in frail watershed areas would help to reduce soil erosion, surface runoff and sedimentation of water sources, and reestablish grass/forb communities. This

would help to maintain and enhance vegetation conditions and water quality, which would indirectly provide forage and water for livestock.

This alternative allows for only limited treatment of vegetation, although a full range of tools would be available (including mechanical, wildland and/or prescribed fire, and chemical methods). These activities would decrease forage available for livestock use in the short-term because treated areas are generally rested from livestock grazing for two years following the treatments. Restoration activities in the long-term would improve the watersheds and vegetation, and provide additional forage for livestock. Areas in which vegetation treatments were not successful could be invaded by weed species and/or become reestablished by other undesired vegetation communities, which would reduce available livestock forage over the long-term.

Wildland fires could decrease forage available for livestock use in the short-term, and would require changes in and restrictions to livestock grazing use during emergency fire rehabilitation since livestock are generally not grazed in those areas until vegetation is reestablished, generally two years. In the long-term, forage quality and quantity available to livestock could potentially increase. Wildland fires can also damage range improvements such as fences, corrals, enclosures, monitoring studies, and above-ground pipelines.

Impacts from Cultural Resources

Activities associated with the management of cultural resources would affect relatively small, localized areas and would not have measurable effects on livestock forage. Mitigating adverse impacts to cultural resources and allowing for preservation and interpretation of such resources could include excavation of known sites, which would result in soil disturbances and forage removal. However, restrictions on surface disturbing activities near cultural sites could prevent the removal of forage in these areas, but could also result in the modification or relocation of range improvements.

Impacts from Visual Resources

New range improvements such as structures or vegetation treatments, would be required to meet VRM class objectives. VRM Classes I and II would be aimed at greater retention of existing landscape character than Classes III or IV, which could affect range improvement design (functionality and cost) or prohibit the construction of improvements such as pipelines and water storage tanks necessary to properly manage or improve livestock grazing management practices. Under Alternative N, none of the lands managed by the RFO are classified as VRM Class I; 529,000 acres (25%) would be managed as VRM Class II; 569,000 (27%) would be managed as VRM Class III; and 1,029,500 (48%) would be managed as VRM Class IV. Areas managed as VRM Class III or IV (75% of the RFO under this alternative) would be subject to actions that allow for greater landscape modification, which would have minimal effects on range improvements.

Impacts from Special Status Species and Fish and Wildlife

Management actions to enhance wildlife habitat could affect livestock grazing by improving vegetation conditions and indirectly maintaining and/or increasing forage production. However, implementing decisions to increase populations of special status species, implementing conservation measures for listed and sensitive species, and prohibiting or restricting ground disturbing activities within buffer zones identified in Appendices 10 and 14 for special status species could also restrict opportunities for range improvements and other grazing management actions.

Management and restoration of native wildlife populations into their historic ranges could have negligible to minor short- and long-term impacts on livestock operations by creating conflict with space, forage use, and water. However, the two activities have mutual goals. Water developments designed to provide new

water sources for wildlife in some situations increase water availability for livestock, promoting improved distribution of both livestock and wildlife.

Reintroductions, transplants, augmentation, and reestablishment of certain wildlife species could eliminate use of livestock in those areas (e.g., introducing bighorn sheep in domestic sheep range). In addition, complying with the Desert Bighorn Sheep Management Plan would preclude converting cattle permits to sheep permits in bighorn sheep habitat (which is located in the eastern portion of the RFO). However, this would have no effect on total acres available for livestock grazing.

Impacts from Wild Horses and Burros

Under this alternative, 100 AUMs are allocated to burros in the Canyonlands HMA, although no AML is established. These relatively small numbers would pose minimal conflicts with livestock grazing.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to livestock grazing.

Impacts from Livestock Grazing

Under this alternative, 138,952 acres would continue to be unavailable to livestock grazing, while 1,989,048 acres would continue to be available to grazing. No changes to current grazing management are proposed. Continued adherence to the *Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration* would result in maintaining plant vigor and increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, productivity, and riparian-wetland function. All of these would provide beneficial impacts to forage production for livestock.

Impacts from Recreation

Recreation activities would continue to directly impact livestock grazing operations through human disturbance, including animal displacement, livestock respiratory problems caused by airborne dust, animal displacement and harassment, and the injury or death of animals caused by vehicle collisions. Cross-country recreational OHV use could damage and remove forage resources and increase dust levels in high-use areas, which could cause dust coating of forage and subsequently lower forage palatability. Vandalism to range projects and leaving gates open would also have an impact on livestock grazing operations. These impacts would likely increase over the life of the RMP due to the increasing level of visitation in the RFO.

Overall impacts from recreation on livestock grazing would be moderate under this alternative and less intense compared to the other alternatives that would expand recreational opportunities and place restrictions on types of uses (including motorized access).

Impacts from Travel Management

Generally, the more area open to OHV use, the greater the potential for trampling of vegetation, which would reduce the amount of forage available for livestock. Limiting travel to designated routes confines the impacts to areas already disturbed and/or hardened for vehicle use. Under this alternative, 1,636,400 acres (77%) of the RFO would be open to motorized and mechanized vehicles, allowing potential impacts to vegetation over a large portion of the RFO; motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO; and 214,000 acres (10%) of the RFO would be closed to motorized and mechanized vehicle use.

The most miles of roads would remain open and the least closed under Alternative N. This would facilitate livestock management by allowing continued access to livestock grazing operations. However, it is expected that visitation to the RFO would continue to grow during the life of this RMP. Easy access afforded by the most miles of open roads would allow for increased interaction of the public with livestock and livestock developments (e.g., fences, corrals, and water developments). This would increase the occurrences of livestock harassment, gates being inappropriately left open or closed, and range improvements being damaged.

Providing the greatest miles of roads under Alternative N would also facilitate dispersed visitor use, which, in turn, would diffuse impacts to livestock and related facilities instead of concentrating such impacts on particular allotments or areas. Overall, Alternative N would cause the fewest impacts to livestock grazing operations from travel management decisions compared to the other alternatives.

Impacts from Lands and Realty

Land tenure adjustments (land disposals and acquisitions) are processed based on specific requests; the demand for these actions is unknown at this time. The loss of public land through land disposals (Section 203 land sales, exchanges, R&PP patents, etc.) could reduce forage available for livestock use on some allotments. Under this alternative, 280 acres are identified for sale. At eight acres per AUM, this could result in the loss of approximately 35 AUMs, which is less than 1% of the total AUMs available within the RFO. Acquired lands within a grazing allotment would be added to the allotment, but these would likely also involve only a small amount of AUMs. Retaining lands in Federal ownership (habitat for listed and candidate species, eligible wild and scenic river segments, ACECs, etc.) would continue to provide rangelands for livestock in these areas (except where identified as unavailable for grazing).

Construction activities related to the development of land use authorizations (ROWs, permits, leases, easements, etc.) would remove a small amount of vegetation over the short-term and increase the potential for the introduction and proliferation of noxious weeds and invasive species, thereby causing a loss of livestock forage and associated AUMs. Increased vehicle travel on new roads would also increase the potential for the spread of weeds and harassment of and injury to livestock. However, an increase in improved roads could facilitate livestock management operations by increasing access to remote locations within allotments. Under this alternative, all ACECs (14,780 acres), eligible WSR corridors (12 segments – 135 miles), areas closed to oil and gas leasing (459,700 acres), and areas open to oil and gas leasing with no surface occupancy (22,600 acres) would be managed as right-of-way avoidance areas (with exceptions granted only if the proposed authorization would not create substantial surface disturbance or would create only temporary impacts) where none of the aforementioned impacts would occur.

Impacts from Minerals and Energy

Surface disturbing activities associated with the development of leasable, locatable, and salable minerals could disturb soils, remove vegetation, and increase the potential for the introduction and proliferation of noxious weeds, thereby causing a loss of livestock forage and associated AUMs. As specified in Appendix 12, surface disturbance from geophysical exploration activities would amount to 5,100 acres (much of it on private lands); oil and gas development (roads, pipelines, and drill pads) would disturb an estimated 3,080 acres, resulting in a loss of livestock forage in these areas. At 20 acres per AUM, available forage could be reduced by 154 AUMs. However, about 80% of the initial disturbance would be reclaimed within the planning horizon, so only 20% of the disturbed area would be devoid of vegetation for the life of the well. Given that livestock grazing occurs across most of the RFO, the loss of forage in these areas would result in relatively minor impacts to livestock grazing.

Mineral development activities would also increase the potential for livestock harassment and livestock loss from vehicle collisions. However, the improvement of roads associated with mineral development

could facilitate livestock management operations by improving access to remote locations within allotments.

Impacts from Special Designations

Wild and Scenic Rivers

Management of river segments to protect their outstandingly remarkable values, free-flowing nature, and tentative classification would include surface use restrictions. Such restrictions would preclude surface disturbance and related forage removal, and could help to maintain AUMs for livestock. Under Alternative N, all 12 eligible river segments (135 miles) would receive protection. However, these additional land use restrictions could also increase constraints on options for range improvements. The restrictions on constructing range improvements within eligible wild and scenic river corridors could reduce management options to correct deficiencies in areas not meeting rangeland health standards, or in meeting other resource objectives. This could lead to reductions in grazing use or changes in season of use.

Areas of Critical Environmental Concern

Alternative N continues the designation of four ACECs (14,780 acres). Two of these ACECs (North Caineville Mesa and South Caineville Mesa) are unavailable for livestock grazing. The feasibility of grazing these areas is questionable, given their difficult access and lack of water. Management of the other two ACECs would have little or no impact on livestock grazing because livestock grazing was not identified as a threat to any relevant or important values, so no special management prescriptions that affect grazing operations would be implemented.

Alternative A

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N, although under Alternative A maximum treatment acreage limits would be set (averaging 73,600 acres annually for all treatments). While no maximum treatment acreage limits would be set under Alternative N, it is likely that fewer acres would actually be treated under that alternative because it generally mandates full suppression of wildland fires and allows for only limited treatment of vegetation. Additionally, full suppression of wildland fires is not mandated under Alternative A. Increasing the acres of vegetation treated would increase the short-term displacement of livestock following the treatments, but over the long-term increasing treatments would increase and improve vegetation types valuable for livestock grazing. However, as there is no requirement to treat a set acreage, there could be no short-term decreases in forage. If little or no vegetation treatments were implemented the existing active use AUMs would likely decrease as pinyon-juniper woodlands continue to expand, invading sagebrush steppe vegetation types and reducing understory forage species.

Impacts from Cultural Resources

Impacts would be similar to those described for Alternative N, except that most cultural resource sites would be allocated and managed for public use under Alternative A. This allocation would emphasize public education and interpretation of cultural resources, which would increase visitation to sites and could cause increased conflicts between livestock and people. This would only affect relatively small, localized areas and would not have significant impacts on livestock.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resources management would be similar to those described under Alternative N, except that more areas would be designated as VRM Classes III and IV (1,681,100 acres, or 79% of the RFO). Designating more areas in these VRM classes would result in larger areas of moderate to major modifications in the existing character of the landscape, which would reduce impacts on design, construction, and installation of range improvements as compared to Alternative N.

Impacts from Special Status Species and Fish and Wildlife

The types of impacts experienced as a result of special status species management would be similar to those described under Alternative N. However, this alternative includes additional strategies to avoid or reduce fragmenting habitat (including employing directional drilling for oil and gas; closing and reclaiming roads; and mitigating the effects of proposed projects that have the potential of causing long-term or permanent impacts or losses of habitat). All of these actions would maintain forage cover and reduce forage loss, which would maintain AUMs for livestock. This alternative also includes less restrictions on OHV use in crucial wildlife habitats, which could remove forage resources and increase dust levels in high-use areas, which could affect palatability of forage.

Impacts from Wild Horses and Burros

In general, the greater the number of burros the greater the possibility of adverse impacts on soil resources. Under this alternative, no AUMs would be allocated to burros in the Canyonlands HMA, and the AML would be set at zero. Keeping the AML at zero would eliminate impacts to soils caused by trampling, compaction, and reduced vegetation cover.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to livestock grazing.

Impacts from Livestock Grazing

The types of impacts experienced as a result of livestock grazing management would be similar to those described under Alternative N except that an additional 36,950 acres would be available for grazing. This represents only a 3% increase over Alternative N. While this increase in total available acres is minimal, it could represent lands that would be important to individual livestock operations. Impacts would therefore be minor area-wide, but potentially moderate in specific areas.

Impacts from Recreation

Under Alternative A, five SRMAs (516,400 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Management of the Factory Butte SRMA (199,700 acres), Big Rocks SRMA (9,300 acres), and Sahara Sands SRMA (12,300 acres) for motorized use would emphasize this type of recreational opportunity available in the RFO and consequently increase the potential for livestock displacement, harassment or injury. However, implementing surface use restrictions within the SRMAs would help to reduce the degree of impact from recreational and other uses. Encouraging primitive types of recreation and prohibiting surface disturbance from oil and gas development and cross-country OHV use in the Dirty Devil and Otter Creek SRMAs would help to reduce effects related to recreational use.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, this alternative designates 449,000 acres (21% of the RFO) as open to

motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,679,000 acres (79%) of the RFO; and 0 acres would be closed to motorized and mechanized vehicle use. The amount of open areas, although greatly reduced as compared to Alternative N, would still result in the potential for livestock displacement, harassment or injury from vehicle use in those areas.

Under this alternative, there would be 4,312 miles of designated routes (slightly more than Alternative N), with 68 miles of routes closed (only 3 miles less than Alternative N). This would facilitate livestock management by allowing essentially unchanged access to livestock grazing operations. As stated previously, it is expected that visitation to the RFO would continue to grow during the life of this RMP. Thus, easy access to the public lands would allow for increased interaction of the public with livestock and livestock developments (e.g., fences, corrals, and water developments). This would increase the occurrences of livestock harassment, gates being inappropriately left open or closed, and range improvements being damaged.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty would be similar to those described under Alternative N, except that more acres proposed for disposal (13,400 acres) via FLPMA land sales. At 20 acres per AUM, this could result in the loss of approximately 670 AUMs (>1% of the total AUMs available within the RFO), which would result in an insignificant impact to livestock grazing. In addition, this alternative proposes fewer right-of-way avoidance and exclusion areas (459,700 acres) where no construction activities related to the development of land use authorizations (ROWs, permits, leases, easements, etc.) would remove vegetation over the short-term and increase the potential for the introduction and proliferation of noxious weeds and invasive species, thereby causing a loss of livestock forage and associated AUMs, or increased vehicle travel on new roads that could increase the potential for harassment of and injury to livestock.

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

There would be no impacts to livestock grazing from wild and scenic rivers since no eligible river segments would be determined suitable and managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative.

Areas of Critical Environmental Concern

Under this alternative, no areas would be designated as ACECs. Thus, no actions specifically to protect relevant and important values that could restrict management of grazing would occur, resulting in no impact to livestock grazing.

Alternative B: Preferred Alternative

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as described under Alternative A.

Impacts from Cultural Resources

Impacts would be similar to those described for Alternative A, except that fewer cultural resource sites would be allocated and managed for public use, which would decrease visitation to sites and could cause decreased conflicts between livestock and people as compared to Alternative A.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N. Under Alternative B, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 209,000 acres (10%) would be managed as VRM Class II; 410,800 (19%) would be designated as VRM Class III; and 1,061,300 (50%) would be designated as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV (which could result in large areas of moderate to major modifications in the existing character of the landscape, with accompanying minimal impacts on range improvements), less of the RFO would be designated in these VRM classes than in Alternatives N or A.

Impacts from Special Status Species and Fish and Wildlife

Impacts from special status species management actions would be the same as described under Alternative A.

Impacts from fish and wildlife management actions under this alternative would be similar to those described for Alternative A. However, this alternative also proposes temporal (winter and/or spring, depending on species) restrictions on surface disturbing activities (to protect wildlife during critical life stages) and restricts OHV use in crucial habitats. These management actions could restrict opportunities for constructing and/or maintaining range improvements and other grazing management actions.

Impacts from Wild Horses and Burros

Under this alternative, 600 AUMs are allocated to burros in the Canyonlands HMA to meet an AML upper limit of 100. These numbers are greater than either Alternative N or A, but less than Alternatives C or D (which establish a herd size of between 120 to 200 head). Since more burros result in a greater possibility of competition for forage between burros and livestock, this alternative would potentially impact grazing management more than Alternative N or A, but less than C or D.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to livestock grazing.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Impacts would be similar to those described for Alternative A, except that more lands (838,700 acres) would be established as SRMAs to manage recreational use and to mitigate impacts caused by this use. Under Alternative B, less area would be managed for motorized use – management of the Factory Butte SRMA (2,600 acres) and Big Rocks SRMA (265 acres) for motorized use would emphasize this type of recreational opportunity available in the RFO and consequently increase the potential for livestock displacement, harassment or injury. However, implementing surface use restrictions within the SRMAs would help to reduce the degree of impact from recreational and other uses. Encouraging primitive types of recreation and prohibiting surface disturbance from oil and gas development and cross-country OHV

use in the Henry Mountains, Dirty Devil, and Capitol Reef Gateway SRMAs would help to reduce effects related to recreational use.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, this alternative designates only 8,400 acres (<1% of the RFO) as open to motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,909,200 acres (90%) of the RFO; and 210,400 acres (10%) would be closed to motorized and mechanized vehicle use. The amount of open areas, although greatly reduced as compared to Alternative N, would still result in the potential for livestock displacement, harassment or injury from vehicle use in those areas. However, increased restrictions on OHV use would decrease forage loss and decrease dust levels in high-use areas that could affect palatability of forage.

Under this alternative, there would be 4,176 miles of designated routes (3% less than in Alternative N), with 204 miles of routes closed (3 times the amount closed in Alternative N). This could affect livestock management by restricting access to livestock grazing operations substantially more than Alternative N.

Impacts from Lands and Realty

Impacts from land tenure adjustments (acquisitions and disposals) would be the same as those described for Alternative A.

The types of impacts from land use authorizations would be similar to those described for Alternative N except that this alternative proposes more right-of-way avoidance and exclusion areas (561,400 acres closed to oil and gas leasing or open with no surface occupancy, 2 suitable WSR segments – 59 miles, and 2 ACECs – 2,530 acres). Within these right-of-way avoidance and exclusion areas, no construction activities related to the development of land use authorizations (ROWs, permits, leases, easements, etc.) would remove vegetation and increase the potential for the introduction and proliferation of noxious weeds and invasive species, causing a loss of livestock forage and associated AUMs. Within these right-of-way avoidance and exclusion areas there would also be no increased vehicle travel on new roads that could increase the potential for harassment of and injury to livestock.

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts from managing wild and scenic rivers would decrease as compared to Alternative N and increase as compared to Alternative A since only two of the eligible segments (59 miles) would be recommended as suitable and managed (with surface use restrictions) to protect their outstandingly remarkable values, free-flowing nature, and tentative classification. These surface use restrictions would preclude surface disturbance and related forage removal, and could help to maintain AUMs for livestock. However, these additional land use restrictions could also increase constraints on options for range improvements.

Areas of Critical Environmental Concern

Alternative B designates two ACECs (2,530 acres). Both of these ACECs are unavailable for livestock grazing. The feasibility of grazing the North Caineville Mesa ACEC is questionable, given its difficult access and lack of water. The other potential ACEC (Old Woman Front) encompasses only 330 acres; its small size would not result in the loss of a significant amount of AUMs, so the overall RFO grazing program would not be substantially affected.

Alternative C

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative A, although under Alternative C fewer acres would be treated annually (averaging 26,000 annually for all treatments). In addition, this alternative proposes using only treatment methods that mimic natural processes (e.g., fire, biological, and hand cutting) which would likely not be as effective as conventional vegetation treatments and result in a slower process of vegetation enhancement and related forage increases. Although vegetation conditions described in Alternative A could be reached over the long-term, the rate of recovery following individual treatments would likely be reduced. This would increase the time that livestock would be precluded following treatments.

Impacts from Cultural Resources

Impacts would be similar to those described for Alternative B, except that fewer cultural resource sites would be allocated and managed for public use, which would decrease visitation to sites and could cause decreased conflicts between livestock and people as compared to Alternative B.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N. Under Alternative C, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 230,600 acres (11%) would be managed as VRM Class II; 509,100 (24%) would be designated as VRM Class III; and 941,400 (44%) would be designated as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV (which could result in large areas of moderate to major modifications in the existing character of the landscape, with accompanying minimal impacts on range improvements), less of the RFO would be designated in these VRM classes than in Alternatives N, A or B.

Impacts from Special Status Species and Fish and Wildlife

The types of impacts experienced as a result of special status species and fish and wildlife management would be similar to those described under Alternative A. However, this alternative proposes restricting surface disturbance or surface occupancy within 660 feet of riparian areas (versus 330 feet for Alternative A), includes more restrictions on OHV use in crucial wildlife habitats, and designates an ACEC in the Henry Mountains (288,200 acres) for the protection of wildlife values. These additional land use restrictions would further help to improve vegetation conditions and increase forage production, but could also increase constraints on options for range improvements.

Impacts from Wild Horses and Burros

Under this alternative, 1,200 AUMs are allocated to burros in the Canyonlands HMA to meet an AML upper limit of 200. These numbers are greater than Alternatives N, A, or B. Since more burros result in a greater possibility of competition for forage between burros and livestock, this alternative would potentially impact grazing management more than Alternatives N, A or B.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to livestock grazing.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative N.

Impacts from Recreation

Impacts would be similar to those described for Alternative B, except that more lands (928,550 acres) would be established as SRMAs to manage recreational use and to mitigate impacts caused by this use, and no areas would be managed for motorized use. This would decrease the potential for livestock displacement, harassment or injury. Encouraging primitive types of recreation and prohibiting surface disturbance from oil and gas development and cross-country OHV use in all of the SRMAs would help to reduce effects related to recreational use.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, this alternative designates no acres as open to motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,445,000 acres (68%) of the RFO; and 683,000 acres (32%) would be closed to motorized and mechanized vehicle use. This alternative would therefore limit the potential for livestock displacement, harassment or injury from vehicle use to those areas designated as limited. Increased restrictions on OHV use would also decrease forage loss and decrease dust levels in high-use areas that could affect palatability of forage.

Under this alternative, there would be 3,192 miles of designated routes (26% less than in Alternative N), with 1,188 miles of routes closed (18 times the amount closed in Alternative N). This could affect livestock management by restricting access to livestock grazing operations substantially more than Alternative N.

Impacts from Lands and Realty

Under this alternative, no lands are identified as available for FLPMA land sales, thus, no AUMs would be lost from this type of lands action.

The types of impacts from land use authorizations would be similar to those described for Alternative N except that this alternative proposes more right-of-way avoidance and exclusion areas (735,100 acres closed to oil and gas leasing or open with no surface occupancy, 12 suitable WSR segments – 135 miles, and 16 ACECs). Within these right-of-way avoidance and exclusion areas, no construction activities related to the development of land use authorizations (ROWs, permits, leases, easements, etc.) would remove vegetation and increase the potential for the introduction and proliferation of noxious weeds and invasive species, causing a loss of livestock forage and associated AUMs. Within these right-of-way avoidance and exclusion areas there would also be no increased vehicle travel on new roads that could increase the potential for harassment of and injury to livestock.

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

Management of river segments to protect their outstandingly remarkable values, free-flowing nature, and tentative classification would include surface use restrictions. Such restrictions would preclude surface disturbance and related forage removal, and could help to maintain AUMs for livestock. Under Alternative C, all 12 eligible river segments (135 miles) would be recommended as suitable and managed (with surface use restrictions) to protect their outstandingly remarkable values, free-flowing nature, and

tentative classification. These surface use restrictions would preclude surface disturbance and related forage removal, and could help to maintain AUMs for livestock. However, these additional land use restrictions could also increase constraints on options for range improvements.

Areas of Critical Environmental Concern

Alternative C designates 16 ACECs (886,810 acres). Portions of the Badlands ACEC (North and South Caineville Mesas) are already unavailable for livestock grazing in the current land use plan; the feasibility of grazing these areas is questionable given their difficult access and lack of water. Old Woman Front ACEC encompasses such a small area (330 acres) that not allowing grazing would not result in the loss of a significant amount of AUMs, so the overall RFO grazing program would not be substantially affected. Of the remaining ACECs, three (Dirty Devil, Henry Mountains, and Little Rockies) preclude converting cattle permits to sheep permits. However, this would have no effect on total acres or AUMs available for livestock grazing since cattle could still be grazed.

Allowing no uses that would cause irreparable damage to the relevant and important values in the ACECs (such as closing to OHV use and managing as either closed to oil and gas leasing or open with no surface occupancy, depending on the ACEC, and designating as VRM Class II) would preclude surface disturbance and related forage removal, and could help to maintain AUMs for livestock. However, these additional land use restrictions could also increase constraints on options for range improvements and access to allotments for management purposes.

Alternative D

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described for Alternative C.

Impacts from Cultural Resources

Impacts would be the same as those described for Alternative C.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management decisions would be similar to those described under Alternative N. Under Alternative D, 1,129,600 acres (53% of the lands managed by the RFO) would be designated as VRM Class I; 66,700 acres (3%) would be designated as VRM Class II; 355,100 (17%) would be designated as VRM Class III; and 576,600 (27%) would be designated as VRM Class IV. With the majority of the RFO designated as VRM Classes I and II (where the existing character of the landscape must be preserved or maintained), the ability to implement range improvements would be precluded or constrained, which could affect the ability to treat vegetation (and improve forage condition), as well as construct improvements to improve distribution of livestock.

Impacts from Special Status Species and Fish and Wildlife

Impacts would be similar to those described for Alternative C except that there would be additional restrictions on motorized use in deer, elk, and bison habitat under Alternative D. This would increase constraints on access to allotments for management purposes.

Impacts from Wild Horses and Burros

Impacts would be the same as described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, non-WSA areas with wilderness characteristics would be protected from impacts that could degrade their wilderness values. Management decisions to protect these values would include prohibitions on range projects that would not meet VRM Class I objectives (including construction of new fences, water structures, and other facilities that may be needed for proper livestock distribution) and closing to OHV use. This could increase constraints on options for range improvements, as well as decrease opportunities for access to remote locations within allotments. These decisions would make management of grazing operations more difficult.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative N.

Impacts from Recreation

Impacts would be similar to those described for Alternative C, except that more lands (1,358,200 acres) would be established as SRMAs to manage recreational use and to mitigate impacts caused by this use; none of these areas would be managed for motorized use. This would decrease the potential for livestock displacement, harassment or injury. Encouraging primitive types of recreation and prohibiting surface disturbance from oil and gas development and cross-country OHV use in all of the SRMAs would help to reduce effects related to recreational use.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. However, this alternative designates 972,800 acres (46% of the RFO) as limited to designated routes and 1,155,200 acres (54%) as closed to motorized and mechanized vehicle use. This alternative would limit the potential for livestock displacement and harassment or injury from vehicle use more than any other alternative. Increased restrictions on OHV use would also decrease forage loss and decrease dust levels in high-use areas that could affect palatability of forage.

Under Alternative D, there would be 3,043 miles of designated routes (the least of any alternative), with 1,242 miles of routes closed (the most of any alternative). This could affect livestock management by restricting access to livestock grazing operations substantially more than any other alternative.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as described under Alternative C.

The types of impacts from land use authorizations would be similar to those described for Alternative N except that this alternative proposes more right-of-way avoidance and exclusion areas (1,203,800 acres closed to oil and gas leasing or open with no surface occupancy, non-WSA lands with wilderness characteristics, 12 suitable WSR segments, and 16 ACECs). Within these right-of-way avoidance and exclusion areas, no surface disturbing activities related to the development of land use authorizations (ROWs, permits, leases, easements, etc.) would occur. Thus, vegetation would be retained in these areas and the potential for the introduction and proliferation of noxious weeds and invasive species would be minimized, causing no loss of livestock forage and associated AUMs. Within these right-of-way avoidance and exclusion areas there would also be no new roads that could increase the potential for harassment of and injury to livestock from motorized or mechanized vehicles.

Impacts from Minerals and Energy

Impacts would be the same as described under Alternative C.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts would be the same as described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be similar to those described for Alternative C – the same ACECs are designated in both alternatives. However, management prescriptions of some ACECs are more restrictive under Alternative D. For example, all non-WSA lands with wilderness characteristics within the ACECs would be designated as closed to OHV use and would be designated as VRM Class I. This could increase constraints on options for range improvements, as well as decrease opportunities for access to remote locations within allotments more than Alternative C.

4.4.3 Recreation

This section presents potential impacts on recreation resources, opportunities and experiences from management actions for other resource programs. Recreation uses within the decision area include backpacking, recreational OHV use, hiking, camping, sightseeing/viewing nature, hunting, fishing, mountain biking, rock climbing, and horseback riding. Impacts could occur through potential changes to visitor preferences (activities, experiences, benefits), recreation setting conditions (physical, social, administrative), recreation management (resources, signing, facilities), recreation marketing (visitor services, information, interpretation and environmental education), recreation inventory and monitoring, and recreation administration (permits, fees, visitor limits and regulations). These recreation features are interrelated and connected to access. For example, changes in recreation settings would result in corresponding changes in the opportunities to achieve desired recreation experiences and associated benefits. These opportunities and benefits are influenced by access.

Recreational experiences and the potential attainment of a variety of beneficial outcomes are vulnerable to any management action that would alter the settings and opportunities in a particular area. Recreation settings are based upon a variety of attributes, such as remoteness, the amount of human modification in the natural environment, evidence of other users, restrictions and controls, and the level of motorized vehicle use. Management actions that greatly alter such features within a particular portion of the planning area could affect the capacity of that landscape to support appropriate recreation opportunities and beneficial outcomes.

Methods and Assumptions

The analysis is based on the following assumptions:

- Recreation use within the planning area will continue to increase during the life of the RMP.
- The incidence of resource damage and conflicts between recreationists involved in motorized and non-motorized activities will increase with increasing use of public lands.
- The existing transportation network will be sufficient to meet the demand of recreational OHV opportunities.
- There will be sufficient opportunities to meet the demand for non-motorized recreation (e.g., hiking, mountain biking, equestrian).
- Demands for all types of recreation experiences will increase, particularly demands for semi-primitive motorized, semi-primitive non-motorized and primitive recreation.
- Demand for Special Recreation Permits (SRPs) will increase during the life of the plan.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources in the RFO, review of existing literature and information provided by other agencies. Effects are quantified where possible. In absence of quantitative data, best professional judgment was used. Spatial analyses were conducted using GIS data and analyses. Impacts are described using ranges of potential impacts or in qualitative terms, if appropriate.

Environmental Consequences

Impacts to recreation would likely result from actions proposed under the following resource programs:

- Water Resources
- Vegetation and Fire and Fuels Management
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Wild Horses and Burros
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on recreation.

Alternative N: No Action

Impacts from Water Resources

Decisions proposed for water quality and the protection of groundwater would also benefit recreational uses by maintaining the quality and quantity of public water sources and natural springs. Maintaining a 500 foot buffer zone of no surface disturbance and/or occupancy around natural springs would continue to restrict commercial permit holders from camping in these areas. General recreation visitors would also be displaced where fencing is constructed to maintain these buffer zones. However, in most cases there are adequate opportunities for camping away from natural springs. The impacts from potential displacement would range from negligible to minor. In the long-term, recreational opportunities such as birding and hunting could be enhanced because habitat within the buffer zone and water quality would be improved.

Impacts from Vegetation and Fire and Fuels Management

Depending on the type, scope, and intensity, vegetation treatments and fire and fuels management could directly impact recreation settings and the associated visitor experiences, as well as the possible realization of specific benefits. Impacts in treated areas could range from negligible to moderate. The duration of the impacts would be dependent on the type of treatment being applied, and the acreage and success of ESR treatments. In the long-term, managing vegetation resources to achieve Fundamentals of Rangeland Health and desired vegetation condition, including the control of noxious weeds, invasive species, and insects, would improve the condition of the landscape and enhance recreation experiences and settings. Vegetation treatments would also indirectly improve wildlife related recreation opportunities as a result of improved wildlife habitat.

Impacts from management activities in riparian areas, specifically buffer zones along streams, would be the same as discussed for this alternative in Impacts from Water.

Impacts from Visual Resources

Managing the RFO according to VRM classes could impact recreation experiences depending on the VRM class assigned and the experience desired. Any new facilities, new types of commercial activities or other surface disturbing activities would be analyzed on a case-by-case basis and would be required to meet VRM objectives or be relocated.

Under this alternative, 529,500 acres (25% of the lands within the RFO) would continue to be managed to meet VRM Class II objectives. The character of the landscape would be maintained in these areas and enhance the recreation experience, especially for those users seeking a more undeveloped setting. Some projects could still be allowed that could result in localized impacts to the landscape and thus the recreation experience, which would range from negligible to minor, depending on the type of project. Managing 569,000 acres (27% of the RFO) as VRM Class III would allow moderate changes to the landscape. While specific impacts would depend on the type and location of projects, they would range from minor to moderate. Class III areas should still support a wide variety of recreational opportunities and experiences. The remaining area, 1,029,500 (48% of the RFO), would continue to be managed as VRM Class IV, which allows for major modification of the landscape. Class IV areas would allow for development of recreation-related facilities if necessary and would continue to support and possibly enhance motorized recreation opportunities such as driving for pleasure, vehicle-supported camping, and OHV riding. The non-motorized recreation experience could be diminished in areas where the surface is disturbed and the landscape altered. Impacts would be long-term, and depending on what projects are proposed, could range from minor to major.

Impacts from Special Status Species

Special status species were not specifically addressed in existing plans. All Federal actions would be subject to the requirements of the Endangered Species Act of 1973, as amended. For recreation resources this would include such things as facility construction, issuance of Special Recreation Permits or trailhead improvements. Any action potentially affecting any listed threatened or endangered species would require the appropriate level of Section 7 consultation with U.S. Fish and Wildlife Service (USFWS). Necessary mitigation, such as timing and avoidance, would be implemented to protect listed plant and animal species. If adequate mitigation could not be applied to the proposal, it would be relocated or denied.

Impacts from Fish and Wildlife

Improving wildlife habitat would help maintain or improve fish and wildlife populations which would be beneficial for recreation opportunities such as wildlife viewing, hunting and fishing. Depending on the scope and intensity of habitat improvement efforts, impacts to recreational opportunities could be mixed. Modification of physical recreational settings could have impacts similar to those described in the Impacts to Vegetation section. Impacts could range from negligible to moderate.

Impacts from Wild Horses and Burros

The Canyonlands HMA would continue to be managed as a wild burro HMA resulting in the opportunity for the public to view the wild burros while in the Robber's Roost area. Although considered a negligible benefit since few visitors seek that experience alone and only a portion see the wild burros, it could enhance their recreation experience.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to recreation.

Impacts from Recreation

Limiting or controlling recreation activities to support the Standards for Public Land Health and Guidelines for Recreation Management for BLM Lands in Utah, and to protect resources could result in some localized closures or limitations on public use. The impacts would be dependent on the extent of the closures/limitations necessary, but would be expected to be negligible to minor.

Continuing to manage a large portion of the RFO as an ERMA would allow a variety of recreational opportunities in a less structured setting. No new SRMAs would be established. Yuba Reservoir SRMA would continue to be managed by the Fillmore FO (and is therefore not addressed in this RMP revision). Under this alternative, emphasis would be placed on maintaining a non-structured setting, subject to change as recreation uses change. Special management objectives to maintain the desired recreational opportunities and settings for specific areas would not be realized. In the long-term, moderate impacts could result as visitation increases and new recreation activities develop. Potential user conflicts and degradation of the resource settings due to overuse are possible.

Special recreation permits (SRPs) would continue to be issued on a case-by-case basis with no management plan direction for issuance of commercial, competitive, organized group and vending permits. Given substantial increases in workload as permit applications increase, the current case-by-case authorization is inefficient. This process may eventually preclude some recreation providers from making available certain recreation opportunities. This could lead to minor to moderate impacts which could increase as demand for SRPs increase.

Impacts from Travel Management

Under Alternative N, 1,636,400 acres (77% of the RFO) would continue to open for cross-country vehicle travel, the most of any alternative. Conflicts between motorized and non-motorized users and the potential for resource degradation would continue to increase which could result in a long-term moderate impact to recreation settings and opportunities. Recreation settings would be maintained and protected within the 277,600 acres (13%) designated as limited for OHV use and the 4,315 miles of routes open to motorized use would provide access. The 214,000 acres (10%) of the RFO designated as closed to OHV use would further maintain and protect the semi-primitive to primitive setting in those areas.

No restrictions would be placed on motorized use off of designated routes for parking/staging and access to campsites, except within WSAs. There are also no decisions for the use of motorized vehicles for retrieval of game kills. This would continue to enhance some motorized activities, but could result in long-term minor to major impacts to resources and recreation settings.

Impacts from Lands and Realty

Land tenure decisions include criteria regarding the disposal and acquisition of lands with high value recreation opportunities. These decisions could enhance the recreation opportunities and management of areas if high value recreation and access are considered.

The four ACECs and five developed recreation sites in the Henry Mountains would be proposed for withdrawal from mineral entry, making the total proposed withdrawal acreage 169,480 (8% of the RFO). This could protect existing recreational opportunities within the ACECs and protect investments at the recreation sites.

If wind and/or solar energy were developed in the lands managed by the RFO, it could adversely affect the recreation setting. Introducing large wind structures and solar arrays would be noticeable. Depending on the setting and opportunities in the area, this type of development could displace some recreational

visitors. The impact would range from minor to major depending on the extent of development of these energy alternatives.

Impacts from Minerals and Energy

Recreation settings, opportunities and experiences could be impacted during all phases of minerals development. Minerals related exploration, development, access road and infrastructure construction would create surface disturbances, noise and light pollution. These impacts would be greatest if development occurred in semi-primitive to primitive areas with natural appearing landscapes. Concentrations of wells or other mineral infrastructure could also result in localized changes to the recreational opportunities and experiences available in that area.

Adherence to best management practices outlined in mining laws, plans of operation, pertinent restrictions, standard terms and conditions, etc., would help minimize such impacts. Closing 459,700 acres to fluids mineral leasing, withdrawing 169,480 acres to mineral entry, and closing 459,700 acres to mineral material disposal would eliminate risks to recreation settings from minerals management within those areas. The potential for development varies within different portions of the planning area (see Table 4-25). However, development potential is low in the eastern portion of the planning area where the majority of the primitive to semi-primitive, natural appearing landscapes occur and where development would be most likely to impact recreation settings and experiences.

Overall impacts to recreation would be minor.

Impacts from Special Designations

Wild and Scenic Rivers

Management of the 12 eligible Wild and Scenic River segments (135 miles) to protect their outstandingly remarkable values, free-flowing nature and tentative classification would maintain the recreation settings along those segments. The majority of these segments are tentatively classified as “wild” and the decision would support the semi-primitive and primitive recreation opportunities. Portions of the Dirty Devil River, Robbers Roost Canyon, Twin Corral Box Canyon and all of the Beaver Wash Canyon, No Mans Canyon, Larry Canyon and Sams Mesa Box Canyon overlap with WSAs which provide similar protection of recreation settings. Overall the impact from this decision would be negligible.

Areas of Critical Environmental Concern

Continuing the present management of the four existing ACECs would maintain the primitive and semi-primitive non-motorized recreational opportunities in those areas.

Alternative A

Impacts from Water Resources

Impacts would be similar to those discussed under Alternative N. The buffer zone around natural springs would be reduced to 330 feet, increasing the camping opportunities slightly over Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts from vegetation and fire and fuels management would be similar to those discussed under Alternative N except that maximum treatment acreage limits would be established (averaging 73,600 annually for all treatments). This may result in greater success for restoring the landscape to its natural condition, further enhancing recreation experiences and settings.

In addition, the buffer zone along streams would be reduced to 330 feet, increasing the camping opportunities slightly over Alternative N.

Impacts from Visual Resources

Under Alternative A, 446,900 acres (21% of the RFO) would be designated as VRM Class I (these acres are within the WSAs). The character of the landscape in these areas would be maintained and enhanced, especially for those users seeking the opportunity for solitude and primitive/unconfined recreation in an undeveloped landscape. Recreation projects and developments would only be allowed if they were consistent with VRM class objectives. Any impacts would be localized and would range from negligible to minor, depending on the type of project. There would be 392,800 acres (18% of the RFO) designated as VRM Class III, slightly less than Alternative N. The remaining 1,288,300 acres (61% of the RFO) would be designated as VRM IV, the most of any alternative.

Impacts from Special Status Species

Closing and reclaiming roads to avoid or reduce habitat fragmentation could have a minor to moderate effect on recreational opportunities. The level of impact would depend on the number of roads closed and/or the amount of recreation use the road receives. Proposed management for special status species and raptor habitats would result in species-specific buffers, and seasonal, temporal and spatial restrictions. These restrictions would likely have the greatest effect on commercial recreation permit holders, making some proposed trips uneconomical to offer and difficult logistically, but impacts are expected to be minor. If restrictions become necessary in areas managed as open to cross-country OHV use, the effect on the recreational opportunities would have a minor to moderate effect. Under this alternative, the opportunities for cross-country OHV use (e.g., open OHV areas), have been reduced by 56% from Alternative N. These closures of open OHV areas would be more noticeable to those recreational users seeking a cross-country experience.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative N. Cross-country OHV use would be limited in some habitat areas which would restrict public land users from creating new routes in these areas, thus protecting the general recreation setting and decreasing conflicts between users. The impact would be minor to moderate.

Impacts from Wild Horses and Burros

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to recreation.

Impacts from Recreation

Impacts under this alternative would be similar to Alternative N in regards to decisions supporting rangeland health and protecting resources.

Under Alternative A, 516,400 acres (24% of the RFO) would be managed under five SRMAs. Management objectives through the development of activity plans would provide visitors higher quality recreation opportunities through the more focused and effective management of the desired settings, activities, and experience opportunities appropriate for each SRMA. Factory Butte, Big Rocks and Sahara Sands SRMAs would focus on motorized recreation opportunities and provide a variety of riding experiences (e.g. Mancos Shale hill climbs, rock crawling and sand dunes). The Dirty Devil and Otter Creek SRMAs would maintain the dispersed recreation opportunities. Impacts to recreation settings would range from negligible to moderate as these SRMAs would maintain the experiences and opportunities currently occurring in these areas. The remainder of the lands would be managed as an extensive recreation management area which would continue to support a variety of recreational

opportunities in a less structured setting. However, with 1,611,600 acres (76%) of the area receiving no specific management direction for recreation opportunities, there would continue to be conflicts between user groups seeking varied experiences which may be viewed as incompatible. These impacts could range from minor to moderate and would continue to increase as recreation uses grow and change.

Management decisions for the issuance of SRPs provides direction regarding the types of permits that would be issued, areas where some types of permits would not be appropriate and thresholds for organized group permits. These decisions would allow for a variety of SRPs to be issued while providing greater resource protection. Processing would also be streamlined by having management plan criteria to compare to applications. The benefits to applicants would be minor to moderate depending on the complexity of their proposal.

Impacts from Travel Management

Alternative A would designate 449,000 acres (21% of the RFO) as open to cross-country OHV use. These managed open play areas would provide a variety of motorized opportunities scattered throughout the management area. The areas identified as open include most of the areas currently being used for cross-country OHV recreation which would be beneficial for motorized users. The remainder of the management area, 1,679,000 acres (79% of the RFO) would be limited to designated routes with a total of 4,312 miles of routes, similar to Alternative N. Limiting OHV use to designated routes within a larger portion of the area would maintain and enhance the recreation experiences for the majority of users, and reduce conflicts. Opportunities for cross-country motorized use would be reduced; however, the impacts from this alternative would be negligible to minor. Designating no closed areas could reduce opportunities for solitude and primitive/unconfined recreation. Areas within WSAs currently closed to any motorized use would be available for limited OHV use on designated, inventoried routes consistent with the IMP. This would be an increase of 18 miles of inventoried routes available over Alternative N. The overall impacts would be minor due to the low number of miles, but could potentially impact opportunities for primitive recreation along those routes.

Management decisions to limit parking/staging and motorized access for camping would continue to provide those recreation opportunities while maintaining the overall recreation settings. Allowing non-motorized, wheeled game carriers to retrieve game kills outside of WSAs would continue to enhance hunting opportunities.

Impacts from Lands and Realty

The impacts would be the same as described for Alternative N.

Impacts from Minerals and Energy

The impacts would be similar to those described under Alternative N. Areas closed or withdrawn for minerals are slightly less in this alternative: 446,900 acres closed to oil and gas leasing, 154,700 acres withdrawn from mineral entry, and 446,900 acres closed to salable mineral disposal. Overall impacts to recreation would still be minor.

Impacts from Special Designations

Wild and Scenic Rivers

No eligible river segments would be managed as suitable for inclusion in the National Wild and Scenic River System under Alternative A. However, 98 of the 135 miles of eligible wild and scenic river segments are within WSAs which would continue to be managed under the IMP, providing protection of the recreation settings. The majority of the eligible Dirty Devil River segment, and all of the eligible Robbers Roost Canyon, Twin Corral Box Canyon, Beaver Wash Canyon, No Mans Canyon, Larry Canyon and Sams Mesa Box Canyon segments would receive management protection from the proposed

Dirty Devil SRMA, retaining the semi-primitive to primitive recreation settings in those areas. Overall the potential for impacts to recreation under this alternative would be negligible.

Areas of Critical Environmental Concern

No ACECs are proposed for designation under Alternative A. There would no longer be protective ACEC management for the four existing ACECs. However, three of the four existing ACECs are within WSAs, which would continue to protect the relevant and important values and preserve the recreation setting in those areas. Removing protective ACEC management prescriptions for North Caineville Mesa could result in changes to the recreation setting and opportunities if surface disturbance and development were to occur. However, due to the topography and lack of access, the probability of impacts would be low.

Alternative B: Preferred Alternative

Impacts from Water Resources

Impacts would be the same as described for Alternative A.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as described for Alternative A.

Impacts from Visual Resources

Under Alternative B, the acreage and impacts for VRM Class I lands would be the same as described under Alternative A (446,900 acres, or 21% of the RFO). Under this alternative, 209,000 acres (10% of the RFO) would be designated as VRM Class II; 410,800 acres (19% of the RFO) would be designated as VRM Class III; and the remaining 1,061,300 acres (50% of the RFO) would be designated as VRM Class IV. The VRM Class II and III acres would be less than in Alternatives N and C, but more than Alternative A and D. VRM Class IV acreage would be more than in Alternatives N, C and D, but less than Alternative A. Although future recreation related projects would be restricted in Class I and II areas, this would maintain the recreation settings and the visual components of the landscape. Any adverse impacts to recreation would be localized and would range from negligible to minor.

Impacts from Special Status Species

Closing and reclaiming roads to avoid or reduce habitat fragmentation could have a minor to moderate effect on recreational opportunities. The level of impact would depend on the number of roads closed and/or the amount of recreation use the road receives. Proposed management for special status species and raptor habitats would result in species-specific buffers, and seasonal, temporal and spatial restrictions. These restrictions would likely have the greatest effect on commercial recreation permit holders, making some proposed trips uneconomical to offer and difficult logistically, but impacts are expected to be minor. If restrictions become necessary in areas managed as open to cross-country OHV use, the effect on the recreational opportunities would have a minor to moderate effect. Under this alternative, the opportunities for cross-country OHV use, open OHV areas, have been reduced by 77% from Alternative N. Therefore, further closures of open OHV areas would be noticeable to those recreational users seeking a cross-country experience. Conflicts between motorized users and safety concerns could increase by further concentrating motorized use into smaller open areas.

Impacts from Fish and Wildlife

Impacts would be similar to those described for Alternative A. Cross-country OHV use would be limited in additional wildlife habitat areas protecting the general recreation setting and decreasing conflicts between users in additional areas.

Impacts from Wild Horses and Burros

Impacts would be similar to those described for Alternative N. As management prescriptions would increase the burro herd and its genetic viability, the potential for viewing the burros could also increase, increasing beneficial impacts.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to recreation.

Impacts from Recreation

Impacts under Alternative B would be similar to Alternative A with the exception that the acreage and locations of the proposed SRMAs change somewhat. Under Alternative B, 838,700 acres (39% of the RFO) would be managed under five SRMAs. Factory Butte and Big Rocks SRMAs would focus on motorized recreation opportunities and provide a variety of riding experiences (e.g. Mancos Shale hill climbs, rock crawling). The Henry Mountains, Dirty Devil and Capitol Reef Gateway SRMAs would focus on dispersed recreation opportunities. These SRMAs would maintain the experiences and opportunities currently occurring in these areas which range from semi-primitive motorized to primitive. The remainder of the lands, 1,289,300 acres (61% of the RFO) would be managed as an extensive recreation management area which would continue to support a variety of recreational opportunities in a less structured setting. This alternative provides more of a balance and variety of structured (SRMA) and non-structured (ERMA) opportunities than any of the other alternatives and should reduce the potential for conflicts between user groups seeking varied experiences.

Impacts from Travel Management

Less than 1% (8,400 acres) of the RFO would be open to cross-country OHV use under this alternative. Conflicts between non-motorized and motorized users would be reduced overall, but would continue due to motorized users being displaced from historical use areas. Conflicts between motorized users and safety concerns could increase by concentrating motorized use into small managed open areas. This alternative would result in moderate to major impacts to motorized users seeking a cross-country motorized experience. Designating 1,908,200 acres (90% of the RFO) as limited and 210,400 acres (10% of the RFO) as closed to OHV use would maintain and enhance the recreation experiences in those areas. Designation of 4,176 miles of routes would be a reduction from what is available in Alternatives N and A. Limiting OHV use to designated routes within a larger portion of the area would maintain and enhance the recreation experiences for the majority of users, and reduce conflicts. Opportunities for primitive recreation would be greater than in Alternative A through the designation of some closed acres.

Management decisions to limit parking/staging and motorized access for camping and game retrieval would be similar to Alternative A. Distances for motorized access would be reduced from 300 feet in Alternative A to 150 feet in Alternative B which would reduce opportunities slightly.

Impacts from Lands and Realty

The impacts would be similar to those described under Alternative N. The two potential ACECs, two suitable wild rivers, and five developed recreation sites in the Henry Mountains would be proposed for withdrawal from mineral entry; combined with the existing withdrawals, a total acreage of 176,200 (9% of the RFO) would be withdrawn from mineral entry and be precluded from surface disturbance due to mining activity. This would be a slight increase over Alternatives N and A, and would help maintain the recreation settings and protect investments at developed recreation sites. The potential for impacts from wind and solar energy development would be reduced by limiting the areas where these developments take place. These criteria would protect areas where these types of developments would have the greatest

impact on recreational opportunities (e.g. WSAs, wild and scenic river corridors, ACECs, areas open to oil and gas leasing with no surface occupancy, and VRM Class I and II areas).

Impacts from Minerals and Energy

The impacts would be similar to that described under Alternative A. Areas closed or withdrawn for minerals are slightly more than Alternative A: 450,500 acres closed to oil and gas leasing, 176,200 acres withdrawn from mineral entry, and 450,500 acres closed to salable mineral disposal.

Impacts from Special Designations

Wild and Scenic Rivers

The impacts from wild and scenic river decisions would be similar to those discussed under Alternative N. Under this alternative, only the Dirty Devil River and Fremont River (Fremont Gorge) would be recommended and managed for suitability as WSRs. Some other eligible segments would still receive protective management from overlapping WSAs. Overall impacts would be negligible.

Areas of Critical Environmental Concern

Under this alternative, two ACECs would be designated: North Caineville Mesa and Old Woman Front. Management prescriptions to protect the relevant and important values for these 2,530 acres, such as closing the areas to OHV use and NSO for minerals would preserve the semi-primitive to primitive recreation opportunities in these areas. Overall the impact would be negligible.

Alternative C

Impacts from Water Resources

Impacts would be similar to those discussed under Alternative N. The buffer zone around natural springs would be increased to 660 feet, reducing the camping opportunities slightly over Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Under Alternative C, impacts would be similar to those discussed under Alternative N except that only treatment methods that mimic natural processes would be used to achieve or maintain Fundamentals of Rangeland Health and desired vegetation condition, including control of noxious weeds and invasive species. No control measures would be implemented to control insect pests. These processes would be the least disturbing and may not alter recreational patterns in the short-term as much as other techniques. However, these treatment methods could be ineffective for managing vegetation or controlling invasive species in some areas, resulting in repeat treatments and impacting the recreation setting and experiences in the long-term.

Impacts would be similar to those discussed under Alternative N. The buffer zone along streams would be increased to 660 feet, reducing the camping opportunities slightly over Alternative N.

Impacts from Visual Resources

Under Alternative C, the acreage and impacts for lands designated as VRM Class I would be the same as described under Alternatives A and B (446,900 acres, or 21% of the RFO). Under this alternative, 230,600 acres (11% of the RFO) would be designated as VRM Class II; 509,100 acres (24% of the RFO) would be designated as VRM Class III; and the remaining 941,400 acres (44% of the RFO) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate to major modifications in the existing character of the landscape, which could alter the recreation settings. However, less of the RFO would be designated in these VRM classes than in Alternatives N, A or B, resulting in less potential impacts to recreation as compared to those alternatives.

Impacts from Special Status Species

Closing and reclaiming roads to avoid or reduce habitat fragmentation could have a minor to moderate effect on recreational opportunities (e.g. reducing access while improving semi-primitive to primitive opportunities). The level of impact would depend on the number of roads closed and/or the amount of recreation use the road receives. Proposed management for special status species and raptor habitats would result in species-specific buffers, and seasonal, temporal and spatial restrictions. These restrictions would likely have the greatest effect on commercial recreation permit holders, making some proposed trips uneconomical to offer and difficult logistically, but impacts are expected to be minor. There would be no effects to recreational users from special status species restrictions in open OHV areas since none are proposed in this alternative.

Impacts from Fish and Wildlife

Impacts would be the same as those described for Alternative B.

Impacts from Wild Horses and Burros

Impacts would be the same as those described for Alternative B.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to recreation.

Impacts from Recreation

Impacts under this alternative would be similar to Alternative B. Under this alternative, 928,550 acres (44% of the RFO) would be managed under four SRMAs. Management of the Henry Mountains, Dirty Devil, Capitol Reef Gateway and Sevier Canyon SRMAs would provide specific direction to maintain and enhance the semi-primitive motorized and primitive recreation settings in those areas. No SRMAs would be established to emphasize cross-country motorized opportunities since there are no open OHV areas proposed in this alternative. This alternative would result in minor to moderate impacts and could result in increased conflict by displacing some users whose activities may no longer be consistent with the types of SRMAs proposed.

Impacts from Travel Management

Under Alternative C, no areas would be available for cross-country OHV use. This would result in a major impact to motorized users seeking a cross-country motorized experience. That specific recreation opportunity would no longer exist within the RFO. Designating 1,445,000 acres (68 % of the RFO) as limited and 683,000 acres (32% of the RFO) as closed to OHV use would maintain and enhance the recreation experiences in those areas. Designation of 3,192 miles of routes would be a reduction of 1,123 miles of routes from what is available under Alternative N, resulting in minor to moderate impacts for access to recreation destinations. The potential for primitive recreation opportunities would be enhanced over Alternatives N, A and B by having additional acres closed to OHV use.

Management decisions to limit parking/staging off of designated routes would be reduced to 25 feet and campsites with motorized access would be designated. This alternative would preclude the use of mechanized game carriers. These decisions would further protect resources and semi-primitive to primitive settings but would displace some users. These decisions would result in minor to moderate impacts to recreational opportunities that are dependent on access, dispersed camping, and game retrieval by potentially limiting these opportunities.

Impacts from Lands and Realty

The impacts would be similar to those described under Alternative B. The acreage recommended for withdrawal from mineral entry would increase to 331,100 acres (16% of the RFO) and include all or parts of eight ACECs, all suitable WSR segments and the five developed recreation sites in the Henry Mountains. This is a 7% increase over Alternative B which would further reduce surface disturbance, maintain the recreation settings and protect investments at the recreation sites.

Impacts from Minerals and Energy

The impacts would be similar to those described under the previous alternatives. The areas closed or withdrawn from mineral entry would increase over the previously discussed alternatives, providing additional protection of the recreation settings in the more undeveloped portions of the planning area: 586,300 acres closed to oil and gas leasing; 331,100 acres withdrawn from mineral entry; and 586,300 acres closed to salable mineral disposal.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

Under this alternative, all potential ACECs would be designated totaling 16 areas with 886,810 acres (42% of the RFO). Management prescriptions to protect the relevant and important values such as closing or limiting areas to OHV use, designating Class A scenery outside WSAs as VRM Class II, and NSO for minerals would complement other recreation decisions and preserve the recreation settings in those areas. Overall the impact would be negligible to minor.

Alternative D

Impacts from Water Resources

Impacts would be the same as those described for Alternative C.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described for Alternative C.

Impacts from Visual Resources

Under Alternative D, the acreage designated as VRM Class I would be 1,129,600 acres (53%), the most of any alternative. This alternative would designate 66,700 acres (3%) of the RFO as VRM Class II, 355,100 acres (17%) as VRM Class III and the remaining 576,600 acres (27%) as VRM Class IV. This alternative would have the most VRM I and II acreage of any of the alternatives, providing the most protection for undeveloped recreation settings and the visual components of the landscape. VRM Class III and IV acreage would be the least under this alternative, providing the least opportunities for the development of facilities for those visitors seeking a more developed setting or if facilities are necessary for resource protection. This may result in moderate site-specific impacts.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative C.

Impacts from Fish and Wildlife

Impacts would be the same as those described for Alternative B.

Impacts from Wild Horses and Burros

Impacts would be the same as those described for Alternative B.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, 682,600 acres (32% of the RFO) would be managed with the goal of protecting or preserving the wilderness characteristics of non-WSA lands with wilderness characteristics. Implementation of this alternative would result in major impacts to recreational settings and opportunities. These areas would be closed to motor vehicle use resulting in large areas that currently exist as semi-primitive motorized settings becoming semi-primitive non-motorized in terms of remoteness, effectively reducing motorized recreational opportunities. Coupled with the adjoining WSAs, this alternative would result in 1,129,500 (53% of the RFO) being managed for semi-primitive to primitive non-motorized recreation. This would be a beneficial impact for the recreationists seeking a more semi-primitive to primitive experience. However, it should be noted that because of the large areas that would be closed to OHV use, access into many of these areas would become more difficult and physically unfeasible for many visitors, which would impact those who seek motorized recreation opportunities. A total of 3,043 miles of routes would be designated as open for motorized travel under this alternative, a reduction of 1,272 miles from Alternative N. This would include access routes to some existing trailheads (e.g., Angel Trail East, Robbers Roost Spring, Larry's Canyon and Horseshoe Canyon [Deadman's Trail]). The need to hike for long distances across dry benchlands to reach canyon destinations would also displace some users seeking a semi-primitive to primitive experience.

Impacts from Recreation

Impacts would be similar to Alternative C except that the SRMA acreage is much larger under Alternative D than in any other alternative. Under this alternative, 1,358,200 acres (64% of the RFO) would be managed under seven SRMAs. Management of the Henry Mountains, Dirty Devil, portions of the Capitol Reef Gateway, portions of East Fork Sevier River, San Rafael Swell, Little Rockies and Labyrinth Canyon SRMAs would be managed to maintain and enhance primitive and semi-primitive recreation. The remainder of the Capitol Reef Gateway and E. Fork Sevier River SRMAs would be managed for dispersed recreation. Managing 64% of the FO for semi-primitive to primitive recreation with large areas closed to OHV use would benefit those recreationists seeking that type of experience. However, some existing trailheads (e.g., Angel Trail East, Robbers Roost Spring, Larry's Canyon and Horseshoe Canyon [Deadman's Trail]) would no longer be accessible by vehicle and some primitive recreationists may be displaced because of longer hiking distances on the dry benchlands to reach destinations in the canyons. These impacts would greatest in the Henry Mountains, Dirty Devil and San Rafael Swell SRMAs. No SRMAs would be established to emphasize cross-country motorized opportunities since there are no open OHV areas proposed in this alternative. This alternative would result in moderate to major impacts and could result in increased conflict by displacing users whose activities may no longer be consistent with the types of SRMAs proposed.

Impacts from Travel Management

The impacts of Alternative D would be similar to Alternative C. However, there would be minor to moderate beneficial and adverse impacts from designating 1,155,200 acres (54% of the RFO) as closed to OHV use. Managing large closed areas would maintain a primitive recreation setting and provide improved opportunities for non-motorized experiences, solitude and unconfined recreation. This management would benefit recreationists seeking a primitive recreation experience. However, some existing trailheads (e.g., Angel Trail East, Robbers Roost Spring, Larry's Canyon and Horseshoe Canyon [Deadman's Trail]) would no longer be accessible by vehicle and some primitive recreationists may be displaced because of longer hiking distances to reach destinations in the canyons. There would continue to be 972,800 acres (46% of the RFO) designated as limited to OHV use. Designated routes would total 3,043 miles, the least of any alternative. This would improve semi-primitive to primitive opportunities,

but would displace motorized users, including those wanting to access existing trailheads to more remote areas. The potential effects to all recreationists using motorized vehicles to access the area would be greatest in this alternative.

The impacts in this alternative for parking/staging and motor vehicle access to campsites and game retrieval would be the same as described for Alternative C.

Impacts from Lands and Realty

The impacts would be similar to those described for Alternative B. The acreage recommended for withdrawal from mineral entry would increase to 903,900 acres (42% of the RFO) and include all or portions of eight ACECs, all suitable wild and scenic river segments, and the five developed recreation sites in the Henry Mountains. It would also include all non-WSA lands with wilderness characteristics which would ensure protection of wilderness characteristics and the setting needed to support primitive and unconfined forms of recreation in these areas. This would significantly reduce surface disturbance, maintain semi-primitive to primitive recreation settings and protect investments at the recreation sites.

Impacts from Minerals and Energy

The impacts would be similar to those described under Alternative C. This alternative would provide the most protection of recreation settings by closing 1,160,500 acres to fluids mineral leasing, withdrawing 903,900 acres to mineral entry, and closing 1,160,500 acres to mineral material disposal. Overall the impacts to recreation would be negligible to minor under Alternative D.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

Under this alternative, the impacts from ACEC designations would be similar to those discussed for non-WSA lands with wilderness characteristics. ACEC management prescriptions would be adjusted in this alternative for consistency with management decisions for non-WSA lands (e.g. restrictions on surface disturbances and OHV use).

4.4.4 Travel Management

This section describes potential impacts on travel management resulting from the implementation of management actions for other resource programs. Impacts on resources and resource uses resulting from implementation of the travel management program are discussed in those particular resource sections of this chapter.

The travel management program provides for ingress, egress, and access in the RFO. The transportation network consists of 4,380 miles of roads and trails, mostly unpaved, that provide access into and across the RFO. Various individuals rely on this network to access livestock operations, mining properties, utility and communication facilities, range and wildlife developments, wildfire prevention/management and suppression, recreation sites as well as the public lands in general for a myriad of recreational activities, and intermingled private and state owned lands. Management decisions that involve changes to miles of roads open for public or administrative use, number of acres open to off-road travel, or specific travel restrictions (vehicle size, seasonal restrictions, etc.) would affect access into and across the RFO. The following discussion of the effects on transportation and access focuses on management actions that restrict or facilitate travel management opportunities. Impacts on opportunities for OHV use is addressed in the recreation impact analysis (Section 4.4.3.).

This analysis describes the degree of access and the extent of usable transportation systems within the RFO and its effects on both motorized and mechanized travel. This includes decisions that would limit the degree of travel opportunities and the ability to access certain portions of the decision area. The majority of motorized access issues are related to OHV use; this form of transportation provides a major source of travel opportunities. Mechanized travel involves primarily mountain bikes, but could also include other forms of non-motorized vehicles.

Impacts to travel management, as defined above (e.g., via state-maintained highways and BLM maintained system roads) would be anticipated primarily from route designations and the implementation of management actions that consolidate public land through purchases, exchanges, and disposal of isolated tracts.

Methods and Assumptions

The analysis was based on the following assumptions:

- The transportation network, as defined by alternative, will remain in place throughout the life of this RMP.
- The BLM will evaluate RS-2477 assertions under a separate process and criteria than this planning process.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources in the RFO, review of existing literature and information provided by other agencies. Effects are quantified where possible. In absence of quantitative data, best professional judgment was used. Spatial analyses were conducted using GIS data and analyses. Impacts are described using ranges of potential impacts or in qualitative terms, if appropriate.

Environmental Consequences

Impacts to travel management would likely result from actions proposed under the following resource programs:

- Special Status Species
- Fish and Wildlife
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Travel Management
- Lands and Realty
- Special Designations

Other programs were determined to have little or no impact on travel management.

Alternative N: No Action

Impacts from Special Status Species

No special management is proposed in Alternative N to protect special status species. However, current policy and practices call for the protection of threatened and endangered species habitat by mitigating disturbances and prohibiting activities that destroy, adversely modify or fragment critical habitat. Extensive limitations are not anticipated. Therefore the overall impact to travel management would be negligible.

Impacts from Fish and Wildlife

Management strategies to avoid or reduce habitat fragmentation would include such practices as reclaiming redundant roads, reclaiming roads no longer serving intended purpose and reducing road densities. There could be some effects on travel management depending on the number of roads reclaimed and the existing uses of those roads, but extensive limitations are not anticipated. Motorized use would continue to be seasonally closed in the Swap Mesa and Cave Flat areas from December 20 through March 20 for the protection of bison crucial habitat. Overall impacts to travel management and access would be negligible.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under this alternative, so no impacts to travel management would occur.

Impacts from Recreation

No recreation management decisions are proposed in Alternative N that would affect travel management. The entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified that would limit or control recreational activities, including OHV use.

Impacts from Travel Management

Under Alternative N, the majority of public lands (1,636,400 acres, or 77% of the RFO) are open to motorized or mechanized cross-country vehicle travel. While not all of these acres are used for cross-country travel, there are certain uses and activities that take users off established routes. Fuelwood, pine nut and other woodland products harvest, wildlife viewing, livestock management, dispersed camping and hunting are some of the reasons other than motorized adventure riding that these open OHV areas are used. There are 277,600 acres (13% of the RFO) designated as limited for the protection of various resources (e.g. cultural, soils, wildlife, and plant habitats) including portions of WSAs. Of the total routes identified for the planning area, 4,315 miles are open to motorized travel including 42 miles of inventoried routes in WSAs that would continue to be available for travel. There would be 65 miles of routes closed. Within the open and limited OHV areas, there would be no restrictions on motorized use off of designated routes for the purposes of parking/staging and access to campsites, except within WSAs. The remainder of the RFO (214,000 acres, or 10%) is closed to OHV use. It should be noted that route designations are implementation decisions and that the resulting transportation network could change over time.

Travel throughout the RFO is expected to increase due to population growth and increased demand for recreation opportunities on public lands. One of the growing demands is for access to open areas for OHV use. As more of the public lands throughout the state restrict cross-country access, the large areas left open in the RFO could draw more interest, putting other resources at risk. In the long-term, this could result in area closures (either through plan amendment or emergency order) if unacceptable impacts to resources are determined to be occurring. Impacts to travel management would be negligible to minor in the short-term, but could increase if additional closures became necessary.

Impacts from Lands and Realty

The disposal of 280 acres identified in the Mountain Valley MFP would reduce the overall amount of BLM lands available to the public for access. Due to the extremely small acreage involved, impacts would be negligible. The development of wind and/or solar energy could adversely affect access and travel management if access were restricted into those areas or through voluntary displacement if

significant development took place. Exploration and development would be considered on a case-by-case basis. Impacts would be site-specific.

Impacts from Special Designations

Wilderness Study Areas

In this alternative, the use of motorized vehicles would be limited to existing routes in 258,300 acres of the WSAs, with 42 of the 60 inventoried miles of routes designated for use by motorized and mechanized vehicles. These routes that are open in WSAs would continue to allow for public access to valid existing rights, grandfathered rights, recreational and trailhead access, and for general use, in accordance with the IMP. The remaining 188,600 acres of the WSAs would be closed to motorized and mechanized use. The development of new routes would not be authorized within these areas.

Wild and Scenic Rivers

The 135 miles of eligible river segments would be managed to protect their outstandingly remarkable values, free-flowing nature and tentative classification. No management decisions are proposed to restrict access in these areas. Motorized use within these segments would be according to existing OHV designations. Many of the segments are remote and are within WSAs where motorized access is closed or limited to inventoried routes. Only 35 miles of routes exist within the eligible river segments. Therefore, the overall impact to access and travel management would be minor.

Areas of Critical Environmental Concern

The four existing ACECs would continue to be managed for the protection of their relevant and important values. These areas are and would continue to be closed to OHV use, which would not provide any additional opportunities for this type of use.

Alternative A

Impacts from Special Status Species

The impacts from the protection of threatened and endangered species habitat would be similar to Alternative N. Strategies incorporated into this alternative (e.g. closing and reclaiming roads, using species-specific buffers and seasonal, temporal, and spatial restrictions) could affect travel management within habitat areas, but extensive limitations are not anticipated. Route restrictions proposed in this alternative for protection of all special status species resources total 249 miles (6% of the total designated route miles). These restrictions would have minor, site-specific impacts on travel and access in the RFO.

Impacts from Fish and Wildlife

Impacts from management strategies to avoid or reduce habitat fragmentation would be the same as described under Alternative N. Management actions would limit OHV use to designated routes in bison crucial habitat, and sage grouse leks and nesting habitats, but do not include area closures or seasonal restrictions. Overall impacts to travel management and access would be minor.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under this alternative, so no impacts to travel management would occur.

Impacts from Recreation

Decisions to maintain and improve the Paiute, Great Western and other motorized trail systems would benefit OHV users and maintain and improve access in these areas.

Five SRMAs, totaling 516,300 acres (24% of the RFO) are proposed under Alternative A. Management of these SRMAs would provide for public access in some SRMAs and would enhance motorized use (specifically cross-country access) in other areas.

Motorized use would be limited to designated routes in a portion of the Otter Creek SRMA (1,900 acres) and all of the Dirty Devil SRMA (290,000 acres). Portions of the Dirty Devil SRMA that were closed in Alternative N would be limited to designated roads and trails (inventoried routes within WSAs) improving access slightly.

Factory Butte (199,700 acres), Big Rocks (9,300 acres), Sahara Sands (12,300 acres) and a portion of the Otter Creek (1,300 acres) SRMAs would be managed as OHV open areas to enhance a motorized recreational experience and provide additional support (signing, interpretation and facilities) for these motorized activities as necessary. Enhanced management would support travel management decisions for these areas. The overall impacts to travel management from recreation decisions in this alternative would be minor.

Impacts from Travel Management

Under Alternative A, 449,000 acres (21% of the RFO) would be open to motorized or mechanized cross-country vehicle travel. These OHV areas would be managed as designated open areas with a variety of riding opportunities: sand dunes, Mancos shale hill climbs, trials motorcycle/rock crawling and community play areas. This would be a reduction in OHV open areas of 1,187,400 acres from Alternative N. While not all of these acres are used for cross-country travel, there are traditional uses that take users off established routes. Reducing the open acreage from 77% in Alternative N to 21% in this alternative significantly reduces the opportunities for cross-country OHV use and some historical uses. Fuelwood, pine nut and other woodland products harvest, wildlife viewing, livestock management, dispersed camping and hunting are some of the uses other than motorized adventure riding that currently take place in these open OHV areas. As travel throughout the RFO increases, including demand for open OHV areas, this alternative may not sufficiently meet the needs for off-road access for OHV and other casual uses. However, cross-country use could still be allowed for permitted uses such as livestock management and products harvest. If open OHV areas are not large enough to absorb the levels of use, conflicts between OHV users and safety concerns could increase. Impacts to travel management in the RFO would be moderate.

The remainder of the RFO (1,679,000 acres, or 79%) would be limited to designated routes and trails. Of the total route miles, 4,063 miles would be designated as open for use in this alternative, 249 miles of routes would be designated with seasonal closures and/or size/width restrictions, and 68 miles would be closed. The total designated route miles include 60 miles of inventoried routes within WSAs. Motor vehicles would be allowed to pull off of a designated route up to 100 feet of either side of the centerline for the purposes of parking/staging, and to use existing spur routes to access established campsites within 300 feet of the centerline of designated routes except in WSAs. This would allow for safe passage of vehicles on routes and continue access to many historic camping sites. These designations would continue to provide access within the majority of the RFO. Under this alternative, only 3 fewer miles of routes would be open to the public compared to Alternative N. It should be noted that route designations are implementation decisions and the resulting transportation network could change over time. Impacts for general access utilizing a road network would be negligible.

Impacts from Lands and Realty

The availability of approximately 13,460 acres for disposal could reduce the overall amount of BLM lands available to the public for access. Due to the small acreage involved, impacts would be minor and site-specific. The development of wind and/or solar energy could adversely affect access and travel management if access were restricted into those areas or through voluntary displacement if significant

development took place. Impacts would be site-specific and dependant on future interest in this type of development.

Impacts from Special Designations

Wilderness Study Areas

The impacts would be similar to those described in Alternative N, except that OHV use within all 466,900 acres of the WSAs would be limited to designated routes. All 60 miles of inventoried routes within the WSAs would be designated as available for motorized and mechanized use in accordance with the IMP. This would be an increase of 18 miles of routes from the designations in Alternative N. This would slightly increase public access into these areas. Overall impacts would be negligible to minor.

Wild and Scenic Rivers

No eligible river segments are recommended for suitability under this alternative and no protective measures are proposed, resulting in no impact to travel management.

Areas of Critical Environmental Concern

There are no ACECs proposed for designation under this alternative, resulting in no impact to travel management.

Alternative B: Preferred Alternative

Impacts from Special Status Species

The impacts would be similar to those described for Alternative A. Under this alternative, route restrictions are proposed with a total of 483 miles (12%) of designated routes, an increase of 234 miles over Alternative A. These restrictions would have minor to moderate, site-specific impacts on travel and access in the RFO.

Impacts from Fish and Wildlife

Impacts from management strategies to avoid or reduce habitat fragmentation would be the same as described under Alternatives N and A. Management actions would limit OHV use to designated routes in 646,000 acres of deer and elk crucial winter range and close 4,000 acres; limit OHV use to designated routes in bison crucial habitat and sage grouse brooding habitats, but do not include area closures. Seasonal restrictions would be addressed on a case-by-case basis. Overall impacts would depend on the number of restricted miles necessary, but extensive limitations are not anticipated.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under Alternative B, so no impacts to travel management would occur.

Impacts from Recreation

Decisions to maintain and improve the Paiute, Great Western and other motorized trail systems would benefit OHV users and maintain and improve access in these areas.

Five SRMAs, totaling 838,700 acres (39% of the RFO) are proposed under Alternative B, an increase of 322,300 acres over Alternative A. In most cases, the proposed SRMA areas and acreages are different than in Alternative A. Management of these SRMAs could restrict public access in some SRMAs and would continue to enhance motorized use (specifically cross-country access) in other SRMAs.

The Dirty Devil SRMA (290,000 acres) would propose to close the canyons within the SRMA to OHV use, with the remainder of the area limited to designated routes. Impacts to travel management would be

similar to Alternative N. The majority of the routes that would be closed are within current closed WSA acreage or areas closed by the OHV Management Plan for the Henry Mountains.

The Capitol Reef Gateway SRMA (12,800 acres) proposes to close the Fremont Gorge WSA and Fremont Gorge itself to OHV use, with the remainder of the area limited to designated routes. Impacts to travel management would be similar to Alternative N. The Fremont Gorge WSA is closed in both alternatives. Few route miles exist within the Fremont Gorge.

The Henry Mountains SRMA (533,900 acres) does not include specific management prescriptions for motorized use. It would be managed according to the OHV area designations in Chapter 2 of this DRMP/DEIS.

The overall impacts to travel management from the proposed Dirty Devil, Capitol Reef Gateway and Henry Mountains SRMAs would range from negligible to minor.

The Factory Butte (2,600 acres) and Big Rocks (265 acres) SRMAs would continue to be managed as OHV open areas to provide a motorized recreational experience and allow for additional support (signing, interpretation and facilities) of these motorized activities as necessary. However, the total acreage of these SRMAs is significantly less than that proposed for support of OHV open areas in Alternative A (219,735 acres), resulting in substantially less open areas in Alternative B. Overall impacts to cross-country access under this alternative would range from moderate to major.

Impacts from Travel Management

Under Alternative B, 8,400 acres (less than 1% of the RFO) would be open to motorized or mechanized cross-country vehicle travel, a reduction of 440,600 acres from Alternative A and 1,628,000 acres from Alternative N. These OHV areas would be managed as designated open areas with a variety of riding opportunities: Mancos shale hill climbs, trials motorcycle/rock crawling and community play areas. However, reducing the open acreage from 77% in Alternative N to less than 1% in this alternative significantly reduces the opportunities for cross-country OHV use and some historical uses. As travel throughout the RFO increases, including demand for open OHV areas, this alternative may not sufficiently meet the needs for off-road access for OHVs and other casual uses. Open OHV areas may not be large enough to absorb the levels of use, resulting in conflicts between OHV users and safety concerns. Impacts to off-road travelers would be moderate to major.

This alternative would designate 1,909,200 acres (90% of the RFO) as limited to designated routes and trails, the largest acreage of all the alternatives. Of the total route miles, 3,693 miles would be designated as open in this alternative and 483 miles of routes would be designated with seasonal closures and/or size/width restrictions. The total designated route miles include 45 miles of inventoried routes within WSAs. There would be 204 miles of routes closed to motorized use, 136 more miles closed than in Alternative A. Motor vehicles would be allowed to pull off of a designated route up to 50 feet of either side of the centerline for the purposes of parking/staging, and to use existing spur routes to access established campsites within 150 feet of the centerline of designated routes. This would allow for safe passage of vehicles on routes and continued access to many historic camping sites. In the long-term, the significant reduction of open acres and miles of routes could increase the traffic on the remaining designated routes. This could increase the number of conflicts and safety concerns on certain heavily used routes. Impacts would range from minor to moderate.

There would be 210,400 acres (10% of the RFO) closed to OHV use under this alternative. The majority of these acres are within WSAs where few inventoried routes occur. The overall impacts would be negligible to minor.

Impacts from Lands and Realty

Impacts would be the same as those described for Alternative A.

Impacts from Special Designations

Wilderness Study Areas

The acres of WSAs designated as limited and closed to OHV use would be the same as Alternative N. Of the 60 miles of total inventoried routes within the WSAs, 45 miles would be designated as open for motorized and mechanized use in accordance with the IMP. This would be an increase of three miles of designated routes over Alternative N and a slight decrease from Alternative A. Overall the impact to access and travel management would negligible to minor.

Wild and Scenic Rivers

Under Alternative B, two river segments totaling 59 miles would be recommended as suitable for inclusion in the National Wild and Scenic River System. Management prescriptions would close these river segments to OHV use within one-quarter mile of each side of the river. The exception would be the Poison Spring road which crosses the Dirty Devil River which would remain open for motorized travel. Only 14 miles of routes exist within these two segments. Therefore, the overall impact to access and travel management would be negligible to minor.

Areas of Critical Environmental Concern

Under this alternative, two ACECs would be designated: North Caineville Mesa and Old Woman Front. Management prescriptions to protect the relevant and important values for these 2,530 acres would close the areas to OHV use. There are no routes identified within these areas and there would be no impact to travel management.

Alternative C

Impacts from Special Status Species

The impacts would be similar to those described for Alternative A. Under this alternative, proposed route restrictions would increase to 591 miles (18% of the total designated routes), which is an increase of 342 miles over Alternative A and 108 miles more than in Alternative B.

Impacts from Fish and Wildlife

Impacts from management strategies to avoid or reduce habitat fragmentation would be the same as described under the previous alternatives. Under this alternative 142,000 acres of deer and elk crucial winter range and 189,000 acres of crucial bison habitat would be closed to OHV use, 26% of the total closed acres under this alternative. These management decisions would reduce motorized access and result in site-specific minor impacts.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under this alternative, so no impacts to travel management would occur.

Impacts from Recreation

Four SRMAs, totaling 928,500 acres (44% of the RFO) are proposed which would be slightly higher than under Alternative B. However, under this alternative, all SRMAs could restrict public access and no SRMAs would be proposed to enhance motorized use (specifically cross-country access) since there are no areas open to cross-country motorized travel.

The Dirty Devil SRMA would be increased to 375,800 acres, 85,800 acres more than under Alternative B. Proposed management prescriptions would close the wild and scenic river segments to OHV use except for the Poison Springs/North Hatch Canyon road corridor. Where the SRMA overlaps WSAs and the Dirty Devil ACEC, the travel management decisions for those areas would apply. The remainder of the SRMA would be limited to designated routes. Impacts to travel management and access from this proposed SRMA would be moderate.

Impacts from the proposed Capitol Reef Gateway SRMA (12,800 acres) would be similar to those discussed under Alternative B. The area closed to OHV use would increase by including the VRM Class II areas, but few routes occur in these areas.

Impacts from the proposed Henry Mountains SRMA (533,900 acres) would be the same as discussed under Alternative B.

Management decisions for the proposed Sevier Canyon SRMA (7,500 acres) would limit OHV use to designated routes. Impacts to travel management from this proposed SRMA would be negligible.

Impacts from Travel Management

Under Alternative C, vehicle travel would be allowed only on designated routes, with no areas open to motorized and mechanized cross-country travel. All 1,636,400 acres previously open (Alternative N) would be limited to designated routes or closed. This would be a decrease of 8,400 acres open to OHV use as compared to Alternative B. Traditional uses that take public land visitors off designated routes (e.g. wood products harvest, wildlife viewing, dispersed camping and hunting), along with motorized adventure riding, would be greatly limited in this alternative. Impacts to off-road travelers would be moderate to major.

This alternative would designate 1,445,000 acres (68% of the RFO) as limited to designated routes and trails, fewer acres than in Alternatives A or B. The remainder of the area (683,000 acres, 32% of the RFO) would be closed to motorized travel, including all WSAs. Of the total route miles, 2,601 miles would be designated as open in this alternative and 591 miles of routes would be designated with seasonal closures and/or size/width restrictions. There would be 1,188 miles of routes closed to motorized use, 984 more miles of closed routes than in Alternative B. In the long-term, allowing no open acreage for cross-country OHV travel and the significant reduction of miles of routes available for public uses could increase the traffic on those designated routes. Motor vehicles would be allowed to pull off of a designated route up to 25 feet of either side of the centerline for the purposes of parking/staging. Depending on the location and factors such as viewing distance along the road, 25 feet may not allow for vehicles to park and still safely allow for the passage of other vehicles on the road. Restricting camping with motorized access to designated campsites would limit access and possibly restrict use of some historic camp areas. This could increase the number of conflicts and safety concerns on certain heavily used routes. Impacts would range from moderate to major.

Impacts from Lands and Realty

Under this alternative, no lands would be available for FLPMA Section 203 sales, which would result in no reduction in the overall amount of BLM lands available to the public for access.

The development of wind and/or solar energy could adversely affect access and travel management if access were restricted into those areas or through voluntary displacement if significant development took place. Impacts would be site-specific and dependant on future interest in this type of development.

Impacts from Special Designations

Wilderness Study Areas

In Alternative C, all WSAs and all of the 60 miles of inventoried routes within WSAs would be closed. Closing these routes would affect access by the public for recreational and trailhead access, as well as general use. Impacts would be most noticeable in locations where routes to existing trailheads such as those accessing the Dirty Devil River and Horseshoe Canyon would no longer be available for use by motorized vehicles. The impacts would be site-specific and range from minor to moderate depending on the length and destination of the route.

Wild and Scenic Rivers

Under Alternative C, all twelve eligible river segments, totaling 135 miles, would be recommended as suitable for inclusion in the National Wild and Scenic River System. Management prescriptions would close these river segments to OHV use within one-quarter mile of each side of the river. The exception would be the Poison Spring road which crosses the Dirty Devil River which would remain open for motorized travel. Many of the segments are remote and occur within WSAs. Only 35 miles of routes exist within the eligible river segments. Therefore, the overall impact to access and travel management would be minor.

Areas of Critical Environmental Concern

Under this alternative, all potential ACECs (16 areas totaling 886,810 acres, or 42% of the RFO) would be designated. Management prescriptions to protect the relevant and important values include closing or limiting the ACECs to OHV use.

Portions of the Badlands and Henry Mountains ACECs would be closed to OHV use by ACEC management prescriptions. Within the Badlands ACEC, the mesa tops would be closed to OHV use; within the Henry Mountains ACEC, No Man's Mesa would be closed to OHV use. All of the potential Old Woman Front ACEC would be closed to OHV use. However, these areas do not contain motorized routes so there would be no impact.

All of the potential Rainbow Hills ACEC (4,000 acres), including 26 miles of routes, would be closed to OHV use by ACEC management prescriptions. Due to the number of routes within this relatively small area, this could result in site-specific moderate impacts for access and travel management.

Alternative D

Impacts from Special Status Species

The impacts would be similar to those described for Alternative C. The total miles of designated routes would be lower under this alternative. The proposed miles of route restrictions would be 550 (18% of the total designated routes), which would be the same as in Alternative C.

Impacts from Fish and Wildlife

Impacts from management strategies to avoid or reduce habitat fragmentation would be the same as described under the previous alternatives, except that this alternative would have the most acreage closed for fish and wildlife protection. Under this alternative, 258,000 acres of deer and elk crucial winter range and 207,000 acres of crucial bison habitat would be closed to OHV use. These management decisions would greatly reduce motorized access and result in moderate impacts.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, all non-WSA lands with wilderness characteristics 682,600 acres (32% of the RFO) would be closed to OHV use for the protection of those values. Closures to motorized use would

increase by 472,200 acres over Alternative C due to this proposed management decision, greatly reducing motorized access and resulting in moderate impacts.

Impacts from Recreation

Seven SRMAs, totaling 1,358,200 acres (64% of the RFO) are proposed which would be the most acreage of any of the alternatives and 20% higher than under Alternative C. Under this alternative, all SRMAs would restrict public access and no SRMAs would be proposed to enhance motorized use (specifically cross-country access) since there are no acres open to cross-country motorized travel.

The East Fork Sevier River SRMA (59,500 acres) would close non-WSA lands with wilderness characteristics to OHV use.

The San Rafael Swell SRMA (127,100 acres) would close the mesa tops and non-WSA lands with wilderness characteristics to OHV use.

The Dirty Devil SRMA would be increased to 383,900 acres, 8,100 acres more than under Alternative C, and would close WSAs and non-WSA lands with wilderness characteristics to OHV use.

The Capitol Reef Gateway SRMA would be increased to 168,800 acres, 156,000 acres more than under Alternative C, and would close the Fremont Gorge WSA, Fremont Gorge WSR corridor and non-WSA lands with wilderness characteristics to OHV use.

The Henry Mountains SRMA would be decreased to 479,500 acres, a reduction of 54,400 acres from Alternatives B and C. Management actions would close the WSAs and non-WSA lands with wilderness characteristics to OHV use.

The Labyrinth Canyon SRMA (75,300 acres) would close WSAs and non-WSA lands with wilderness characteristics to OHV use.

The Little Rockies SRMA (64,000 acres) would be closed to OHV use for the protection of WSA and non-WSA lands with wilderness characteristics.

Managing 64% of the RFO as SRMAs emphasizing primitive and semi-primitive recreation with large areas closed to OHV use would impact travel management and all access into these areas. Some existing trailheads (e.g., Angel Trail East, Robbers Roost Spring, Larry's Canyon and Horseshoe Canyon [Deadman's Trail]) would no longer be accessible by motorized vehicles. The overall impact to travel management would range from moderate to major under this alternative.

Impacts from Travel Management

The impacts of this alternative would be similar to Alternative C. Vehicle travel would be allowed only on designated routes, with no areas open to motorized and mechanized cross-country travel. All 1,636,400 acres currently open (Alternative N) would either be limited to designated routes or closed. Alternative D proposes the most acreage to be closed, including all WSAs and non-WSAs with wilderness characteristics (1,155,200 acres, or 54% of the RFO). Alternative D would also designate the least miles of routes as open or open with restrictions and the most closed route miles. Of the total route miles, 2,493 miles would be designated as open, 550 miles of routes would be designated with seasonal closures and/or size/width restrictions and 1,242 miles of routes would be closed to motorized use. Restrictions on parking/staging and motorized access to campsites would be the same as Alternative C. The potential for traffic, accidents and conflicts experienced by travelers on the designated routes would be greater than that experienced under the other alternatives due to the limited miles of routes open to the

public. The decisions in this alternative could result in a major impact to travel and access within and across the RFO for the recreating public, permitted users, researchers, and Federal and state agencies.

Impacts from Lands and Realty

Impacts would be the same as those described for Alternative C.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative C.

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative C.

Areas of Critical Environmental Concern

Under this alternative, all potential ACECs (16 areas totaling 886,810 acres, or 42% of the RFO) would be designated. Management prescriptions to protect the relevant and important values include closing or limiting areas to OHV use.

As in Alternative C, the mesa tops in the Badlands ACEC, No Man's Mesa in the Henry Mountains ACEC and all of the Old Woman Front and Rainbow Hills ACECs would be closed to OHV use. The impacts would be the same as discussed for Alternative C.

Under Alternative D, management prescriptions would also close portions of the Badlands, Bull Creek, Fremont Gorge/Cockscomb, Henry Mountains, Kingston Canyon, Little Rockies, Quitchupah and Thousand Lakes Bench ACECs, and all of the Dirty Devil, Horseshoe Canyon and Lower Muddy Creek ACECs that include non-WSA lands with wilderness characteristics. The overall impacts to travel management from closure of non-WSA lands were discussed above under the Impacts from non-WSA lands with Wilderness Characteristics section.

4.4.5 Lands and Realty

The following discussion highlights the primary differences between alternatives and their anticipated impacts on the lands and realty program. Included in the lands and realty program are land-tenure adjustments (e.g., sales, exchanges, acquisitions); withdrawals, classifications, and segregations; and rights-of-way and other land use authorizations (e.g., leases, easements, and permits). This section focuses on how other resources potentially impact the lands and realty program by limiting or preventing realty actions.

The purpose of the lands and realty program is to facilitate management of the RFO's lands and resources. The program adapts according to changing land management and resource needs and issues. As such, lands and realty program actions generally result in beneficial impacts within the RFO with regard to multiple use objectives. In addition, the presence of other resources could prevent lands and realty actions from being carried out and, thus, they are considered adverse impacts on the lands and realty program.

The only types of direct impacts to the lands and realty program occur when other resources prevent or make it considerably more difficult to complete a transaction. For example, mitigating measures to protect resource values required for a right-of-way substantially increase processing costs and timeframes required to complete the transaction and temporarily delay the transaction. Generally, there are no indirect impacts to the lands and realty program.

Methods and Assumptions

The analysis was based on the following assumptions:

- The BLM would continue to process land tenure adjustments.
- Lands identified for FLPMA Section 203 sale may be sold or otherwise disposed of within the life of the RMP.
- Disposal of small, isolated parcels of public land would decrease the cost of public land administration in the RFO and enhance efficient management of remaining public lands.
- The disposal of small, isolated parcels would decrease conflicts between public land users and private landowners.
- Lands and interests in lands could be acquired from willing landowners by purchase, exchange or donation.
- Non-Federal land, interests in land (including access and conservation easements), and water rights would be considered for acquisition when they are within administratively designated areas or contain important resources (e.g., WSAs, ACECs, critical habitat, lands supporting listed species, riparian/wetland areas, etc.).
- Existing withdrawals would continue.
- The demand for communication sites and ROW corridors would increase within the life of this RMP.
- ROW holders may maintain their use and access at their discretion consistent with the terms of their ROW grant.

Environmental Consequences

Impacts to lands and realty would likely result from actions proposed under the following resource programs:

- Visual Resources
- Special Status Species
- Fish and Wildlife
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Travel Management
- Lands and Realty
- Special Designations

Other programs were determined to have little or no impact on lands and realty.

Alternative N: No Action

Impacts from Visual Resources

Implementing VRM guidelines would increase the design and siting requirements for ROWs and other land use authorizations, and affect associated costs on new or amended ROWs. Such restrictions may also restrict placement and could possibly delay availability of energy supply (by restricting pipelines, transmission lines, and wind and solar projects), and could create dead zones or delay availability of communications service. Such requirements could require utility lines and communication sites to be installed in less desirable locations or areas with more restrictions on accessibility or construction. There would also be an increased potential that requests for new or amended and renewed ROWs at existing sites would be denied as available space decreases.

ROWs would not occur in VRM Class I areas, and would generally not occur in Class II areas because of the requirements to preserve or retain the existing character of the landscape. Under this alternative, none of the lands managed by the RFO are classified as VRM Class I. ROWs and other land use authorizations proposed on the 529,000 acres (25% of the RFO) within VRM Class II areas would be redesigned, moved, or otherwise restricted.

Managing for VRM Classes III and IV would allow the greatest flexibility for ROWs and other land use authorizations. VRM Classes III and IV allow more changes to the landscape and are less restrictive of ground disturbing activities. Under this alternative, 569,000 acres would be managed as VRM Class III and 1,029,500 acres would managed as Class IV. Thus, the majority of the RFO (75%) would be available for siting of ROWs.

Impacts from Special Status Species

Land tenure adjustments would be affected by the management decision to generally retain all habitat for Federally-listed and candidate species in Federal ownership. The presence of special status species may preclude the issuance of some land use authorizations and place restrictions on others (such as timing restrictions on construction or other ground disturbing activities, or siting restrictions to avoid habitat areas). The reintroduction of endemic or non-endemic special status species may potentially impact lands and realty depending upon the species and the use restrictions and/or conservation measures applied.

Impacts from Fish and Wildlife

Proposed decisions for fish and wildlife could restrict some ROWs and other land use authorizations by location or season. In order to avoid or reduce habitat fragmentation, ROW applicants would be encouraged (or even required, in some locations) to collocate facilities. Seasonal or spatial restrictions for bison, mule deer, and elk could delay construction of new ROWs or reconstruction of existing ROWs. Prohibiting surface disturbing activities from November 1 through May 15 (6½ months each year) could make it difficult to complete some projects.

Seasonal limitations within one mile of bald eagle nest sites, within one-half mile of bald eagle winter concentration areas, and year round restrictions on ground disturbing activities within one-half mile of bald eagle nest sites could limit access and could delay project construction of new ROWs or reconstruction of existing ROWs. Where seasonal restrictions limit the time available to complete activities, relocation of surface facilities could be required. Impacts to issuance of ROWs would likely be minimal because areas where habitat restrictions apply are likely not areas where demand for ROWs is high.

Impacts from Fire and Fuels Management

Wildland fire use, appropriate management response, and prescribed fire suppression activities could potentially adversely impact ROWs (e.g., power lines and communication sites), facilities, and adjacent non-BLM lands; however, long-term impacts could be beneficial due to the reduction of high severity fires. Post-fire rehabilitation improvements could affect adjacent non-BLM lands (e.g., reduced erosion and less chance of alien plant invasion). Impacts to lands and realty would be minor.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional restriction on lands and realty.

Impacts from Travel Management

Impacts to lands and realty from travel management would result from reduced access to the public lands, and therefore reduced opportunities for land use authorizations. Generally, the more area open to OHV

use, the greater the opportunity for activities authorized under a land use permit or ROW. Under this alternative, 1,637,000 acres (77%) of the RFO would be open to motorized and mechanized vehicles, allowing opportunities for these types of activities over a large portion of the RFO.

Motorized and mechanized vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO, which would limit opportunities for land use authorizations to areas along those designated routes if the activity required motorized or mechanized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes). Under this alternative, 4,310 miles of routes in the RFO would be open to motorized use.

The remainder of the RFO (214,000 acres, or 10% of the RFO) would be closed to motorized and mechanized vehicle use, which would result in restrictions on land use authorizations beyond the restrictions that already would occur as a result of avoidance or exclusion areas for land use authorizations. Land use authorizations that do not require motorized or mechanized vehicle use (such as minimum impact filming activities) would not be affected.

Impacts from Lands and Realty

Under this alternative, 280 acres identified as available for FLPMA Section 203 sale in the existing land use plans would continue to be available pending site-specific environmental analysis. Inholdings within the wilderness study areas and four existing ACECs would be priorities for acquisition.

The purpose of designating corridors is to reduce or eliminate resource and land use conflicts. One major inhibitor to the timely review and approval of ROWs for a major energy facility is the effort involved in selecting a suitable route for the facility while minimizing the environmental impacts created by its construction, operation and continued maintenance. This includes the requirement that suitable alternative routes be identified and reviewed at the same level of scrutiny as the preferred route. One way to help alleviate this inhibitor and help streamline the authorization process is to identify and designate utility corridors in RMPs. If a corridor is designated as such in the RMP, then it has already been determined to be the "preferred route" and other alternative routes need not be addressed. If the project proponent uses the designated corridor as the proposed route, then the proponent would only be required to do on-the-ground environmental studies to determine if the route is suitable for the construction of the project. This simplifies the permitting process and can save considerable time as well as costs.

This alternative designates no utility corridors. Therefore, the benefits described above to the lands and realty program would not be realized.

Impacts from Special Designations

Wilderness Study Areas

Continued management of WSAs under the IMP would limit surface disturbing actions that could result in impairment of wilderness values. Thus, WSAs are exclusion areas for ROWs, and are unavailable for land disposals. However, land use authorizations that would not impair wilderness values (such as minimum impact filming) could be authorized, and in fact would provide the appropriate setting for these types of activities. Inholdings within the WSAs would be a priority for acquisition, consolidating Federal land ownership and improving manageability of public lands in these areas.

Wild and Scenic Rivers

Management actions to protect the outstandingly remarkable values, free-flowing nature, and tentative classification of all eligible river segments affect the availability of these areas for lands and realty actions. As such these river corridors (12 segments, 135 miles) would be managed as avoidance areas for ROWs, which could result in denying ROWs and/or requiring realignment of the proposed ROW around

the avoidance area. These restrictions would increase the cost of construction, or preclude authorization of the ROW altogether. However, because these areas are remote in location, impacts to lands and realty should be negligible.

Areas of Critical Environmental Concern

Management actions for protection of relevant and important values of ACECs affect the availability of these areas for lands and realty actions. Along with continuing the designations of Beaver Wash Canyon, North Caineville Mesa and South Caineville Mesa ACECs, proposals under Alternative N would allow no uses that would cause irreparable damage to relevant and important values. As such these ACECs (14,780 acres) would be managed as avoidance areas for ROWs. However, because these areas are small in extent and are remote in location, impacts to lands and realty should be negligible.

Land tenure adjustments would focus on acquisition of non-Federal land within the ACECs. Over time, this would lead to a consolidated land pattern within these special designations, a benefit to other resource programs.

Alternative A

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described for Alternative N. This alternative designates fewer areas as VRM Classes I and II (446,900 acres as VRM Class I, and 0 acres as VRM Class II. This alternative designates more acres as VRM Classes III and IV than any of the alternatives, which would provide the least restrictions on design and siting of ROWs and other land use authorizations.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the similar to those described for Alternative N except that there are fewer restricted areas under Alternative A. For example, surface disturbing activities within sage grouse brooding habitat would be restricted from April 1 through June 15 in Alternative N but no restrictions apply in Alternative A. This would result in increased opportunities for land use authorizations under Alternative A. However, impacts to the lands and realty program would be minimal because areas where habitat restrictions apply are likely not areas where demand for ROWs is high. Land use authorizations that do not involve surface disturbing activities would not be affected by these restrictions.

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional restrictions on lands and realty.

Impacts from Travel Management

The types of impacts that would be experienced as a result of travel management would be similar to those described for Alternative N. However, this alternative designates 449,400 acres (21%) of the RFO as open to motorized and mechanized vehicles; motor vehicles would be limited to designated routes on 1,679,000 acres (79%) of the RFO; and 0 acres would be closed to motorized and mechanized vehicle

use. The amount of open areas, although greatly reduced as compared to Alternative N, would provide relatively unrestricted opportunities for land use authorizations.

The remainder of the RFO would have motorized/mechanized use limited to designated routes, which would limit opportunities for land use authorizations to areas along those designated routes if the activity required motorized or mechanized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes). Under this alternative, 4,312 miles of routes in the RFO would be open to motorized use.

No areas would be closed to motorized/mechanized use, with no accompanying restrictions (at least from travel decisions) on land use authorizations.

Impacts from Lands and Realty

One hundred and eighteen parcels totaling 13,400 acres are identified as available for sale under FLPMA Section 203 and could be sold pending site-specific environmental analysis. These sales would improve the manageability of the public land estate by disposing of parcels isolated and/or difficult to manage and could provide opportunities for community expansion. Conversely, grazing land, open space, wildlife habitat, and land available for other public land uses would be lost. Inholdings within the wilderness study areas would be priorities for acquisition, consolidating Federal land ownership and improving manageability of public lands in these areas.

Under this alternative, 25 utility corridors would be designated (see Table A5-9 in Appendix 5). Of these, twelve would be one-half mile in width and the remaining thirteen would be 800 feet in width. These corridors follow existing utility lines and/or highway corridors. This would minimize adverse environmental impacts and the proliferation of separate rights-of-way in these areas, as well as help streamline the process for the authorizing energy transmission facilities and other utility rights-of-way.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

No river segments are recommended as suitable wild and scenic rivers under this alternative.

Areas of Critical Environmental Concern

No ACECs are proposed for designation under this alternative.

Alternative B: Preferred Alternative

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described for Alternative A except that more acres would be designated as VRM Classes I and II (655,900 acres, or 31% of the RFO), and fewer areas as VRM Classes III and IV (1,472,100 acres). This would result in less area where ROWs and other land use authorizations could be sited, which could affect associated costs to the ROW/permit applicant by requiring relocation or changes in project design to meet the VRM class objectives. This could also restrict or delay availability of communications service if suitable sites cannot be found.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the similar to those described for Alternative N except that there are more restricted areas under Alternative B. For example, activities within crucial desert bighorn sheep habitat would be restricted from April 15 through June 15 in Alternative B but no restrictions on surface-disturbing activities within bighorn sheep habitat would apply in Alternative N. However, impacts to the lands and realty program would be minimal because areas where habitat restrictions apply are likely not areas where demand for ROWs is high. Land use authorizations that do not involve surface disturbing activities would not be affected by these restrictions.

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for vegetation.

Impacts from Travel Management

The types of impacts that would be experienced as a result of travel management would be similar to those described for Alternative N. However, this alternative designates only 8,400 acres (<1% of the RFO) as open to cross-country motorized and mechanized vehicle use. This could limit the opportunities for land use authorizations if the connected activity required cross-country travel (unless administrative access was granted for such purpose). In addition, motorized users seeking that type of recreational opportunity would be concentrated into that relatively small area, which could result in conflicts with the holder of the land use authorization.

This alternative would close 210,400 acres (10% of the RFO) to motorized use, which would eliminate all opportunities for land use authorizations requiring motorized or mechanized vehicle access. The remainder of the RFO (1,909,200 acres) would have motorized/mechanized use limited to designated routes, which would limit opportunities for land use authorizations to areas along those designated routes if the activity required motorized or mechanized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes). Under this alternative, 4,176 miles of routes in the RFO would be open to motorized use.

Impacts from Lands and Realty

One hundred and eighteen parcels totaling 13,400 acres are identified as available for sale under FLPMA Section 203 and could be sold pending site-specific environmental analysis (same as Alternative A). These sales would improve the manageability of the public land estate by disposing of parcels that are isolated and/or difficult to manage and could provide opportunities for community expansion. Conversely, grazing land, open space, wildlife habitat and land available for other public land uses would be lost. Inholdings within WSAs, two suitable wild and scenic river corridors (Dirty Devil River and Fremont River in Fremont Gorge), and two ACECs (North Caineville Mesa and Old Woman Front) would be priorities for acquisition, consolidating Federal land ownership and improving manageability of public lands in these areas.

The same utility corridors designated under Alternative A would also be designated in Alternative B, resulting in the same impacts.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Management actions to protect the outstandingly remarkable values, free-flowing nature, and tentative classification of all suitable river segments affect the availability of these areas for lands and realty actions. Under this alternative, two river corridors (59 miles) are recommended as suitable and would be managed as avoidance areas for ROWs, which could result in denying ROWs and/or requiring realignment of the proposed ROW around the avoidance area. These restrictions would increase the cost of construction, or preclude authorization of the ROW altogether. However, because these areas are remote in location, impacts to lands and realty should be negligible.

Areas of Critical Environmental Concern

Impacts would be similar to those described for Alternative N except that fewer areas would be designated as ACECs (two ACECs, totaling 2,530 acres). Thus, potential impacts on the lands and realty program (in the form of fewer ROW avoidance areas and fewer focus areas for acquisition of inholdings) would be reduced.

Alternative C

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described for Alternative B except that fewer acres would be designated as VRM Classes III and IV (1,450,500 acres). This would result in less area where ROWs and other land use authorizations could be sited, which could affect associated costs to the ROW/permit applicant. This could also restrict or delay availability of communications service if suitable sites cannot be found.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the similar to those described for Alternative N except that there are additional restrictions for protection of wildlife habitat areas under Alternative C. For example, OHV use on 142,000 acres of deer and elk crucial winter range and 189,000 acres of crucial bison habitat would be closed under this alternative. This could limit opportunities for land use authorizations that require motorized or mechanized vehicle use for access. However, impacts to the lands and realty program should be minimal because areas where habitat restrictions apply are likely not areas where demand for ROWs is high. Land use authorizations that do not involve surface disturbing activities would not be affected by these restrictions.

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional restrictions on lands and realty.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative B. However, this alternative designates no areas as open to motorized and mechanized vehicles. The lack of open areas would eliminate opportunities for land use authorizations if the connected activity required cross-country travel (unless administrative access was granted for such purpose).

This alternative would close 683,000 acres (32% of the RFO) to motorized use, which would eliminate all opportunities for land use authorizations requiring motorized or mechanized vehicle access. The remainder of the RFO (1,445,000 acres) would have motorized/mechanized use limited to designated routes, which would limit opportunities for land use authorizations to areas along those designated routes if the activity required motorized or mechanized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes). Under this alternative, 3,192 miles of routes in the RFO would be open to motorized use.

Impacts from Lands and Realty

No lands are identified as available for sale under FLPMA Section 203; hence there would be no beneficial or adverse impacts to the Federal land ownership pattern. Inholdings within the WSAs, all suitable wild and scenic river corridors, and all ACECs would be priorities for acquisition, which would consolidate the ownership pattern in these special designations.

The same utility corridors designated under Alternative A would also be designated in Alternative B, resulting in the same impacts.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Impacts would the same as those described for Alternative N.

Areas of Critical Environmental Concern

The types of impacts experienced from the designation of ACECs would be similar to those described for Alternative N except that significantly more areas would be designated as ACECs (16 areas, totaling 886,810 acres). Thus, potential impacts on the lands and realty program (in the form of many more ROW avoidance areas and more focus areas for acquisition of inholdings) would be substantially greater.

Alternative D

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described for Alternative C except that even fewer acres would be designated as VRM Classes III and IV (931,700 acres). This alternative would be the most restrictive on where ROWs and other land use authorizations could be sited, and would be most likely to affect associated costs to the ROW/permit applicant, and most delay or restrict availability of communications service in some areas.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

Impacts would be the similar to those described for Alternative C except that there are additional restrictions for protection of wildlife habitat areas under Alternative D. For example, OHV use on 258,000 acres of deer and elk crucial winter range and 207,000 acres of crucial bison habitat would be closed under this alternative. This alternative could limit opportunities for land use authorizations that require motorized or mechanized vehicle use for access the most of any alternative. However, impacts to the lands and realty program should still be minimal because areas where habitat restrictions apply are likely not areas where demand for ROWs is high. Land use authorizations that do not involve surface disturbing activities would not be affected by these restrictions.

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Approximately 682,600 acres within the RFO would be managed to preserve non-WSA wilderness characteristics. In addition to managing these areas as ROW exclusion areas, they would not be available for disposal, and would be designated as VRM Class I. Prohibiting ROWs and associated surface disturbance in order to protect the wilderness values in these areas would preclude pipelines, power lines, and other infrastructure that may be needed for mineral related activities, community enhancement, or development of inholdings.

In order to protect wilderness characteristics values, lands identified for disposal in the Notom Bench and Dogwater Creek non-WSA lands with wilderness characteristics would be retained in Federal ownership. This would preclude the augmentation of contiguous private ranchlands in these areas.

All 682,600 acres of non-WSA lands with wilderness characteristics would be proposed for mineral withdrawal under this alternative. This would preclude extraction of all locatable minerals, including uranium and vanadium, from these lands, subject to valid existing rights.

Protecting wilderness characteristics lands would preclude designation of the full widths of ROW corridors along Highway 24 within Wild Horse Mesa, Red Desert, Fremont Gorge and Notom Bench non-WSA lands with wilderness characteristics. In addition, corridor widths would also be limited to outside non-WSA lands along State Highways 95, 276, and 62 within Little Rockies, Fiddle Butte, Rocky Ford, Phonolite Hill and Kingston Ridge non-WSA lands. Narrowing the corridors could preclude some future ROWs, especially large electrical lines, because lines would have to be sited too close together, which could result in sparking and other electrical interference.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. Similar to Alternative C, this alternative designates no areas as open to motorized and mechanized vehicles, which would eliminate opportunities for land use authorizations if the connected activity required cross-country travel (unless administrative access was granted for such purpose).

This alternative would close significantly more (1,155,200 acres, or 32%) of the RFO to motorized use, which would eliminate all opportunities for land use authorizations requiring motorized or mechanized vehicle access. The remainder of the RFO (972,800 acres) would have motorized/mechanized use limited to designated routes, which would limit opportunities for land use authorizations to areas along those designated routes if the activity required motorized or mechanized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes). Under this

alternative, 3,043 miles of routes in the RFO would be open to motorized use. This alternative would provide the least opportunity for land use authorizations requiring motorized or mechanized vehicle access.

Impacts from Lands and Realty

No lands are identified as available for sale under FLPMA Section 203; hence there would be no beneficial or adverse impacts to the Federal land ownership pattern. Inholdings within non-WSA lands with wilderness characteristics areas, WSAs, suitable wild and scenic river corridors, and ACECs would be priorities for acquisition, which would consolidate the ownership pattern in these areas.

Under this alternative, the same utility corridors designated under Alternative A would also be designated in Alternative B, except that widths for four of the corridors (along State Highways 95, 276, and 62) would be narrower to avoid non-WSA lands. As described above (in the Non-WSA Lands with Wilderness Characteristics section), narrowing the corridors could preclude some future ROWs, especially large electrical lines, because lines would have to be sited too close together. Impacts from designating the other 21 corridors would be same as described for Alternative A.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described for Alternative C.

4.4.6 Minerals and Energy

4.4.6.1 Leasable Minerals

4.4.6.1.1 Oil and Gas

Oil and gas resources within the RFO would be available for leasing under the alternatives as depicted in Table 4-24. Alternative A would make the most land (79% of the lands managed by the RFO) available for oil and gas leasing; Alternative D the least (45%). Likewise, Alternative A would impose the fewest restrictions on exploration and development; Alternative D would be the most restrictive.

Table 4-24. Oil and Gas Leasing Categories, Acres, and Percentage of RFO

Leasing Categories		Alternative N (No Action)	Alternative A	Alternative B (Preferred	Alternative C	Alternative D
Open	Standard Lease Terms	1,236,500 ac 58%	860,600 ac 40%	545,000 ac 26%	491,900 ac 23%	290,200 ac 14%
	Controlled surface use or timing stipulations	409,200 ac 19%	820,500 ac 39%	1,021,600 ac 48%	901,100 ac 42%	634,000 ac 30%

Leasing Categories		Alternative N (No Action)	Alternative A	Alternative B (Preferred	Alternative C	Alternative D
Open	No Surface Occupancy	22,600 ac 1%	0 ac 0%	110,900 ac 5%	148,700 ac 7%	43,300 ac 2%
	Total Open	1,668,300 ac 78%	1,681,100 ac 79%	1,677,500 ac 79%	1,541,700 ac 72%	967,500 ac 46%
Closed to Leasing		459,700 ac 22%	446,900 ac 21%	450,500 ac 21%	586,300 ac 28%	1,160,500 ac 54%

Mineral potential for oil and gas is assessed in the *Mineral Potential Report for Sanpete, Sevier, Wayne, and Garfield Counties, Richfield Field Office* (BLM 2005b) which is available for review on the planning project web site at: http://www.blm.gov/ut/st/en/fo/richfield/planning.html. In addition, a Reasonable Foreseeable Development Scenario (RFD) was developed for oil and gas activities in the planning area in conformance with IM 2004-089 (Appendix 12). The RFD is a prediction of the number of wells to be drilled, acreage of surface disturbance, and a rating of activity (development potential), based on the assumptions and analysis in the Mineral Potential Report. Table 4-25 is a summary of the RFD. The RFD does not differentiate between activities on public versus non-public lands. In the RFD, the planning area is divided into four areas, based on USGS oil and gas plays and predicted activity within the plays.

Table 4-25. Reasonably Foreseeable Development for Oil and Gas

Defined Area	General Area	Number of Wells Predicted	Surface Disturbance Geophysical (Acres)	Surface Disturbance Wells (Acres)	Oil and Gas Occurrence Potential*	Development Potential*
Areas 1 & 2	Piute, Wayne and Garfield counties	45 wells	240 ac	540 ac	Wayne and Garfield Counties and eastern Piute County are high potential; western Piute County and the Antimony area are moderate	Low
Area 3	Eastern Sevier and Sanpete Counties—Wasatch Plateau area	49 wells	360 ac	1,100 ac	High	Moderate
Area 4	Western Sevier and Sanpete Counties—Sevier and Sanpete Valleys	360 wells	4,500 ac	1,440 ac	High**	High
Total		**454 wells**	**5,100 ac**	**3,080 ac**		

* Oil and gas occurrence potential and development potential are based on the Mineral Potential Report and RFD, respectively. In the RFD, development potential is defined as the relative likelihood of activity, not development *per se.* The Mineral Potential Report stated that development is likely in Areas 3 and 4 and unlikely in Areas 1 and 2. The RFD modified the development potential, based on published information available after the completion of the Mineral Potential Report.
**Area 4 includes the Sevier Frontal Thrust play and other plays. Given the overlap of the plays, the potential is based on the thrust play.

Most oil and gas activity is predicted in the western part of the planning area in Area 4 in association with the Sevier Frontal play, also referred to as the Central Utah Thrust play, which generally encompasses the Sevier and Sanpete Valleys and adjacent ranges. Area 3 is located in the vicinity of the Wasatch Plateau and includes conventional gas as well as coal bed methane gas. Areas 1 and 2 include the southern parts of the planning area in Piute, Wayne, and eastern Garfield Counties, and include several plays associated with the Paradox Basin province as well as the Permo-Triassic Unconformity play.

Methods and Assumptions

The analysis for impacts to oil and gas assumes:

- Oil and gas activity—exploration, drilling, and production if paying quantities of oil and/or gas are discovered—would be managed according to applicable law, Federal regulations and onshore orders and would be managed to mitigate impacts to other resources according to BMPs appropriate to the site/location.
- The RFD is a reasonable prediction of oil and gas activity for the planning horizon.

Environmental Consequences

Impacts to oil and gas activity would most likely result from actions proposed for the management of the following resource:

- Soil Resources and Water Resources
- Cultural Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Lands and Realty
- Special Designations

Other programs were determined to have little or no impact on oil and gas leasing and development.

Alternative N: No Action

<u>Impacts from Soil Resources and Water Resources</u>

Managing public lands to protect soil and water would have an impact on oil and gas activity as mitigations would be developed that would modify proposed oil and gas operations when an application, such as a Notice of Intent (NOI) for Geophysical Exploration or Application for Permit to Drill (APD), is received by the BLM. Most mitigation would be required based on the Federal regulations, the standard lease terms, and best management practices. Oil and gas operations would be restricted by a major leasing constraint on lands with steep slopes, canyon walls, or muddy and wet conditions, and where watersheds may be impaired. These areas are specifically:

- Moroni Slopes, Blue Hills, and Dirty Devil River canyons (no occupancy or other surface disturbances where grades of slopes are greater than 50%);
- Dirty Devil River canyons (no occupancy within the canyon);
- Municipal water supplies (no occupancy or other surface disturbance);
- Live water (no occupancy or other surface disturbance within 500 feet).

The slope restriction would have an adverse impact on exploration and development by disallowing occupancy for drilling and surface facilities. Vertical drilling is preferred over directional, as vertical wells are less expensive to drill and are more likely to be successful. The above areas are specified by legal description and are protected by a lease stipulation, which have provisions for exceptions, waivers or modifications in some areas.

Impacts from Cultural Resources

Managing public lands to protect cultural resources would impact oil and gas activity as mitigations and/or restrictions would be developed that would modify proposed oil and gas operations when an application, such as a NOI for Geophysical Exploration or APD, is received by the BLM. Archaeological sites and sites eligible for the National Register would be avoided, and mitigation would be required as consistent with the Federal laws and regulations and the standard lease terms. Modifying proposed exploration and development would have adverse impacts by delaying the time required for approval.

Oil and gas operations would be subject to no surface occupancy in the following areas:

- Bull Creek Archaeological District
- Susan Rockshelter Archaeological Site
- Fish Cove Archaeological Site

NSO would preclude drilling or other facilities on the above sites and would have an adverse impact on exploration and development. If the proposed subsurface target is beneath one of the above sites, the drilling would need to be by directional methods, which would increase drilling costs and would decrease the likelihood of successful exploration.

Cultural resources within four existing ACECs—Beaver Wash Canyon, North Caineville Mesa, South Caineville Mesa, and the Gilbert Badlands—would be protected by additional management prescriptions for those designated areas. The existing ACECs are open to leasing with NSO, except for Beaver Wash Canyon which is closed to leasing.

Impacts from Visual Resources

Managing visual resources on public lands would have an impact on oil and gas activity as mitigations would be developed that would modify proposed oil and gas operations when an application, such as a NOI for Geophysical Exploration or APD, is received by the BLM. Based on the VRM class, mitigations would be developed consistent with the guidelines of the VRM classes and the Federal laws and regulations and standard lease terms. The VRM guidelines for the RFO are: VRM I, 0 acres, which is 0% of public land within the RFO; VRM II, 529,000 acres, which is 25%; VRM III, 569,000 acres, which is 27%; and VRM IV, 1,029,500 acres, which is 48%. The WSAs (446,900 acres) would be managed as VRM I although they may be designated in other VRM classes. Areas designated VRM Class II would allow for minimal change to its landscape character, thus, oil and gas activity would be very restricted, or activities may need to be redesigned or moved depending on the proposed oil and gas operation. This restriction would preclude drilling on the surface and preclude surface facilities, unless it meets the VRM objective. The restriction could require drilling to be by directional methods from adjacent land, which would increase cost and would decrease the likelihood of success of wildcat wells. Areas designated VRM IV would allow for major modifications of the landscape; thus oil and gas activity would be minimally impacted compared to VRM II.

The following areas are designated as no surface occupancy:

- Utah Highway 24 in places in the vicinity of Torrey

- Utah Highway 95 at North Wash
- Notom Road east of Capitol Reef National Park

The land subject to no surface occupancy is within 1,320 feet of the centerline of the roadway unless the oil and gas activity is not visible from the highway or road. NSO would preclude drilling or other facilities within the above highway corridors and would have an adverse impact on exploration and development. If a proposed subsurface target is within one of the above corridors, the drilling would need to be by directional methods from adjacent land, which would increase drilling costs and would decrease the likelihood of successful exploration.

Impacts from Special Status Species

All oil and gas Federal actions would be subject to the requirements of the Endangered Species Act of 1973, as amended. Any action potentially affecting any listed threatened or endangered species would require the appropriate level of Section 7 consultation with U.S. Fish and Wildlife Service (USFWS). Necessary mitigation, such as timing and avoidance, would be implemented to protect listed plant and animal species, subject to applicable Federal laws, regulations, and lease terms. Applicable lease notices for subject special status species that may be present would be attached to a lease when authorized. The mapped sage grouse strutting (leks) and nesting (brooding) areas within the Parker Mountain planning area would be subject to a seasonal restriction for oil and gas exploration and development. Distance or timing restrictions for special status species would have an adverse impact on oil and gas operations. Requirements for special status species inventories may result in relocating proposed well sites and/or other surface facilities, and delays in permitting oil and gas operations. Seasonal restrictions would have adverse impacts to oil and gas exploration and development if a proposed deep well could not be feasibly drilled and completed within the open season, precluding drilling deep exploration targets. Distance restrictions would require directional drilling instead of vertical drilling, which would increase drilling cost, and directional drilling in wildcat areas would have less likelihood of success.

Impacts from Fish and Wildlife

Management of wildlife habitat would have an impact to oil and gas exploration and development through imposing restrictions for when oil and gas activity would be allowed. Crucial winter range for deer, elk, antelope, and bison have seasonal restrictions for when exploration and development may occur. In addition, pronghorn (antelope) kidding range and bison yearlong range are seasonally restricted for oil and gas activity. These timing restrictions affect when oil and gas exploration and development would be allowed. Seasonal restrictions would have adverse impacts to oil and gas exploration and development as a company would need to schedule activities during the open season. Equipment, such as drill rigs and work crews would not necessarily be available during the open season. Delays in permitting proposed operations and contracting necessary equipment and crews would increase costs for exploration and development. On deeper wells, the seasonal restrictions would preclude drilling deep targets, when the well could not be feasibly drilled and completed within the open season. Habitat for these animals that is open to leasing subject to minor constraints, such as timing restriction, would be open or closed as shown in Table 4-26 below:

Table 4-26. Oil and Gas Leasing Stipulations within Crucial Wildlife Habitat - Alternative N

			Deer	Pronghorn	Bison	Elk
Open	Standard Lease Terms	Acres	225,400 ac	23,600 ac	89,400 ac	82,300 ac
		% habitat	40%	23%	36%	39%

			Deer	Pronghorn	Bison	Elk
Open	Timing or controlled surface use restrictions	Acres	243,800 ac	73,300 ac	44,600 ac	124,900 ac
		% habitat	43%	71%	18%	59%
	No Surface Occupancy	Acres	8,500 ac	5,300 ac	500 ac	4,900 ac
		% habitat	1%	5%	<1%	2%
Closed		Acres	91,500 ac	500 ac	116,400 ac	100 ac
		% habitat	16%	1%	46%	<1%

The CSU, NSO, and closed are not necessarily imposed for the protection of wildlife, but the wildlife habitat is enclosed within those areas. This alternative would have the least impact on oil and gas exploration as the land subject to habitat restrictions and/or closure would be the least under this alternative.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, no actions to maintain wilderness characteristics on lands outside of WSAs are proposed, resulting in no impact to oil and gas exploration and development.

Impacts from Recreation

Under this alternative, no SRMAs would be established. The following areas would be subject to no surface occupancy:

- Jet Basin
- Pink Cliffs
- Star Springs
- Fremont River Gorge
- Otter Creek

The NSO designation reduces the opportunity for oil and gas exploration and development, because drilling and surface facilities would be disallowed. If subsurface targets beneath the above sites were drilled, then directional drilling would be necessary. Drilling directional wells is more expensive than drilling vertical wells, and directional drilling is less likely to be successful in wildcat areas.

The following areas would be closed to leasing:

- Little Rockies
- Beaver Wash Canyon

In closed areas oil and gas resources would not be explored and would not be available for development.

Impacts from Lands and Realty

The following areas would be open to leasing subject to no surface occupancy:

- Cemeteries
- Landfills—existing and closed
- Lands managed under Recreation and Public Purpose Act lease

The following areas would be closed to leasing:

- Incorporated municipalities

Limiting the above areas subject to NSO or closure to leasing would affect oil and gas exploration and development. The NSO areas would reduce the opportunity for oil and gas exploration and development, because drilling from the NSO-restricted surface and other surface facilities would be disallowed. If subsurface targets beneath the above sites were drilled, then directional drilling would be necessary. Drilling directional wells would be more expensive than drilling vertical wells, and directional drilling would be less likely to be successful than vertical drilling in wildcat areas. In closed areas, undiscovered oil and gas resources would not be explored and would not be available for development.

Impacts from Special Designations

Wilderness Study Areas

WSAs, encompassing 446,900 acres, would be closed to leasing for oil and gas exploration and development. The WSAs are within the low activity area (low development potential area) in the RFD scenario for oil and gas, where the prediction is for one well per year or 45 wells for the planning horizon. However, none of those wells were predicted for WSAs, as the RFD does not apply to lands that are closed to leasing by law, which is the case for WSAs. Closing WSAs to leasing is required by law; therefore, the decisions in this DRMP/DEIS would not impact oil and gas exploration and development within WSAs.

Wild and Scenic Rivers

Managing 12 eligible wild and scenic river corridors totaling 135 miles would affect oil and gas exploration and development by limiting surface disturbing activities within the river corridors. No decision would be made under this alternative for suitability. There are 98 miles (73% of the total miles) of the eligible river segments that are within WSAs, which are closed to leasing. The management prescription for the 37 miles of river segments outside of WSAs would vary in management from open subject to standard terms to closed to leasing. The eligible rivers are within areas with high potential for the occurrence of oil and gas with a predicted low activity level (development potential), except Quitchupah Creek that has a predicted moderate activity level. The protected corridor for wild and scenic rivers, where designated as such, is one-quarter mile on either side of the river. The management of wild and scenic rivers outside of WSAs would have adverse impacts to oil and gas exploration and development. The NSO segments would require directional drilling and no surface facilities, which would increase cost and would decrease the likelihood of successful exploration. In the segments closed to leasing, oil and gas resources would not be explored and would not be available for development.

Areas of Critical Environmental Concern

The four existing ACECs would affect oil and gas exploration and development. At Beaver Wash 4,800 acres are closed to leasing. At the Gilbert Badlands, 3,680 acres and at North and South Caineville Mesas, 2,200 and 4,100 acres, respectively, are subject to NSO. At Beaver Wash, which would be closed to leasing, oil and gas resources would not be explored and would not be available for development. At Gilbert Badlands and the Caineville Mesas ACECs, oil and gas exploration and development would be impacted by requiring the relocation of well sites and surface facilities. The relocation of well sites would require directional drilling. Such impacts would increase the cost of exploration and would affect the likelihood of successful exploration.

Alternative A

Impacts from Soil Resources and Water Resources

Managing public lands to protect soil and water would have an impact on oil and gas activity as mitigations would be developed that would modify proposed oil and gas operations when an application, such as a NOI for Geophysical Exploration or APD, is received by the BLM. Most mitigation would be required based on the Federal regulations, the standard lease terms, and best management practices. In order to protect soil and water, controlled surface use would establish the following minor constraints:

- Exploration and development would not be allowed within 330 feet of live water;
- Exploration and development would not be allowed within 330 feet of a spring;
- Exploration and development would not be allowed within zones of hydric soils;
- Exploration and development within areas of high potential for wind erosion as identified by the Natural Resources Conservation Service (NRCS) would require plans for soil stabilization or signing; and
- Exploration and development on slope gradients that are 21 to 40% would require appropriate design in the surface use plan of operations.

The above CSU requirements would have provisions for exceptions, modifications, and waivers as addressed in Appendix 11, but could require redesign or result in the inability to develop oil and gas in some locations.

Slopes that have a gradient that is greater than 40% would be subject to no surface occupancy. This major constraint would be subject to exception or modification, based upon adequate design for the control or reduction of erosion.

Managing for the above soil and water conditions would add costs and delays to permitting oil and gas exploration activities, although most of the above-stated conditions would require a relocation of less than 660 feet. Where the relocation is more than 660 feet for a proposed drilling site, directional drilling would be required instead of vertical, which would increase costs and decrease the likelihood of successful exploration.

Impacts from Cultural Resources

Impacts to oil and gas activity from the management of cultural resources would be similar to those described for Alternative N, except designated areas with specific protection for cultural resources (e.g., ACECs with cultural relevant and important values) are not proposed in this alternative. Oil and gas exploration and development would be mitigated by requirements imposed for site-specific applications as consistent with the Federal laws and regulations and the standard lease terms. Mitigation would require avoidance of cultural resources and such mitigation would impact oil and gas exploration and development through an increased cost for cultural resource inventories and relocation of proposed wells and surface facilities.

Impacts from Visual Resources

The types of impacts experienced from visual resource management would be similar to, but slightly less than, those described for Alternative N, due to the following changes to the designated VRM classes: VRM Class I - 446,900 acres (21% of the RFO); VRM Class II - 0 acres (0%); VRM Class III - 392,800 acres (18%); and VRM Class IV - 1,288,300 acres (61%). VRM Class I would impact oil and gas exploration as surface disturbance would be disallowed, unless appropriate mitigation met the objective of this VRM class; however, the VRM Class I lands are also WSAs that are closed to oil and gas leasing. Thus VRM Class I designations, in effect, do not impact oil and gas. VRM Classes III and IV designated

lands would have minimal impact on oil and gas, although there could be some delays and added costs to develop mitigations, such as use of appropriate paint colors, building facilities in a manner that blends better with the landscape, and other minor changes in operations. The impacts to oil and gas activity from visual resources would be the least in this alternative.

Impacts from Special Status Species

The types of impacts experienced from management of special status species would be similar to those described for Alternative N, except a one-quarter mile buffer for no surface disturbance or permanent structure would be imposed around sage grouse leks. In this alternative, there would not be a timing restriction for brooding (nesting) areas imposed as a lease stipulation; thus any timing or distance restriction would be imposed at the time of an application for exploration and development, based on applicable Federal laws and regulations and the standard lease terms. Requiring the one-quarter mile buffer or another distance restriction would result in relocating wells and/or facilities and would require directional drilling to a subsurface target. Completing species inventories, selecting relocated sites, and directional drilling would increase delays in permitting and the costs of exploration and development, and directional drilling would decrease the likelihood of successful exploration. Seasonal restrictions would have adverse impacts to oil and gas exploration and development when a proposed deep well could not be feasibly drilled and completed within the open season, precluding drilling deep exploration targets.

This alternative would be the least restrictive for oil and gas exploration and development and would thus result in the least impacts.

Impacts from Fish and Wildlife

Under this alternative, there would be no special stipulations for oil and gas leasing. However, mitigation may still be applied for wildlife crucial habitats at the time of exploration and development, and mitigation for desert bighorn sheep would also be included under this alternative. Although the CSU, NSO and closed acreage within Table 4-27 below are not necessarily imposed for the protection of wildlife, wildlife habitat is enclosed within those areas. The requirement of mitigation for wildlife species if necessary would most likely occur for the acres in the CSU category, which is the most CSU acres of any of the alternatives and could result in impacts to oil and gas exploration and development. Seasonal restrictions would have adverse impacts to oil and gas exploration and development as a company would need to schedule activities during the open season. Equipment, such as drill rigs and work crews would not necessarily be available during the open season. Delays in permitting proposed operations and contracting necessary equipment and crews would increase costs for exploration and development. On deeper wells, seasonal restrictions would preclude drilling deep targets, when the well could not be feasibly drilled and completed within the open season.

Table 4-27. Oil and Gas Leasing Stipulations within Crucial Wildlife Habitat - Alternative A

			Deer	Pronghorn	Bison	Bighorn	Elk
Open	Standard Lease Terms	Acres	400 ac	0 ac	200 ac	8,700 ac	100 ac
		% habitat	<1%	0%	<1%	4%	<1%
	Timing or controlled surface use restrictions	Acres	477,300 ac	102,700 ac	134,300 ac	121,200 ac	212,100 ac
		% habitat	84%	100%	54%	53%	100%
	No Surface Occupancy	Acres	0 ac	0 ac	0 ac	0 ac	0 ac
		% habitat	0%	0%	0%	0%	0%

		Deer	Pronghorn	Bison	Bighorn	Elk
Closed	Acres	91,500 ac	0 ac	116,400 ac	97,400 ac	0 ac
	% habitat	16%	0%	46%	43%	0%

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as for Alternative N.

Impacts from Recreation

Under this alternative, five SRMAs would be established—Dirty Devil/Robbers Roost, Big Rocks, Sahara Sands, Otter Creek, and Factory Butte. Only the Dirty Devil/Robbers Roost would be specifically managed for semi-primitive and primitive recreation. However, other than the portion of this SRMA within designated WSAs, the lands would be subject to standard lease terms and minor constraints for oil and gas activity. Thus, the SRMAs would generally not impose stricter restrictions on oil and gas exploration and development.

Impacts from Lands and Realty

Impacts would be the same as described for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described for Alternative N.

Wild and Scenic Rivers

Under this alternative, no eligible river segments would be recommended as suitable for wild and scenic designations. There would be no impact to oil and gas activity.

Areas of Critical Environmental Concern

No ACECs would be designated, and the four existing ACECs in Alternative N would no longer be designated as such. There would be no impacts to oil and gas from ACEC designations. Relevant and important values for the potential ACECs would be protected by applicable Federal laws and regulations and the standard lease terms.

Alternative B: Preferred Alternative

Impacts from Soil and Water

The impacts would be the same as those described for Alternative A.

Impacts from Cultural Resources

Impacts would be similar to those described for Alternative N, except designated areas with specific protection for cultural resources are not proposed in this alternative. Thus, no impacts associated with those restrictions would occur. Oil and gas exploration and development would be mitigated by requirements imposed at the time of review of site-specific applications as consistent with Federal laws and regulations and the standard lease terms. Mitigation, if required, would include avoidance of cultural resources and such mitigation would impact oil and gas exploration and development through an increased cost for cultural resource inventories and relocation of proposed wells and surface facilities.

Two ACECs would be designated and the management prescription for those two areas would provide additional protection for cultural resources. These ACECs would be open to leasing with NSO which could make development of oil and gas unfeasible. These ACECs are:

- North Caineville Mesa
- Old Woman Front

NSO would require directional drilling and no surface facilities, which would increase cost and would decrease the likelihood of successful exploration as directional drilling is more expensive and less successful for exploration than vertical drilling.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management would be the same as those described for Alternative N, except the designated VRM classes are changed as follows: VRM Class I - 446,900 acres (21% of the RFO); VRM Class II - 209,000 acres (10%); VRM Class III - 410,800 acres (19%); and VRM Class IV - 1,061,300 acres (50%). VRM Classes I and II would impact oil and gas exploration as surface disturbance would be disallowed, unless appropriate mitigation met the objective of these VRM classes. The VRM Class I designated lands are also WSAs that are closed to the leasing of oil and gas; thus VRM Class I designations, in effect, do not impact oil and gas. VRM Class II would preclude drilling on the surface and preclude surface facilities, unless it meets the VRM objective, and the restriction could require drilling to be by directional methods from adjacent land, which would increase cost and would decrease the likelihood of success of wildcat wells. VRM Classes III and IV designated lands would have minimal impact on oil and gas, although there could be some delays and added costs to develop mitigations, such as appropriate paint colors, building facilities in a manner that blends better with the landscape, and other minor changes in operations. This alternative has more VRM Classes I and II acres than Alternatives N or A, which would result in more restrictions to oil and gas activities.

Impacts from Special Status Species

The types of impacts experienced as a result of special status species management would be the same as those described for Alternative N, except a one-half mile buffer for no surface disturbance or permanent structures would be imposed around sage grouse leks. Brooding (nesting) areas would be subject to a timing restriction and this timing restriction would increase by one month. These restrictions would limit oil and gas activity within the vicinity of sage grouse leks and brooding areas. Requiring the one-half mile buffer would require relocating wells and/or facilities at a greater distance than in Alternative A and would require directional drilling to a subsurface target. Completing species inventories, selecting relocated sites, and directional drilling would increase delays in permitting and the costs of exploration and development, and the greater distance for directional drilling would further decrease the likelihood of successful exploration. Seasonal restrictions would have adverse impacts to oil and gas exploration and development when a proposed deep well could not be feasibly drilled and completed within the open season, precluding drilling deep exploration targets.

Impacts from Fish and Wildlife

The impacts to oil and gas exploration and development from wildlife management would be similar to Alternative N, except the acreage of habitat under each open or closed designation changes, and habitat has been added for desert bighorn sheep which would impose restrictions on oil and gas exploration and development. Less than 1-2% of the crucial wildlife habitat acres would be open to oil and gas leasing with standard lease terms. The acres that would be restricted by CSU and NSO would be similar to Alternative A, resulting in restrictions to oil and gas leasing within 77% of the deer habitat acres, 100% of pronghorn, 37% of bison, 43% of bighorn sheep, and greater than 99% of elk habitat. The remaining habitat acres, varying from 0-63% depending on the species, would be NSO and closed to oil and gas leasing. Seasonal restrictions would have adverse impacts to oil and gas exploration and development as a company would need to schedule activities during the open season. Equipment, such as drill rigs and work crews would not necessarily be available during the open season. Delays in permitting proposed operations and delays in contracting necessary equipment and crews would increase costs for exploration

and development. On deeper wells, seasonal restrictions would preclude drilling deep targets, when the well could not be feasibly drilled and completed within the open season. Designated NSO areas would require directional drilling and no surface facilities, which would increase cost and would decrease the likelihood of successful exploration. In the areas closed to leasing, oil and gas resources would not be explored and would not be available for development.

Leasing stipulations within crucial wildlife habitat are shown in Table 4-28 below:

Table 4-28. Oil and Gas Leasing Stipulations within Crucial Wildlife Habitat - Alternative B

			Deer	Pronghorn	Bison	Bighorn	Elk
Open	Standard Lease Terms	Acres	100 ac	0 ac	200 ac	3,900 ac	200 ac
		% habitat	<1%	0%	<1%	2%	<1%
	Timing or controlled surface use restrictions	Acres	439,400 ac	102,700 ac	92,600 ac	97,800 ac	211,700 ac
		% habitat	77%	100%	37%	43%	>99%
	No Surface Occupancy	Acres	38,200 ac	0 ac	41,700 ac	24,300 ac	300 ac
		% habitat	7%	0%	17%	11%	<1%
Closed		Acres	91,500 ac	0 ac	116,400 ac	101,300 ac	0 ac
		% habitat	16%	0%	46%	44%	0%

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as described for Alternative N.

Impacts from Recreation

Under this alternative, five SRMAs would be established—Henry Mountains, Dirty Devil/Robbers Roost, Capitol Reef Gateway, Factory Butte, and Big Rocks, which would result in greater impacts to oil and gas than under Alternative N and A. The Henry Mountains, Dirty Devil/Robbers Roost, and Capitol Reef Gateway SRMAs would provide opportunities for primitive and semi-primitive motorized and non-motorized recreation. The portion of these three SRMAs with Class A scenery, outside of WSAs, would be subject to no surface occupancy. These three SRMAs are within a low activity RFD area (Areas 1 & 2 combined) that is predicted to have 3 wells per year or 45 wells during the plan life. The NSO designation would reduce the opportunity for exploration and development by requiring no surface disturbance within those designated areas and would require directional drilling and no surface facilities, which would increase cost and would decrease the likelihood of successful exploration.

The Factory Butte and Big Rocks SRMAs would provide opportunities for cross-country OHV use. Providing opportunities for OHV recreation would not preclude oil and gas exploration and development, although there could be delays in permitting any proposal for drilling or other surface facilities and requirements to relocate such.

The NSO area within the Dirty Devil/Robbers Roost SRMA, in part, overlaps existing oil and gas leases. These leases have been pending conversion to combined hydrocarbon leases since 1984, and the drafting of an EIS for tar sand leasing under the Energy Policy Act of 2005 is in progress by the BLM. These pending leases have pre-existing rights to the use of the surface for exploration and development. Issues

related to permitting wells in areas with no surface occupancy would delay approval and would impose stricter environmental standards than currently addressed under the lease terms of the pending leases.

Impacts from Lands and Realty

Impacts would be the same as described for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described for Alternative N.

Wild and Scenic Rivers

Two eligible segments would be recommended for suitability. The Dirty Devil River and tributaries would be closed to leasing, because they are within a WSA and recommended as suitable for Wild and Scenic River designation which would preclude oil and gas activity. The Fremont Gorge of the Fremont River would be open subject to NSO. Given that the corridor would be one-quarter mile on either side of the Fremont River, oil and gas activity would be precluded with a NSO designation which would require directional drilling and no surface facilities that would increase cost and would decrease the likelihood of successful exploration.. This alternative would result in greater impacts to oil and gas than Alternative A, but less than Alternatives N, C and D.

Areas of Critical Environmental Concern

North Caineville Mesa would remain a designated ACEC (2,200 acres), and Old Woman Front ACEC (330 acres) would be designated. Both would restrict oil and gas activity through a NSO constraint, which would require directional drilling and no surface facilities that would increase cost and would decrease the likelihood of successful exploration. This alternative would result in greater impacts to oil and gas than Alternative A, but less than Alternatives N, C and D.

Alternative C

Impacts from Soil Resources and Water Resources

The types of impacts would be the same as Alternative A, except the buffer around live water and springs would increase to 660 feet.

Impacts from Cultural Resources

Management of cultural resources would impact oil and gas activity the same as Alternative N, including Bull Creek Archaeological District for the protection for cultural resources but not the Susan Rockshelter site. Oil and gas exploration and development would be mitigated by requirements imposed at time of review of site-specific applications as consistent with the Federal laws and regulations and the standard lease terms. Mitigation if required would include avoidance of cultural resources and such mitigation would impact oil and gas exploration and development through an increased cost for cultural resource inventories and relocation of proposed wells and surface facilities.

Sixteen ACECs would be designated and the management prescription for these areas would provide additional protection for cultural resources. Those ACECs are:

- Badlands (includes North and South Caineville Mesas and Gilbert Badlands)
- Bull Creek Archaeological District
- Dirty Devil (includes Beaver Wash Canyon)
- Fremont Gorge/Cockscomb

- Henry Mountains (includes No Man's Mesa)
- Horseshoe Canyon
- Kingston Canyon
- Little Rockies
- Lower Muddy Creek
- Old Woman Front
- Parker Mountain
- Quitchupah
- Rainbow Hills
- Sevier Canyon
- Thousand Lakes Bench
- Special Status Species

Impacts to oil and gas exploration and development from the designation of these ACECs are addressed under that section.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management would be the same as described for Alternative N. The designated VRM classes are changed as follows: VRM Class I - 446,900 acres (21% of the RFO); VRM Class II -, 230,600 acres (11%); VRM Class III - 509,400 acres (24%); and VRM Class IV - 944,100 acres (41%). VRM Classes I and II would impact oil and gas exploration as surface disturbance would be disallowed, unless appropriate mitigation met the objective of these VRM classes. The VRM Class I designated lands are also WSAs that are closed to the leasing of oil and gas; thus VRM Class I designations, in effect, do not impact oil and gas. VRM Class II would preclude drilling on the surface and preclude surface facilities, unless it meets the VRM objective, and the restriction would require drilling to be by directional methods from adjacent land, which would increase cost and would decrease the likelihood of success of wildcat wells. VRM Classes III and IV designated lands would have minimal impact on oil and gas, although there could be some delays and added costs to develop mitigations, such as appropriate paint colors, building facilities in a manner that blends better with the landscape, and other minor changes in operations. The acres within VRM Classes I and II which would result in the greatest restrictions to oil and gas activities are similar to the acreages in Alternative B.

Impacts from Special Status Species

The types of impacts experienced as a result of special status species management would be the same as described for Alternative B, except the buffer for leks would be two miles. Requiring the two mile buffer would require relocating wells and/or facilities at a greater distance than in Alternatives N, A and B, and would require directional drilling to a subsurface target. Completing species inventories, selecting relocated sites, and directional drilling would increase delays in permitting and the costs of exploration and development, and the greater distance for directional drilling would further decrease the likelihood of successful exploration. Seasonal restrictions would have adverse impacts to oil and gas exploration and development when a proposed deep well could not be feasibly drilled and completed within the open season, precluding drilling deep exploration targets.

Impacts from Fish and Wildlife

Impacts would be similar to those described for Alternative B. The habitat acres open to leasing with restrictions would be reduced to 73% of the deer habitat, 34% of bison, 32% of bighorn sheep and 95% of the elk habitat. The habitat acres designated as NSO and closed to oil and gas leasing would increase,

varying from 0-67% depending on the species, resulting in a greater impact to oil and gas exploration and development over Alternative B. Seasonal restrictions would have adverse impacts to oil and gas exploration and development as a company would need to schedule activities during the open season. Equipment, such as drill rigs and work crews would not necessarily be available during the open season. Delays in permitting proposed operations and contracting necessary equipment and crews would increase costs for exploration and development. On deeper wells, seasonal restrictions would preclude drilling deep targets, when the well could not be feasibly drilled and completed within the open season. Designated NSO areas would require directional drilling and no surface facilities, which would increase costs and would decrease the likelihood of successful exploration. In the areas closed to leasing, oil and gas resources would not be explored and would not be available for development.

Leasing stipulations within crucial wildlife habitat are shown in Table 4-29 below:

Table 4-29. Oil and Gas Leasing Stipulations within Crucial Wildlife Habitat - Alternative C

			Deer	Pronghorn	Bison	Bighorn	Elk
Open	Standard Lease Terms	Acres	100 ac	0 ac	0 ac	3,400 ac	100 ac
		% habitat	<1%	0%	0%	1%	<1%
	Timing or controlled surface use restrictions	Acres	412,800 ac	102,700 ac	84,400 ac	71,700 ac	201,000 ac
		% habitat	73%	100%	34%	32%	95%
	No Surface Occupancy	Acres	31,200 ac	0 ac	15,800 ac	23,200 ac	10,500 ac
		% habitat	5%	0%	6%	10%	5%
Closed		Acres	125,100 ac	0 ac	150,700 ac	129,000 ac	600 ac
		% habitat	22%	0%	60%	57%	<1%

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as described for Alternative N.

Impacts from Recreation

Under this alternative, four SRMAs would be established—The Henry Mountains, Capitol Reef Gateway, Dirty Devil/Robbers Roost, and Sevier Canyon. In the Henry Mountains SRMA, Class A scenery would be closed to leasing and areas within the viewshed of Capitol Reef National Park would be NSO; in the Dirty Devil/Robbers Roost SRMA, Class A scenery would be NSO or closed to leasing; in the Capitol Reef Gateway SRMA, the Fremont Gorge would be NSO; and in the Sevier Canyon SRMA, the Highway 89 corridor within the bottom of the canyon would be NSO. The portion of these SRMAs that are designated as NSO or closed to leasing, outside of WSAs, are within a low activity RFD area (Areas 1 & 2 combined) that is predicted to have 3 wells per year or 45 wells during the plan life. The NSO designation would reduce the opportunity for exploration and development by requiring no surface disturbance within those designated areas which would require directional drilling, resulting in increased costs and decreased likelihood of successful exploration. The areas closed to leasing would preclude any opportunities for oil and gas exploration and development. This alternative would result in greater impacts to oil and gas from recreation than Alternatives N, A and B.

The NSO and closed areas within the Dirty Devil/Robbers Roost SRMA, in part, overlaps existing oil and gas leases. These leases have been pending conversion to combined hydrocarbon leases since 1984, and the drafting of an EIS for tar sand leasing under the Energy Policy Act of 2005 is in progress by the BLM. These pending leases have pre-existing rights to the use of the surface for exploration and development. Issues related to permitting wells in areas with no surface occupancy would delay approval and would impose stricter environmental standards than currently addressed under the lease terms of the pending leases. The closure to leasing would be in conflict with the terms of the pending leases.

Impacts from Lands and Realty

Impacts would be the same as described for Alternative N.

Impacts from Special Designations

Impacts from Wilderness Study Areas

Impacts would be the same as described for Alternative N.

Wild and Scenic Rivers

Under this alternative, twelve eligible river segments would be recommended as suitable as wild and scenic rivers resulting in greater impacts to oil and gas than Alternatives N, A and B. All twelve of the segments would be closed to leasing, which would preclude any oil and gas activity, including any development of oil and gas resources.

Areas of Critical Environmental Concern

Sixteen ACECs encompassing approximately 886,810 acres would be designated. The specific relevant and important values and management prescriptions would vary by ACEC. Major constraints and areas closed to leasing would impact oil and gas activity as the ACECs overlap lands that have a high potential for oil and gas with a predicted low activity level (development potential). In this alternative, 516,199 acres would be closed to leasing, 73,511 acres would be subject to no surface occupancy, and 297,100 acres would be open with standard lease terms, seasonal restrictions or controlled surface use. Closure to leasing would preclude any oil and gas exploration and development of such resources. NSO designations would require directional drilling and no surface facilities, which would increase cost and would decrease the likelihood of successful exploration. Relocation of a well may eliminate a reasonable chance of success, by moving the well site too far from the drilling target.

Approximately 882,300 acres of the ACECs would be in the low activity RFD area, Areas 1 & 2 combined. Although only 3 wells per year are predicted (45 for the plan life), the designation of ACECs with major constraints and closure to leasing would affect the opportunity to explore for oil and gas resources and to develop any resources that may be discovered. In addition, existing leases overlap, in part, ACECs in the vicinity of the Dirty Devil River, Awapa Plateau (Parker Mountain), Kingston Canyon, and Marysvale Canyon (Sevier Canyon). The existing leases in the vicinity of the Dirty Devil River are leases that have been pending conversion to a combined hydrocarbon lease since 1984 and the current, on-going drafting of an EIS for tar sand leasing under the Energy Policy Act of 2005. The Sevier Canyon ACEC is almost totally leased at this time and would be subject to valid existing rights. An attempt to impose NSO on a pre-existing lease or an attempt to revoke a pre-existing lease could lead to litigation.

RFD Area 3 would contain only 510 acres of ACECs. The opportunity for oil and gas exploration would be minimally impacted by the ACEC designations.

RFD Area 4 would be impacted by the management decision for no surface occupancy at the Rainbow Hills ACEC that encompasses 4,000 acres. The ACEC is presently encompassed by authorized oil and

gas leases, and the producing oil field in this RFD area overlaps this ACEC. The existing leases are valid existing rights to the ACEC designation, and those leases are not subject to no surface occupancy. An attempt to impose NSO on a pre-existing lease or an attempt to revoke a pre-existing lease could lead to litigation. Although directional drilling has been used as a BMP at the Covenant field, no surface occupancy, if followed, would decrease opportunities for exploration and development in the lands designated as an ACEC.

Alternative D

Impacts from Soil Resources and Water Resources

The types of impacts would be similar to those described for Alternative A, except the buffer around live water and springs would increase to 660 feet.

Impacts from Cultural Resources

Impacts would be the same as described for Alternative C.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management would be the same as described for Alternative N, except the designated VRM classes are changed as follows: VRM Class I - 1,129,500 acres (53% of the RFO); VRM Class II - 67,100 acres (3%); VRM Class III - 356,500 acres (17%); and VRM Class IV - 574,900 acres (27%). The impacts to oil and gas activity from visual resources would be the greatest in this alternative. VRM Classes I and II would impact oil and gas exploration as surface disturbance would be disallowed, unless appropriate mitigation met the objective of these VRM classes. The VRM Class I designated lands include WSAs, which are closed to the leasing of oil and gas. However, under this alternative, approximately 700,000 additional acres would be designated as VRM Class I, which would disallow any change to the landscape character. VRM Class II would preclude drilling on the surface and surface facilities, unless it meets the VRM objective, and the restriction would require drilling to be by directional methods from adjacent land, which would increase cost and would decrease the likelihood of success of wildcat wells. Relocation of a well, depending on the distance, may move the well site too far from the drilling target to have a reasonable chance of success. This alternative contains the most VRM Classes I and II acres, resulting in the greatest impacts to oil and gas exploration and development. VRM Classes III and IV designated lands would have minimal impact on oil and gas, although there could be some delays and added costs to develop mitigations, such as appropriate paint colors, building facilities in manner that blends better with the landscape, and other minor changes in operations.

Impacts from Special Status Species

Impacts would be the same as described for Alternative C.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative B, except that the habitat acres open to leasing with restrictions would be reduced to 53% of the deer habitat, 12% of bison, 2% of bighorn sheep and less than 1% of elk habitat. The habitat acres closed to oil and gas leasing would increase, varying from 0-94% depending on species. Alternative D would result in the most acres closed and the greatest impact to oil and gas exploration and development of all the alternatives. Leasing stipulations within crucial wildlife habitat are shown in Table 4-30 below:

Table 4-30. Oil and Gas Leasing Stipulations within Crucial Wildlife Habitat - Alternative D

			Deer	Pronghorn	Bison	Bighorn	Elk
Open	Standard Lease Terms	Acres	100 ac	0 ac	0 ac	1,100 ac	100 ac
		% habitat	<1%	0%	0%	<1%	<1%
	Timing or controlled surface use restrictions	Acres	300,000 ac	102,700 ac	30,500 ac	5,500 ac	172,700 ac
		% habitat	53%	100%	12%	2%	81%
	No Surface Occupancy	Acres	15,500 ac	0 ac	4,700 ac	6,900 ac	10,500 ac
		% habitat	3%	0%	2%	3%	5%
Closed		Acres	253,600 ac	0 ac	215,700 ac	213,800 ac	28,900 ac
		% habitat	44%	0%	86%	94%	14%

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, a total of 682,600 acres of non-WSA lands with wilderness characteristics would be managed to protect the naturalness and outstanding opportunities for solitude and primitive recreation within these areas. All non-WSA lands with wilderness characteristics would be closed to leasing, which would preclude exploration and development of oil and gas resources. The non-WSA lands with wilderness characteristics encompass approximately 33% of the acreage of public lands in the RFO and are mostly located in the eastern part of the RFO.

Most of the non-WSA land with wilderness characteristics (approximately 667,360 acres) would be in the low activity RFD area, Areas 1 & 2 combined, and approximately 94% of the non-WSA lands with wilderness characteristics would be concentrated in the general geographic area of the Henry Mountains, Awapa Plateau, and the canyon lands of the Colorado Plateau. Approximately 19,240 acres are within the moderate activity RFD area, Area 3. Non-WSA lands with wilderness characteristics are not identified within the high activity RFD area, Area 4. Although only 3 wells per year are predicted in the low and moderate activity RFD areas during the plan life (45 or 49 total in the low or moderate activity areas, respectively), the closure to leasing would affect the opportunity to explore for oil and gas resources and to develop any resources that may be discovered. Managing the non-WSA lands as closed to oil and gas leasing could reduce the opportunity to discover oil and gas resources in 33% of the RFO.

In addition, non-WSA lands with wilderness characteristics, in part, encompass existing Federal oil and gas leases at Dirty Devil/French Springs, Flat Tops, and Wild Horse Mesa. The Flat Tops area is mostly leased for oil and gas. These leases have pre-existing rights to the use of the surface for exploration and development. However, there would be issues related to location of wells and surface facilities in areas with wilderness characteristics that could delay approval and would impose stricter environmental standards than currently addressed under the lease terms of these pre-existing leases. An attempt to impose NSO on a pre-existing lease or an attempt to revoke a pre-existing lease could lead to litigation.

In addition, the non-WSA lands in the eastern part of the Dirty Devil/French Springs area encompass authorized oil and gas leases that are within the Tar Sands Triangle Special Tar Sands Area (STSA). These leases have been pending conversion to combined hydrocarbon leases since 1984, and the BLM is currently drafting an EIS for tar sand leasing under the Energy Policy Act of 2005. These pending leases have pre-existing rights to the use of the surface for exploration and development. Issues related to location of wells and surface facilities in areas with wilderness characteristics could delay approval and

would impose stricter environmental standards than currently addressed under the lease terms of the pending leases.

Impacts from Recreation

Under this alternative, seven SRMAs would be established—Henry Mountains, Dirty Devil, Capitol Reef Gateway, East Fork Sevier River, San Rafael Swell, Little Rockies and Labyrinth Canyon, resulting in the greatest potential for impacts to oil and gas of any of the alternatives. The Henry Mountains, Capitol Reef Gateway, Dirty Devil/Robbers Roost, Little Rockies, San Rafael Swell, and Labyrinth Canyon SRMAs would provide opportunities for primitive, semi-primitive motorized and non-motorized recreation; the East Fork Sevier River SRMA would be for primitive and semi-primitive and roaded natural recreation. Most of the acreage in each of these SRMAs, except the East Fork Sevier River, would be closed to leasing. There would be areas open subject to no surface occupancy, minor constraints, and standard lease terms. The portion of these SRMAs that are designated as NSO or closed to leasing, outside of WSAs, are within a low activity RFD area (Areas 1 & 2 combined) that is predicted to have 3 wells per year or 45 wells during the plan life. The NSO designation would reduce the opportunity for exploration and development by requiring no surface disturbance within those designated areas and would require directional drilling and no surface facilities, which would increase cost and would decrease the likelihood of successful exploration. The areas closed to leasing would preclude any opportunities for oil and gas exploration and development.

The NSO and closed areas within the Dirty Devil/Robbers Roost SRMA, in part, overlap existing oil and gas leases. These leases have been pending conversion to combined hydrocarbon leases since 1984, and BLM is currently drafting an EIS for tar sand leasing under the Energy Policy Act of 2005. These pending leases have pre-existing rights to the use of the surface for exploration and development. Issues related to location of wells and surface facilities in areas with NSO and closed to leasing would delay approval and would impose stricter environmental standards than currently addressed under the lease terms of the pending leases. The closure to leasing would be in conflict with the terms of the pending leases. An attempt to impose NSO on a pre-existing lease or an attempt to revoke a pre-existing lease could lead to litigation.

Impacts from Lands and Realty

Impacts to oil and gas would be the same as for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as described for Alternative C.

Areas of Critical Environmental Concern

Impacts would be similar to those described for Alternative C, except that additional acres within the ACECs (33% of the RFO) would be closed to oil and gas leasing for the protection of non-WSA lands with wilderness characteristics (discussed in detail for that resource). This alternative would result in the greatest impacts to oil and gas.

4.4.6.1.1.1 Energy Policy and Conservation Act (EPCA) Evaluation by Alternative

The environmental consequences of proposed decisions on oil and gas resources were determined according to Energy Policy and Conservation Act guidance, per IM 2003-233.

In the EPCA, Congress required Federal agencies to estimate oil and gas resources in five oil and gas provinces in the western United States and assess impediments to development. Two of the provinces, the Greater Paradox Basin and the Green River Basin, overlap the lands managed by the RFO.

The results of the EPCA analysis relative to the lands managed by the RFO are displayed below. Oil and gas resource data (volumetric data on the amounts of undiscovered oil and gas resources within the EPCA basins within the lands managed by the RFO) are shown for all alternatives, and data on leasing stipulations that would be imposed under the alternatives are shown for Alternatives A, B and C. These estimates are mathematical projections, based on geologic and production parameters and broad-based, regional assumptions.

- **Alternative N:** Based on the 2003 EPCA report, the estimated oil and gas resources in each oil and gas leasing designation are summarized in Table 4-31.

Table 4-31. Technically Recoverable, Undiscovered Resources in Designated Open and Closed Areas - Alternative N

Oil and Gas Leasing Designation	Area		Total Liquids[1]		Total Natural Gas[2]	
	Acres	Square Miles	Barrels per Square Mile[3]	Million Barrels	Cubic Feet per Square Mile[4]	Billion Cubic Feet of Gas
Open, Standard Terms	1,327,000	2,073	0 - 20,000	0 - 41	0 - 500,000,000	0 - 1,036
Open Subject to CSU or Timing Stipulations	409,000	639	0 - 20,000	0 - 13	0 - 500,000,000	0 - 320
Open Subject to No Surface Occupancy	23,000	36	0 - 20,000	0 - 1	0 - 500,000,000	0 - 18
Closed	460,000	719	0 - 20,000	0 -14	0 - 500,000,000	0 - 359

1. Includes oil, natural gas liquids and liquids associated with natural gas reservoirs.
2. Includes associated dissolved and non-associated natural gas.
3. Estimate from USDI, USDA, USDOE 2003, p. 2-15.
4. Estimate from USDI, USDA, USDOE 2003, p. 2-20.

The land managed by the RFO is predominantly rated as high potential for oil and gas and subordinately as moderate potential with different confidence ratings. (Refer to the *Mineral Potential Report [BLM 2005b].)* In addition, activity related to oil and gas has been forecast in a RFD Scenario (Appendix 12). In the RFD, the western part of the lands managed by the RFO in the vicinity of the Sevier and Sanpete Valleys is most likely to see oil and gas development, related to the Sevier Frontal play (also referred to as the Central Utah Thrust play), and this part of the land managed by the RFO is predominantly open to leasing with standard lease terms or a seasonal stipulation for wildlife critical habitat. The timing stipulations for wildlife habitat could impact proposed operations by altering the timing of exploration; however, the stipulation would not disallow most exploration.

Most of the public lands open to oil and gas leasing subject to no surface occupancy or closed to leasing are in the eastern part of the lands managed by the RFO. Allowing no surface occupancy or closing areas to leasing would have greater impacts to exploration and development than standard lease terms or controlled surface use or timing stipulations. Exploration would be precluded in the

closed areas and could be precluded in the areas with no surface occupancy. At this time, oil and gas development is not foreseen in the eastern part of the RFO; however, in any wildcat area, when oil and/or gas are discovered in paying quantities, a forecast for exploration can quickly change from exploration to development.

- **Alternative A:** Based on the 2003 EPCA report, the estimated oil and gas resources in each oil and gas leasing designation are summarized in Table 4-32 and on Map 4-1.

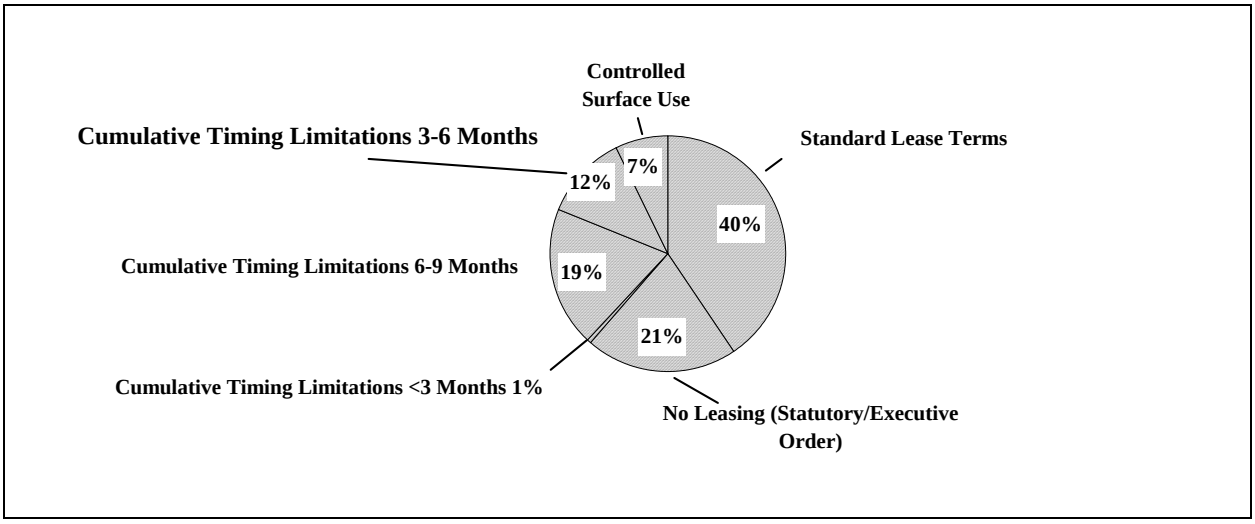
Table 4-32. Technically Recoverable, Undiscovered Resources in Designated Open and Closed Areas - Alternative A

Oil and Gas Leasing Designation	Area		Total Liquids[1]		Total Natural Gas[2]	
	Acres	Square Miles	Barrels per Square Mile[3]	Millions of Barrels of Oil	Cubic Feet per Square Mile [4]	Billions of Cubic Feet of Gas
Open, Standard Terms	861,000	1,345	0 - 20,000	0 - 27	0 - 500,000,000	0 - 673
Open Subject to CSU or Timing Stipulations	669,000	1,045	0 - 20,000	0 - 21	0 - 500,000,000	0 - 523
Open Subject to NSO	0	0	0 - 20,000	0	0 - 500,000,000	0
Closed	445,000	695	0 - 20,000	0 - 14	0 - 500,000,000	0 - 348

1. Includes oil, NGLs, and liquids associated with natural gas reservoirs.
2. Includes associated dissolved and non-associated natural gas
3. Estimate from USDI, USDA, USDOE 2003, p. 2-15.
4. Estimate from USDI, USDA, USDOE 2003, p. 2-20.

In addition, the percentage of the lands managed by the RFO in each open and closed oil and gas designation is shown in Figure 4-1. Among the alternatives, management of other resources under Alternative A would result in the most acres in the Standard Lease Terms category, thus having the least impact to oil and gas exploration and development.

Figure 4-1. Percentage of Public Lands in each Open and Closed Designation - Alternative A



- **Alternative B:** Based on the 2003 EPCA report, the estimated oil and gas resources in each oil and gas leasing designation are summarized in Table 4-33 and on Map 4-2.

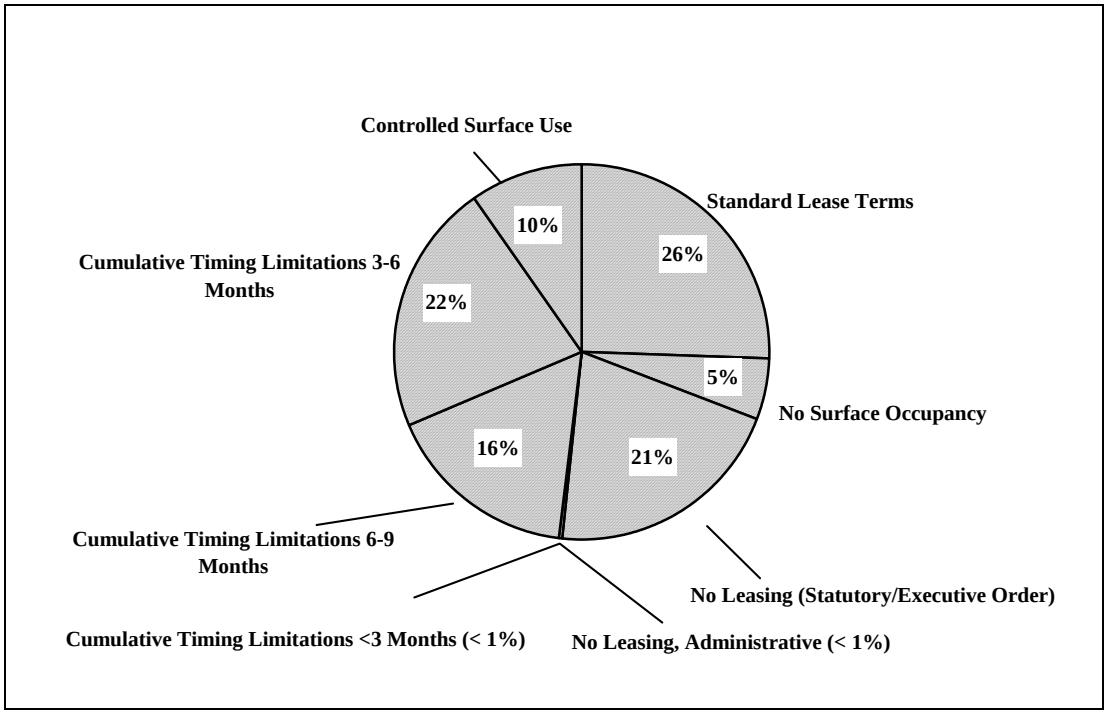
Table 4-33. Technically Recoverable, Undiscovered Resources in Designated Open and Closed Areas - Alternative B

Oil and Gas Leasing Designation	Area		Total Liquids[1]		Total Natural Gas[2]	
	Acres	Square Miles	Barrels per Square Mile[3]	Million Barrels of Oil	Cubic Feet per Square Mile[4]	Billion Cubic Feet of Gas
Open, Standard Terms	545,000	851	0 - 20,000	0 - 17	0 - 500,000,000	0 - 425
Open Subject to CSU or Timing Stipulations	1,022,000	1,596	0 - 20,000	0 - 32	0 - 500,000,000	0 - 798
Open Subject to NSO	111,000	173	0 - 20,000	0 - 3	0 - 500,000,000	0 - 87
Closed to leasing	498,000	703	0 - 20,000	0 - 14	0 - 500,000,000	0 - 352

1. Includes oil, NGLs and liquids associated with natural gas reservoirs.
2. Includes associated dissolved and non-associated natural gas
3. Estimate from USDI, USDA, USDOE 2003, p. 2-15.
4. Estimate from USDI, USDA, USDOE 2003, p. 2-20.

In addition, the percentage of the lands managed by the RFO in each open and closed oil and gas designation is shown in Figure 4-2. Under this alternative less acreage would be leased with Standard Lease Terms and some areas would be NSO. In this alternative, proposed decisions for other resources would have more impact to oil and gas exploration and development than Alternatives N and A, but less than Alternative C.

Figure 4-2. Percentage of Public Lands in each Open and Closed Designation - Alternative B



- **Alternative C:** Based on the 2003 EPCA report, the estimated oil and gas resources in each oil and gas leasing designation are summarized in Table 4-34 and on Map 4-3.

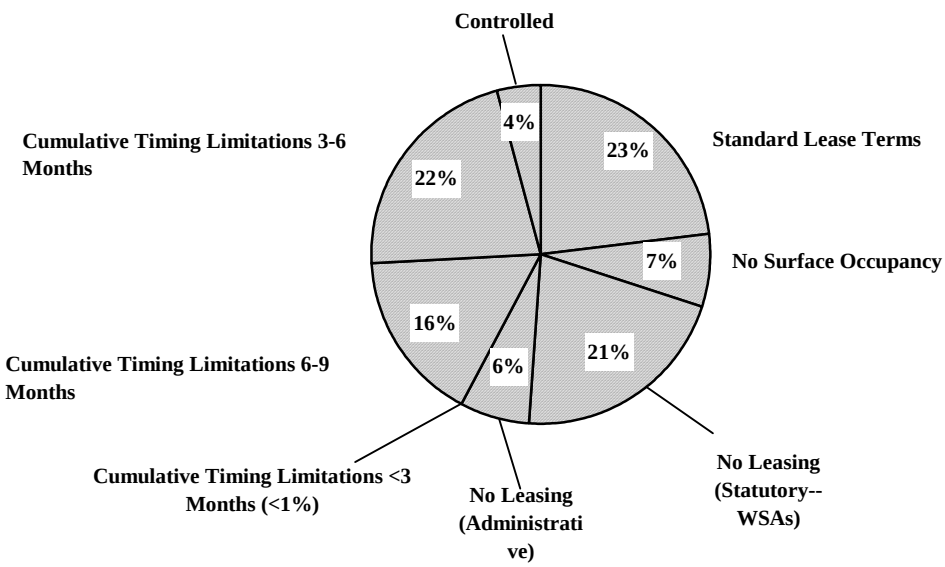
Table 4-34. Technically Recoverable, Undiscovered Resources in Designated Open and Closed Areas - Alternative C

Oil and Gas Leasing Designation	Area		Total Liquids[1]		Total Natural Gas[2]	
	Acres	Square Miles	Barrels per Square Mile[3]	Million Barrels of Oil	Cubic Feet per Square Mile [4]	Billion Cubic Feet of Gas
Open, Standard Lease Terms	492,000	769	0 - 20,000	0 - 10	0 - 500,000,000	0 - 384
Open Subject to CSU or Timing Stipulations	901,000	1,407	0 - 20,000	0 - 28	0 - 500,000,000	0 - 704
Open Subject to NSO	149,000	233	0 - 20,000	0 - 5	0 - 500,000,000	0 - 116
Closed	586,000	916	0 - 20,000	0 - 18	0 - 500,000,000	0 - 458

1. Includes oil, NGLs and liquids associated with natural gas reservoirs.
2. Includes associated dissolved and non-associated natural gas
3. Estimate from USDI, USDA, USDOE 2003, p. 2-15.
4. Estimate from USDI, USDA, USDOE 2003, p. 2-20.

In addition, the percentage of the lands managed by the RFO in each open and closed oil and gas designation is shown in Figure 4-3. As stated under Alternative N, the Mineral Potential Report and the RFD show oil and gas potential and a reasonable forecast of oil and gas activity in the lands managed by the RFO. Under Alternative C, management of other resources would have more impact to oil and gas exploration and development as compared to Alternatives N, A, and B. There would be less acreage leased with standard terms and more acres leased with NSO or closed to leasing. Within NSO areas, this would result in increased costs, decreasing the likelihood of successful exploration. Closed areas would preclude oil and gas exploration and development.

Figure 4-3. Percentage of Public Lands in each Open and Closed Designation - Alternative C



- **Alternative D:** Based on the 2003 EPCA report, the estimated oil and gas resources in each oil and gas leasing designation are summarized in Table 4-35 and on Map 4-4.

Table 4-35. Technically Recoverable, Undiscovered Resources in Designated Open and Closed Areas - Alternative D

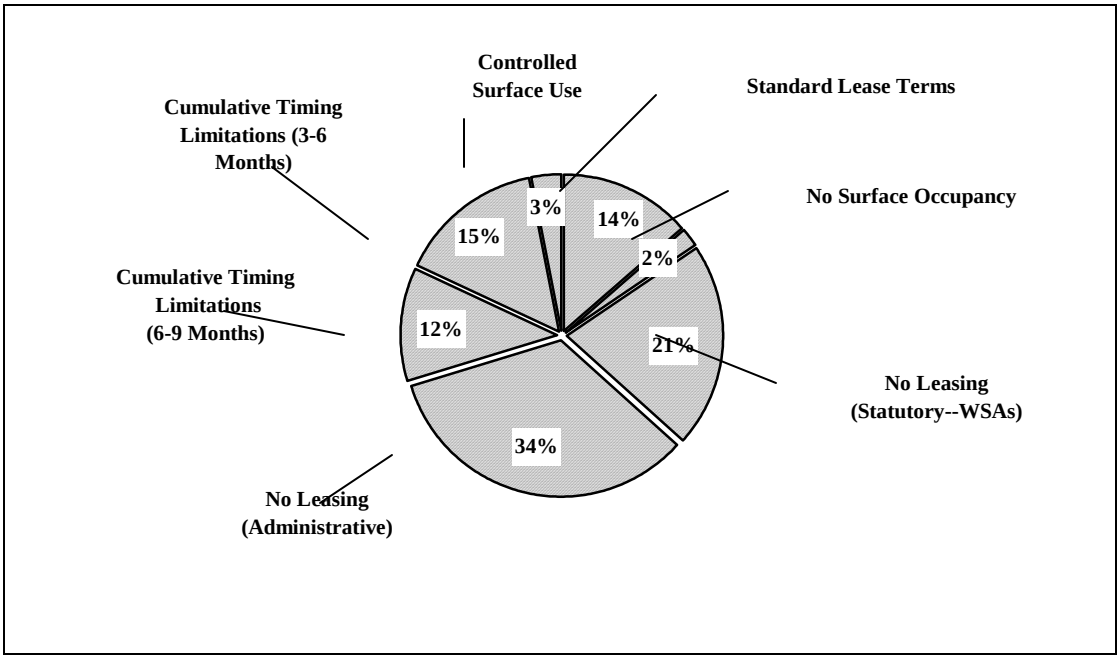
Oil and Gas Leasing Designation	Area		Total Liquids[1]		Total Natural Gas[2]	
	Acres	Square Miles	Barrels per Square Mile[3]	Million Barrels of Oil	Cubic Feet per Square Mile [4]	Billion Cubic Feet of Gas
Open, Standard Lease Terms	290,200	453	0 - 20,000	0-9	0 - 500,000,000	0-227
Open Subject to CSU or Timing Stipulations	634,000	990	0 - 20,000	0-20	0 - 500,000,000	0-495

Oil and Gas Leasing Designation	Area		Total Liquids[1]		Total Natural Gas[2]	
	Acres	Square Miles	Barrels per Square Mile[3]	Million Barrels of Oil	Cubic Feet per Square Mile [4]	Billion Cubic Feet of Gas
Open Subject NSO	43,300	68	0 - 20,000	0-1	0 - 500,000,000	0-34
Closed	1,160,500	1,811	0 - 20,000	0 - 36	0 - 500,000,000	0 - 906

1. Includes oil, NGLs and liquids associated with natural gas reservoirs.
2. Includes associated dissolved and non-associated natural gas
3. Estimate from USDI, USDA, USDOE 2003, p. 2-15.
4. Estimate from USDI, USDA, USDOE 2003, p. 2-20.

In addition, the percentage of the lands managed by the RFO in each open and closed oil and gas designation is shown in Figure 4-4. Among the alternatives, management prescriptions under Alternative D would have the greatest impact on the opportunities for oil and gas exploration and development. This alternative would allow the least acres leased with Standard Terms. This alternative would have the most acres closed to leasing (55% of the RFO), precluding oil and gas exploration and development.

Figure 4-4. Percentage of Public Lands in each Open and Closed Designation - Alternative D



4.4.6.1.2 Geothermal Resources

Geothermal resources are leased under the Geothermal Steam Act of 1970. Through land use planning, the BLM uses the same guidelines for geothermal leasing as it does for oil and gas leasing in designating areas as open subject to standard lease terms, open subject to major or minor constraints, and closed to leasing. Lands available for geothermal leasing would follow the oil and gas leasing designations. The provisions for exceptions, modifications, and waivers would also apply to geothermal resources.

Methods and Assumptions

The analysis for impacts to geothermal resources assumes:

- Geothermal resource activity—exploration, drilling, and production if paying quantities are discovered—would be managed according to applicable law, Federal regulations and onshore orders and would be managed to mitigate impacts to other resources according to BMPs appropriate to the site/location.
- The RFD is a reasonable prediction of geothermal resource activity for the planning horizon.

Environmental Consequences

The impacts to geothermal resources would be similar to oil and gas, since geothermal resources would be subject to the same leasing designations as oil and gas with differences as follows.

The high potential for the occurrence of geothermal resources is in the western part of the RFO, generally in the vicinity of the Sevier Valley, Sanpete Valley, and Marysvale. The high potential area coincides approximately with the Colorado Plateau – Basin and Range Transition Zone. Development of geothermal resources is not considered likely, but if such were to occur, it would most likely be in the vicinity of known hot springs and a former Known Geothermal Resource Area (KGRA) in the vicinity of Joseph and Monroe.

4.4.6.1.3 Tar Sands

Tar sands or bituminous sandstone are minerals that are subject to the Mineral Leasing Act of 1920, as amended, and the Combined Hydrocarbon Act of 1980. The Energy Act of 2005 required BLM to develop a leasing program for tar sands. The BLM is preparing an EIS to address the leasing of tar sands. The requirements for land use planning for tar sands are similar to oil and gas leasing. The BLM may designate public land as open subject to standard terms, open subject to minor or major constraints, or closed to leasing. Exceptions, modifications, and waivers would also be allowed as described in the Tar Sands DEIS. One STSA, the Tar Sands Triangle, overlaps BLM lands on the Wayne and Garfield County line in the eastern part of the RFO.

Methods and Assumptions

The analysis for impacts assumes exploration and development would be governed by the applicable laws and regulations.

Environmental Consequences

The impacts to tar sands under each alternative would be similar to oil and gas, although recognizing that the types of wells, facilities, and infrastructure necessary to explore and develop tar sands would differ from conventional oil and gas. The oil and gas leasing restrictions would apply to tar sands leasing. Existing oil and gas leases pending conversion to combined hydrocarbon leases were addressed under the discussion for oil and gas.

4.4.6.1.4 Coal

Federal regulations for the management of coal resources are at 43 CFR 3400. Coal resources within the planning area occur in three coal fields—the southern part of the Wasatch Plateau, Emery, and Henry Mountains. Land use planning for coal leasing requires an evaluation to determine the coal resources that have development potential by surface or underground mining methods, then a subsequent evaluation

under the coal unsuitability criteria as defined at 43 CFR 3461.5 to determine the coal resources that are acceptable for further consideration of leasing.

Alternative N: No Action

For Alternative N, the coal evaluations and unsuitability reports were completed as part of the current land use plans. The unsuitability criteria were applied to the Wasatch Plateau and Emery coal fields as one study area and to the Henry Mountains coal field as another study area (see Section 2.6.2.6).

Alternatives A-D

For Alternatives A-D, the coal resources in these three fields were evaluated in two resource reports in 2003-2004 to delineate coal with development potential that would be mined by underground or surface mining methods, based on parameters and assumptions presented in the coal evaluation reports. Those two reports, included in Appendix 8, are:

- Coal Resources of the BLM Richfield Planning Area, July 2003
- Coal Resource Evaluation of the Henry Mountains Coal Field, July 2004

The coal resources that were determined to have development potential were additionally analyzed by applying the unsuitability criteria. These documents, included in Appendix 8, are:

- Coal Unsuitability Report, Henry Mountains Coal Field (draft), March 2005
- Coal Unsuitability Report, Wasatch Plateau and Emery Coal Fields (draft), March 2005

Refer to Section 2.6.2.6 for acres identified for surface and subsurface mining of coal.

Methods and Assumptions

The analysis for impacts to coal assumes:

- Coal exploration and development would be managed according to the Federal regulations and would be managed to mitigate impacts to other resources.
- The coal resource evaluations are a reasonable estimation of the coal resources within the RFO for the planning horizon, based on the assumptions and analysis in the reports.

Since the reports for Alternative N combined the Wasatch Plateau and Emery coal fields without differentiating the resources within each field, the acreage for the Wasatch Plateau coal field is included in the discussion for that alternative. However, for Alternatives A-D, this analysis only addresses BLM-administered lands; thus, the discussion does not include the Wasatch Plateau for these alternatives. Coal resources in the southern Wasatch Plateau and Emery coal fields on the Fishlake or Manti-LaSal National Forests would be further considered in the Forest Plans for those two forests. The impact analysis for Alternatives A-D is only for BLM-administered lands.

Environmental Consequences

Impacts to coal exploration and development would most likely result from actions proposed for the management of the following resource:

- Soil Resources and Water Resources
- Cultural Resources
- Fish and Wildlife

- Visual Resources
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Special Designations

Other programs were determined to have little or no impact on exploration and development of coal resources.

Alternative N: No Action

Impacts from Soil Resources and Water Resources

Managing public lands to protect soil and water would have an impact on coal resource exploration and development and could modify proposed activity, when an application is received by the BLM. The mitigations would be site-specific at the time of an application. As consistent with resource protection and applicable Federal laws and regulations, mitigations would include requirements such as stockpiling topsoil for reclamation and require avoidance of live water by 500 feet. Such a buffer would not preclude drilling and other exploration activities and necessary facilities, such as roads, although such sites and facilities may be relocated to avoid live water as necessary. In the case of a mine, most likely for a surface mine, imposing a 500-foot buffer could result in a redesign of the mine and loss of recoverable coal.

Impacts from Cultural Resources

Managing public lands to protect cultural resources would have an impact on coal exploration and development as mitigations would be developed that would modify proposed activity when an application is received by the BLM and as needed to protect cultural resources. The mitigations would be site-specific at the time of an application as consistent with applicable Federal laws and regulations. Avoidance of cultural resource sites would not preclude drilling and other exploration activities, although specific drill or exploration sites and facilities, such as roads, may need to be relocated. In the case of a mine, most likely for a surface mine, avoidance of cultural resources could result in a redesign of the mine and loss of recoverable coal.

Impacts from Fish and Wildlife

Under this alternative, restrictions for wildlife, such as seasonal restraints, would apply to coal exploration and development. In the Henry Mountains coal field, 17,268 acres of coal resources are within crucial habitat, and in the Wasatch Plateau and Emery coal fields, 28,781 acres of coal resources are within crucial habitat. The crucial habitat is unsuitable for surface mining and is subject to no surface disturbing activities during the restricted season for underground mining. The seasonal restriction would impact coal exploration by reducing the time frame during which such work could be completed. For an underground coal mine, locating portals, other facilities and infrastructure outside of the seasonally restricted area would affect the feasibility of the coal mining and the operation of the mine. The seasonal restrictions would preclude coal development if surface facilities needed to be located within a restricted area and an exception is not applicable.

Impacts from Visual Resources

Managing visual resources on public lands would have an impact on coal resources. VRM classes of coal resources determined acceptable for further consideration of leasing are shown in Table 4-36:

Table 4-36. VRM Classes of Coal Resources, Alternative N

		Acres of Coal Resources by VRM Class			
Coal Field	Mining Method	Class I	Class II	Class III	Class IV
Henry Mountains	Surface	0	3,401	7,419	14,172
	Underground	0	25,258	29,471	66,373
Emery	Surface	0	1,411	3,935	6,821
	Underground	0	3,108	1,377	9,817

VRM Class I lands are unsuitable for coal leasing, and, except for WSAs, public lands are not classified as VRM Class I in this alternative. (BLM policy requires that WSAs be managed to meet VRM Class I objectives. Thus, WSAs are not suitable for coal leasing.) The objective of VRM Class II is to retain the character of the landscape with a low level of change, VRM Class III is to partially retain the character of the landscape with change that may be seen without dominating the view of the casual observer, and VRM Class IV allows for major modifications of the landscape. Mitigations as appropriate for the VRM class would be imposed on coal operations at the time of an application as consistent with the Federal laws and regulations. VRM Class II would be the most restrictive of the three classes of VRM applicable here. Conforming to the objectives of VRM Class II may require relocation of drill sites and other exploration activities and could preclude development of a coal mine, particularly a surface mine, and loss of recoverable coal. VRM Classes III and IV are less restrictive than VRM Classes I and II. The VRM Classes III and IV would not preclude exploration and development of coal resources, although proposals would be modified to be consistent with the VRM class and applicable laws and regulations.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, no actions to maintain wilderness characteristics on lands outside of WSAs are proposed, resulting in no impact to coal exploration and development.

Impacts from Recreation

In this alternative, there are no SRMAs that would impact coal exploration and development.

Impacts from Special Designations

Areas of Critical Environmental Concern

Three of the existing ACECs in this alternative would affect exploration of coal resources. The Gilbert Badlands (3,680 acres) includes restrictions for steep slopes and wet and muddy conditions, and the North and South Caineville Mesas (2,200 and 4,100 acres, respectively) are subject to no surface occupancy. None of these ACECs have coal resources that are acceptable for further consideration of leasing by surface mining methods. Exploration would not be allowed within the ACECs with the no surface occupancy restriction.

Alternative A

Impacts from Soil Resource sand Water Resources

Impacts on coal exploration and development from soil and water would be similar to Alternative N, except activity would not be allowed:

- within 330 feet of live water and/or springs;
- within zones of hydric soils;

- on slopes greater than 40%.

The exceptions, modifications, and waivers as described for oil and gas leasing would apply to coal exploration and development and would be considered at the time of an application for license or lease. The impacts of the 330-foot buffer would be similar to the 500-foot buffer as addressed in Alternative N. Disallowing exploration and development activities within areas of hydric soils and slopes greater than 40% would preclude development of coal resources and loss of recoverable coal.

Impacts from Cultural Resources

Impacts would be the same as Alternative N.

Impacts from Fish and Wildlife

Managing public lands for wildlife habitat would have an impact on coal exploration and development by imposing seasonal restraints for crucial wildlife habitat. In the Henry Mountains coal field, 10,871 acres of coal resources acceptable for consideration of leasing with a surface mining method and 41,347 acres with an underground mining method are contained within lands subject to minor constraints, such as the seasonal crucial wildlife habitat. In the Emery coal field, 5,126 acres with an underground mining method are contained within land subject to minor constraints. The seasonal restriction would impact coal exploration by reducing the time frame during which such work would be completed. For a coal mine, the seasonal restriction would impose shut downs, if the restriction is not modified or waived. Such shut downs would affect the feasibility of the surface coal mining and would render the mine inoperable. For an underground coal mine, locating portals, other facilities and infrastructure outside of the seasonally restricted area would affect the feasibility of the coal mining and the operation of the mine. These impacts to coal leasing would preclude coal development, if modifications and waivers are not considered at the time of an application for a lease.

Impacts from Visual Resource Management

Managing visual resources on public lands would have an impact on coal resources. VRM classes of coal resources determined acceptable for further consideration of leasing are shown in Table 4-37:

Table 4-37. VRM Classes of Coal Resources, Alternative A

		Acres of Coal Resources by VRM Class			
Coal Field	**Mining Method**	**Class I**	**Class II**	**Class III**	**Class IV**
Henry Mountains	**Surface**	0	0	290	14,378
	Underground	0	0	723	40,629
Emery	**Underground**	0	0	5,125	4,497

Public lands with acceptable resources for mining would not be designated as VRM Class I or II under this alternative. Mitigations as appropriate for the VRM class would be imposed on coal operations at the time of an application as consistent with the Federal laws and regulations. VRM Class III and IV would not preclude exploration and development of coal resources, although proposals may need to be modified to be consistent with the VRM class and applicable laws and regulations.

Impacts from Non-WSA Land with Wilderness Characteristics

Impacts would be the same as for Alternative N.

Impacts from Recreation

Under this alternative, only the Factory Butte SRMA would overlap coal resources. The management prescription of this SRMA provides opportunities for cross-country OHV use, which would not restrict coal exploration and development.

Impacts from Special Designations

Areas of Critical Environmental Concern

No new ACECs would be designated in this alternative, and the four existing ACECs in Alternative N would no longer be designated as such. Thus, there would be no impacts to coal exploration and development from ACEC designations or the associated special management prescriptions.

Alternative B: Preferred Alternative

Impacts from Soil Resources and Water Resources

Impacts would be the same as described for Alternative A.

Impacts from Cultural Resources

Impacts would be the same as described for Alternative N.

Impacts from Fish and Wildlife

The types of impacts from management of fish and wildlife would be the same as Alternative A, except the acreage that is restricted is different in this alternative. In the Henry Mountains coal field, 11,759 acres of coal resources acceptable for consideration of leasing with a surface mining method and 40,550 acres with an underground mining method are contained within lands subject to minor constraints, such as the seasonal crucial wildlife habitat. In the Emery coal field, 7,358 acres with an underground mining method are contained within land subject to minor constraints. This alternative has additional acreage leased with minor constraints and thus there would be greater potential for restrictions of coal development.

Impacts from Visual Resource Management

Impacts to coal exploration and development would be the same as Alternative A, except the acreage in each VRM class would change. VRM classes of coal resources determined acceptable for further consideration of leasing are shown in Table 4-38:

Table 4-38. VRM Classes of Coal Resources, Alternative B

		Acres of Coal Resources by VRM Class			
Coal Field	**Mining Method**	**Class I**	**Class II**	**Class III**	**Class IV**
Henry Mountains	**Surface**	0	928	110	13,630
	Underground	0	827	0	40,524
Emery	**Underground**	0	1,701	357	7,564

Public lands with acceptable resources for mining would not be designated as VRM Class I in this alternative. Mitigations as appropriate for the VRM Classes II through IV would be imposed on coal operations at the time of an application as consistent with the Federal laws and regulations. VRM Class II would be the most restrictive of the three VRM classes; VRM Class IV, the least. The VRM designations

would not preclude coal exploration and development, although proposals would be modified to be consistent with the VRM class and applicable laws and regulations.

Impacts from Non-WSA Land with Wilderness Characteristics

Impacts would be the same as for Alternative N.

Impacts from Recreation

Under this alternative, the Henry Mountains and Factory Butte SRMAs would overlap coal resources in the Henry Mountains coal field. The Henry Mountains SRMA would provide opportunities for primitive and semi-primitive motorized and non-motorized recreation. The portion of this SRMA with Class A scenery, outside of WSAs, would be subject to no surface occupancy and includes 21 acres that overlap coal resources acceptable for further consideration of leasing by surface mining and 827 acres that are acceptable by underground mining. The no surface occupancy designation could reduce or eliminate the opportunity to mine coal resources, depending on whether exceptions, modifications, or waivers would apply to a specific application to explore or develop coal resources.

The Factory Butte SRMA would provide opportunities for cross-country OHV use. This SRMA would not necessarily restrict coal exploration and development.

Impacts from Special Designations

Areas of Critical Environmental Concern

North Caineville Mesa would be the only designated ACEC within a coal field and would be subject to no surface occupancy. A coal resource acceptable for consideration of leasing has not been identified within this ACEC, and exploration would not be allowed due to the no surface occupancy restriction.

Alternative C

Impacts from Soil Resources and Water Resources

The types of impacts would be the same as Alternative A, except the buffer around live water and springs would be 660 feet. The impacts of the 660-foot buffer would be double the buffer distance for live water as addressed in Alternative A, which could increase the number of drill sites and other exploration sites that may be relocated. It would also increase the possibility of redesign of a proposed mine and increase the loss of recoverable coal resources.

Impacts from Cultural Resources

Impacts would be the same as described for Alternative N.

Impacts from Fish and Wildlife

The types of impacts from management of fish and wildlife would be the same as Alternative A, except the acreage that is restricted is different in this alternative. In the Henry Mountains coal field, 9,447 acres of coal resources acceptable for consideration of leasing with a surface mining method and 33,249 acres with an underground mining method are contained within lands subject to minor constraints, such as the seasonal crucial wildlife habitat. In the Emery coal field, 7,922 acres with an underground mining method are contained within land subject to minor constraints. This alternative would allow fewer acres available for surface mining and require minor constraints for more acres of the RFO. This alternative would have greater impacts on coal resources than Alternatives N, A and B, but less impacts than Alternative D.

Impacts from Visual Resource Management

The types of impacts to coal exploration and development would be the same as Alternative A, except the acreage in each VRM class would change and VRM Class II areas would be closed to coal leasing. VRM classes of coal resources determined acceptable for further consideration of leasing are shown in Table 4-39:

Table 4-39. VRM Classes of Coal Resources, Alternative C

		Acres of Coal Resources by VRM Class			
Coal Field	**Mining Method**	**Class I**	**Class II**	**Class III**	**Class IV**
Henry Mountains	**Surface**	0	3,013	4,094	7,562
	Underground	0	8,134	10,039	23,178
Emery	**Underground**	0	1,701	357	7,564

Under this alternative, 11,147 acres of coal resources, including surface and underground resources, in the Henry Mountains coal field and 1,701 acres in the Emery coal field that are acceptable for the consideration of leasing would be precluded from any coal development or leasing due to the VRM Class II lands being closed to leasing, resulting in the loss of recoverable coal resources. Mitigations as appropriate for the VRM Classes III and IV would be imposed on coal operations at the time of an application as consistent with the Federal laws and regulations. VRM Class III and IV would not preclude exploration and development of coal resources.

Impacts from Non-WSA Land with Wilderness Characteristics

Impacts would be the same as described for Alternative N.

Impacts from Recreation

Under this alternative, the Henry Mountains SRMA would overlap coal resources in the Henry Mountains coal field. This SRMA would provide opportunities for primitive and semi-primitive motorized and primitive non-motorized recreation. Class A scenery would be closed to leasing and areas within the view shed of Capitol Reef National Park would be no surface occupancy. In this SRMA, 2,012 acres of coal resources that are acceptable for the consideration of leasing by surface mining and 7,279 acres acceptable by underground mining would be subject to no surface occupancy. In addition, 418 acres of coal resources acceptable for the further consideration of leasing surface mining and 823 acres of coal resources acceptable by underground mining would be closed to leasing. The no surface occupancy designation would reduce or eliminate the opportunity to explore and develop coal resources, depending on whether exceptions, modifications, or waivers would apply to the specific application to explore or lease coal resources. The public lands closed to leasing would not be leased for coal development.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under this alternative, the potential Badlands and Henry Mountains ACECs would overlap the Henry Mountains coal field, and the potential Thousand Lake Bench ACECs would overlap the Emery coal field. The Badlands ACEC would be closed to leasing, and the Henry Mountains ACEC would be closed to leasing in VRM Class II. The Thousand Lake Bench ACEC would be managed to protect cultural resources, special status plants and riparian, which could affect siting of exploration and development, but would not likely preclude leasing in a large area. In the Henry Mountains coal field, 8,134 acres of coal resources acceptable for leasing by underground mining methods and 3,013 acres acceptable for surface

mining methods would be closed to leasing due to the management of the two ACECs. Closing these public lands to coal leasing would preclude exploration and development of coal resources within those portions of the ACECs.

Alternative D

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described for Alternative C.

Impacts from Cultural Resources

Impacts would be the same as those described for Alternative N.

Impacts from Fish and Wildlife

The types of impacts from management of fish and wildlife would be the same as Alternative A, except the acreage that is restricted is different in this alternative. In the Henry Mountains coal field, there are 2,592 acres of coal resources acceptable for consideration of leasing with a surface mining method, and 10,135 acres with an underground mining method are contained within lands subject to minor constraints, such as the seasonal timing limitations. In the Emery coal field, 3,888 acres with an underground mining method are contained within land subject to minor constraints. This alternative would allow surface mining on the fewest acres of any alternative. This alternative also has the fewest acres available for underground mining with only minor constraints, thus resulting in the greatest impact on the development of coal resources.

Impacts from Visual Resource Management

Impacts to coal exploration and development would be the same as those described for Alternative A, except the acreage in each VRM class would change and coal resources within VRM Classes I and II would be closed to leasing. VRM classes of coal resources determined acceptable for further consideration of leasing are shown in Table 4-40:

Table 4-40. VRM Classes of Coal Resources, Alternative D

		Acres of Coal Resources by VRM Class			
Coal Field	**Mining Method**	**Class I**	**Class II**	**Class III**	**Class IV**
Henry Mountains	**Surface**	10,008	706	2,358	1,627
	Underground	30,121	1,164	4,142	5,928
Emery	**Underground**	4,034	1,701	39	3,849

The acreages for the above-listed VRM Class I areas are for public lands outside WSAs and are acceptable for further consideration of leasing. Under this alternative, public lands designated as VRM Class I and II would be closed to leasing, which would result in 41,999 acres of coal resources in the Henry Mountains coal field and 5,735 acres in the Emery coal field being precluded from any coal development. This would be a substantial impact to the availability of coal resources that are minable by the listed mining methods as these coal resources would be unavailable for leasing. Mitigations as appropriate for VRM Classes III and IV would be imposed on coal operations at the time of an application as consistent with the Federal laws and regulations.

Impacts from Non-WSA Land with Wilderness Characteristics

Under this alternative, all of the non-WSA lands with wilderness characteristics would be closed to leasing. In the Henry Mountains, 9,936 acres of coal resources that are acceptable for consideration of

leasing by surface mining and 30,183 acres by underground mining would be unavailable for development. In the Emery coal field, 4,034 acres of coal resources that are acceptable by underground mining would be unavailable for leasing. These lands would be precluded from coal exploration and development. This would be a substantial impact to the availability of coal resources that are minable by the listed mining methods as these coal resources would be unavailable for leasing.

Impacts from Recreation

Under this alternative, the Henry Mountains and Capitol Reef Gateway SRMAs would overlap coal resources. These SRMAs would provide opportunities for primitive and semi-primitive motorized and primitive non-motorized recreation. In these SRMAs, 1,480 acres of coal resources that are acceptable for the consideration of leasing by surface mining and 848 acres acceptable for the consideration of leasing by underground mining would be subject to no surface occupancy. In addition, 10,832 acres of coal resources acceptable for the further consideration of leasing surface mining and 30,367 acres of coal resources acceptable by underground mining would be closed to leasing. The no surface occupancy designation would reduce or eliminate the opportunity to explore and develop coal resources, depending on whether exceptions, modifications, or waivers would apply to the specific application to explore or lease coal resources. The public lands closed to leasing would not be leased for coal development.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described for Alternative C.

4.4.6.1.5 Non-Energy Solid Leasable Minerals

These solid leasable minerals are leased under the Mineral Leasing Act of 1920, as amended, and the Federal regulations at 43 CFR Part 3500. Through land use planning, the BLM may designate public land as open or closed to leasing, and the use of open areas may be restricted by special conditions. The designations of open, open with special conditions, and closed would follow the oil and gas leasing designations to the extent practicable. The areas open with special conditions include the oil and gas open with minor constraints (timing or controlled surface use) and open with major constraints (no surface occupancy). The provisions for exceptions, modifications, and waivers would also apply to non-energy solid leasable minerals.

Methods and Assumptions

The analysis for impacts to non-energy solid leasable minerals assumes exploration and development would be regulated under all applicable laws and regulations.

Environmental Consequences

The impacts to non-energy solid leasable minerals would be similar to those impacts on oil and gas leasing and development under all alternatives. However, under Alternative N, the oil and gas leasing restrictions do not apply to these leasable minerals. Operations for solid minerals do not involve the same operations as oil and gas. Exploration for these minerals would include drilling, testing by excavating trenches or pits, bulk sampling, and other surface disturbances, and production would involve surface mines or quarries, underground mines, or in situ extraction. Additional facilities would be constructed as necessary for processing the mined or extracted mineral and for building an infrastructure as needed to develop a mine and to market the extracted mineral.

Non-energy solid leasable minerals are unlikely to see development during the planning horizon. Sodium and potassiums as evaporitic or saline minerals have high potential in the Sevier and Sanpete Valleys,

generally in association with the outcrop and mapped subsurface of the Arapien Shale. Also, such minerals have high potential in the mapped subsurface of Paleozoic strata and facies in the Paradox Basin, proper, where salt has been penetrated in deep oil and gas wells. However, neither the Sevier-Sanpete Valley area nor the Paradox Basin are likely to see exploration and development due to the relative abundance and more marketable saline resources at the Great Salt Lake in Utah. The area with high potential for salt in the Sevier and Sanpete Valleys is not encumbered by other proposed management prescriptions, such as ACECs, SRMAs, special status species, or VRM that would preclude or substantially restrict such exploration and development. The high potential area for salt in the Paradox Basin is encumbered in part by WSAs, ACECs, SRMAs, and VRM that would restrict such exploration and development.

Alunite or clay alteration deposits that would contain potassium are present in association with the Marysvale volcanic field. The high potential area for such deposits is generally located in the vicinity of Marysvale. The potassium in the past has been prospected as a source of fertilizer. Such development is considered unlikely during the planning horizon. These deposits in the Marysvale field are not encumbered by other proposed management prescriptions, such as ACECs, SRMAs, special status species, or VRM that would preclude or restrict such exploration or substantially restrict such exploration and development.

4.4.6.2 Locatable Minerals

Locatable minerals are those valuable under the U.S. mining laws, generally referred to as the 1872 Mining Law. Locatable minerals are subject to entry and location. Entry means the public land is subject to application for title to the land, (e.g. patenting under the mining laws). The BLM does not have discretion as to entry and location of mining claims on open, unappropriated, public lands and does not have the discretion to determine mitigations for mining claims at the time of location. However, the BLM does have discretion to make public lands open to entry or to close lands, (e.g., withdraw certain public lands from the operations of the mining laws). The BLM also has authority through FLPMA, the Federal regulations at 43 CFR 3809, and other Federal laws and regulations as applicable to regulate mining-related operations and the surface disturbances that would be incident to those operations. The BLM regulates mining-related operations on public lands to prevent unnecessary or undue degradation and to ensure the operation is reasonably incident to mining. In WSAs, the BLM regulates mining-related operations under the IMP and as required by 43 CFR 3802, so as to prevent the impairment of a WSA's suitability for designation as wilderness by Congress.

Methods and Assumptions

The analysis for impacts to locatable minerals assumes exploration and development will be governed by the applicable laws and regulations.

Environmental Consequences

Impacts to locatable minerals would likely result from actions proposed under the following resource management programs:

- Cultural Resources
- Visual Resources
- Special Status Species
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Travel Management

- Lands and Realty
- Special Designations

Other programs were determined to have little or no impact on locatable minerals.

Alternative N: No Action

Impacts from Cultural Resources

Managing cultural resources requires the BLM to make a reasonable and good faith effort to identify the potential effects of Federal undertakings. All Federal undertakings having the potential to adversely affect cultural resources must include mitigation measures designed to avoid the impact. This is covered by the NHPA and its implementing regulations found at 36 CFR Part 800. Operations under the mining laws would be regulated to avoid unnecessary or undue degradation of the public land and cannot knowingly disturb, alter, injure or destroy any historic or archaeological site, structure, building or object listed or eligible for listing on the National Register of Historic Properties. These requirements could result in the need for avoidance or modification of proposed operations. The Federal government bears any costs of investigations and salvage of cultural resources. Exploration for locatable minerals under a Notice is not a Federal action, as it is not approved by the BLM. However, the BLM would review the Notice and advise the operator of proposed activity that would impact cultural resources. Exploration or development under a Plan of Operations is a Federal action and requires approval by the BLM. Before approval is granted, the proposed activity for locatable minerals would be reviewed as required under NEPA and all applicable laws including NHPA. Mitigations, as consistent with the claimant's rights under the mining laws, would be imposed on proposed operations. Thus, managing cultural resources would require mining operators under the mining laws to not knowingly impact historic or archaeological sites and to immediately bring to the attention of the BLM any cultural resources that would be altered or destroyed by the mining operation. Modification and/or mitigation requirements would have adverse impacts by delaying the time required for approval of proposed operations.

Impacts from Visual Resources

Managing visual resources would be accomplished by managing public lands as subject to VRM Classes I through IV objectives. The current VRM classes for the RFO are: Class I - 0 acres (0% of the RFO); Class II - 529,000 acres (25%); Class III - 569,000 acres (27%); and Class IV - 1,029,500 acres (48%). It should be noted that BLM policy requires WSAs to be managed to meet VRM Class I objectives. The lands within the WSAs were inventoried as VRM Class II, and are represented as such in this section. However, 446,900 acres would actually be managed as VRM Class I, to preserve the existing character of the landscape. Consistent with the IMP and as required by 43 CFR 3802.3-2, operations proposed within WSAs would be mitigated to harmonize operations, to the extent practicable, with visual resources. VRM Class II objectives are more restrictive in terms of allowing changes to the landscape than Classes III and IV, with Class IV being the least restrictive. Notices would be reviewed and the claimant would be advised of the steps necessary in order to be in conformance with the VRM class, as consistent with the claimant's rights under the mining laws. Drilling or other exploration sites and facilities could be relocated in VRM Class II areas to the extent practicable and to preserve the claimant's rights. Plans of operations would be reviewed under NEPA and approved in accordance with the VRM class and the claimant's rights. As consistent with 43 CFR 3809.5, operations would be designed to minimize and reduce adverse visual impacts and avoid or eliminate such impacts, as practical. Thus, operations may need to be relocated in order to utilize screening within the natural topography, and may be modified in color, shape and size, as consistent with a claimant's rights. This action would result in delays in authorizing proposed operations and additional costs.

Impacts from Special Status Species

All Federal actions are subject to the requirements of the ESA, as amended. A plan of operations is required for operations proposed on lands or waters known to contain Federally-proposed or listed threatened or endangered species or their proposed or designated critical habitats, unless the BLM allows for other actions under a land use plan or threatened or endangered species recovery plan as stated at 43 CFR 3809.11(c)(6). The operator would be required to take such actions as may be needed to prevent adverse impacts to threatened or endangered species and its habitat which may be affected by mining-related operations. Prior to approving any mining action potentially affecting any listed threatened or endangered species the BLM must consult with USFWS under Section 7 of the ESA. As necessary and appropriate with the claimant's rights, mitigation, such as timing and avoidance, may be required to avoid or reduce potential impacts to listed species, species proposed for listing, and designated critical habitat. This could result in delays in approval of proposals. Some mitigation, such as timing and avoidance could reduce the success of or preclude some operations.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, no actions to maintain wilderness characteristics on lands outside of WSAs are proposed, resulting in no impacts to mining of locatable minerals.

Impacts from Recreation

Developed recreation sites would be proposed for withdrawal from mineral entry. These sites include: Hog Springs Picnic Area; Lonesome Beaver Campground; McMillan Spring Campground; Starr Springs Campground; and Dandelion Flat Picnic Area. The acreage varies but generally would be less than 20 acres at each site. Withdrawal, if executed, would preclude any operations and development of minerals under the mining laws. These recreation sites are in areas with moderate to high potential for the occurrence of locatable minerals, but are considered unlikely to have mineral development.

Impacts from Travel Management

Off-highway vehicle management restricting cross-country travel would affect locatable minerals. A plan of operations would be required for any closed area as stated at 43 CFR 3809.11(c)(5). In this alternative, there would be 214,000 acres closed to cross-country motorized travel. This may increase the processing time for the review and approval of the plan of operations under applicable Federal laws and regulations. Increased processing time may also occur for the 277,600 acres where motorized use is limited to existing/designated/maintained routes. If a new access route were needed for the proposed operation additional processing time may be necessary, resulting in project delays and additional costs.

Impacts from Lands and Realty

Under this alternative, developed recreation sites (Table 2-18) and existing ACECs (14,780 acres) would be recommended for withdrawal from mineral entry, in addition to the existing withdrawals (154,700 acres). No mining-related operations under the mining laws could occur within the withdrawn lands, resulting in a potential loss of minerals development and the associated economic benefits. These recreation sites and ACECs are generally within areas with a high potential for the occurrence of locatable minerals. Valid existing rights would be recognized in withdrawn land.

Impacts from Special Designations

Wilderness Study Areas

Managing WSAs under the Federal regulations at 43 CFR 3802 and the IMP would impact locatable minerals. There are 10 active, recorded mining claims within the Mount Pennell WSA and 4 within the Bull Mountain WSAs. WSAs are not withdrawn from mineral entry. However, all mining-related operations are subject to the IMP such that actions may not impair the suitability of the WSA for

inclusion in the Wilderness Preservation System; thus, precluding exploration and development of locatable minerals unless the activity is non-impairing, a grandfathered use, or valid existing right. The WSAs are within an area rated as high potential for locatable minerals, increasing the potential for adverse impacts to locatable minerals and the loss of associated economic benefits.

Wild and Scenic Rivers

Managing 12 eligible wild and scenic river corridors totaling 135 miles would affect locatable mineral exploration and development. No decision would be made under this alternative for suitability. A total of 98 miles (73% of the total miles) of the eligible river segments are also within WSAs and are thus subject to the IMP. Stream segments designated for potential addition to the National Wild and Scenic Rivers System, which includes eligible rivers, would require a plan of operations as stated at 43 CFR 3809.11(c)(2). As the plan of operations is reviewed and approved under the applicable Federal laws and regulations and as consistent with claimant's right, mitigations may be required to protect the outstandingly remarkable values of the eligible rivers as consistent with applicable Federal laws and regulations and a claimant's rights. Requiring a plan of operations and mitigation would have adverse impacts by delaying the processing time and possibly reducing the feasibility of the proposal. Most of the eligible river segments are within areas that are rated as high potential for the occurrence of locatable minerals. However, there are no active, recorded mining claims within the eligible river segments, so potential impacts would be expected to be minor.

Areas of Critical Environmental Concern

Four ACECs are designated: Beaver Wash (4,800 acres), Gilbert Badlands (3,680 acres), North Caineville Mesa (2,200 acres), and South Caineville Mesa (4,100 acres). These ACECs are proposed for withdrawal from mineral entry, which would preclude any mining-related activity. If the above areas are designated as ACECs but not withdrawn, any proposed mining-related operation would require a plan of operation as required at 43 CFR 3809.11(c)(3). As part of the review and approval of the plan of operations, mitigations would be required. As these ACECs are subject to NSO or no leasing under oil and gas, a similar restriction under the mining laws would not be consistent with a claimant's rights. NSO is inconsistent with the claimant's right to occupy and use public land, reasonably incident to the mining laws. However, where consistent with claimant's rights, drilling and exploration sites and other facilities would be relocated and the critical resource(s) would be avoided. These requirements would likely result in delays due to processing time. These four ACECs are within an area rated as high potential for the occurrence of locatable minerals; however, development is considered unlikely.

Alternative A

Impacts from Cultural Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

The types of impacts from management of visual resources would be the same as Alternative N, except the VRM class designations under Alternative A would be: Class I - 446,900 acres (21% of the RFO); Class II - 0 acres (0%); Class III - 392,800 acres (18%); and Class IV - 1,288,300 acres, (61%). The VRM Class I areas are coincident with WSAs, and exploration and development under the mining laws would be managed as consistent with the regulations at 43 CFR 3802. These regulations would preclude any activity for locatable minerals unless the activity is non-impairing, a grandfathered use, or a valid existing right. As required at 43 CFR 3802.3-2, operations proposed within WSAs would be mitigated to harmonize operations, to the extent practicable, with visual resources. Under this alternative, there would be no areas classified as VRM Class II which is more restrictive in terms of allowing changes to the landscape than VRM Classes III and IV. This would result in fewer restrictions in terms of project modifications. This alternative would result in the least impacts to locatable mineral development.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N. The lease stipulations and notices for oil and gas leasing would be used as guidelines as consistent with the Federal laws and regulations, the claimant's rights, and in recognition that operations for oil and gas and mining differ in scale, scope and types of exploration and development. As practical and consistent with Federal laws and regulations, proposed operations may be relocated to avoid special status species habitat. This action would result in delays in authorizing proposed operations.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Developed recreation sites would not be withdrawn from mineral entry. There would be no impact to locatable minerals, although any proposed mining operation would be regulated to prevent unnecessary or undue degradation.

Impacts from Travel Management

The types of impacts would be similar to Alternative N. However, under this alternative there would be no areas designated as closed to motorized use. Therefore, there would be no requirement to file a plan of operations for locatable minerals due to travel designations. Within the 1,679,000 acres where OHV use would be limited to designated routes potential impacts would depend on the need for additional access. If additional access routes were necessary, more processing time may be necessary to authorize that access, thus delaying operations and increasing costs. This alternative is the least restrictive to locatable minerals.

Impacts from Lands and Realty

Impacts would be similar to those described for Alternative N except that no new areas would be proposed for withdrawal from mineral entry. Thus, impacts to mining of locatable minerals would be slightly less than under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

The 12 eligible wild and scenic river corridors would be released as a potential addition to the National Wild and Scenic Rivers System. These corridors would be managed for unnecessary or undue degradation under 43 CFR 3809, except within WSAs or where other planning decisions may affect the regulation of mining-related activity. This would result in fewer restrictions and less processing time from what was described under Alternative N.

Areas of Critical Environmental Concern

No ACECs would be designated, and the four existing ACECs in Alternative N would no longer be designated as such. Operations under the mining laws would be regulated for the prevention of unnecessary or undue degradation, and a plan of operation would be required only if required under other applicable regulations. This would result in less restrictions or delays than under Alternative N.

Alternative B: Preferred Alternative

Impacts from Cultural Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

The types of impacts from management of visual resources would be similar to those described for Alternative N, except the VRM class designations for this alternative would be: Class I - 446,900 acres (21% of the RFO); Class II - 209,000 acres (10%); Class III - 410,800 acres (19%); and Class IV - 1,061,300 acres (50%). The VRM Class I areas are coincident with WSAs. The VRM Class I lands would be managed as consistent with the regulations at 43 CFR 3802 for exploration and development under the mining laws. These regulations would preclude any activity for locatable minerals unless the activity is non-impairing, a grandfathered use, or a valid existing right. As required at 43 CFR 3802.3-2, operations proposed within WSAs would be mitigated to harmonize operations, to the extent practicable, with visual resources. This alternative would have more acres classified as VRM Classes I and II, and fewer acres as VRM Classes III and IV than under Alternatives N and A. This could result in the need for additional modifications of proposals and greater impacts to locatable minerals.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative A

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

The impacts would be similar to Alternative N, except that additional developed recreation sites would be proposed for withdrawal from mineral entry. These sites include: Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, and Koosharem Picnic Area. The acreage varies but generally would be less than 20 acres at each site. Withdrawal, if executed, would preclude any operations under the mining laws and would preclude development of locatable minerals. These sites are in areas with moderate to high potential for the occurrence of locatable minerals, but are considered unlikely to have mineral development.

Impacts from Travel Management

The types of impacts from travel management would be similar to Alternative N. A plan of operations would be required for any closed area as stated at 43 CFR 3809.11(c)(5). In this alternative, there would be 210,400 acres designated as closed to motorized use. The impact would include an increased processing time for the review and approval of the plan of operations under applicable Federal laws and regulations. There would be 1,909,200 acres of the RFO limited to designated routes. The potential for impacts to mining operations within the limited areas would depend on the need for additional access. If additional access routes were necessary, more processing time may be required to authorize that access. This alternative would result in greater potential for impacts to mining than Alternatives N and A.

Impacts from Lands and Realty

Under this alternative, the following areas would be recommended for withdrawal from mineral entry:

- North Caineville Mesa ACEC
- Old Woman Front ACEC
- Dirty Devil and Fremont (Fremont Gorge) suitable wild rivers within one-quarter mile of each side of the river

- Developed recreation sites including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site and Koosharem Picnic Area

The impacts would be similar to Alternative N, except that the total acreage of the proposed new withdrawals would increase to 21,500 (this is in addition to the existing 154,700 acres withdrawn). This would result in a greater potential for impacts to mining-related operations than under Alternatives N and A. These recreation sites and ACECs are generally within areas with a moderate to high potential for the occurrence of locatable minerals. Valid existing rights would be recognized.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described for Alternative N.

Wild and Scenic Rivers

Two eligible segments—Dirty Devil River and Fremont Gorge—would be recommended for suitability and would be recommended for withdrawal from mineral entry, which would preclude any mining-related operations under the mining laws. Stream segments designated for potential addition to the National Wild and Scenic Rivers System, which includes eligible rivers, would require a plan of operations as stated at 43 CFR 3809.11(c)(2). If a plan of operations is reviewed and approved under the applicable Federal laws and regulations, mitigation would be required to protect the outstandingly remarkable values of the eligible rivers consistent with a claimant's rights. However, there are no active, recorded mining claims within these eligible segments and only 59 miles of river segments would be recommended for suitability under this alternative. The potential for impacts would be minor.

Areas of Critical Environmental Concern

North Caineville Mesa (2,200 acres) would remain as a designated ACEC, and Old Woman Front (330 acres) would be designated as an ACEC. These ACECs are proposed for withdrawal from mineral entry, and a withdrawal would preclude any mining-related activity and development of locatable minerals. If the above areas are designated as ACECs but not withdrawn, any proposed mining-related operation would require a plan of operation as required by applicable regulations. As part of the review and approval of a plan of operations, mitigations would be required. As these ACECs are subject to no surface occupancy under oil and gas, a similar restriction under the mining laws would not be consistent with a claimant's rights. NSO is inconsistent with the claimant's right to occupy and use public land, reasonably incident to the mining laws. However, where consistent with claimant's rights, drilling and exploration sites and other facilities would be relocated and the critical resource(s) would be avoided. These two ACECs would be in areas designated a high potential (North Caineville Mesa) and low potential (Old Woman Front) for the occurrence of locatable minerals; however, exploration and development are considered unlikely.

Alternative C

Impacts from Cultural Resources

Impacts would be the same as described for Alternative N.

Impacts from Visual Resources

The types of impacts from management of visual resources would be similar to those described for Alternative N, except the VRM class designations under Alternative C would be: Class I - 446,900 acres (21% of the RFO); Class II - 230,600 acres (11%); Class III - 509,400 acres (24%); and Class IV -,

944,100 acres (41%). The VRM Class I areas are coincident with WSAs. The VRM Classes I and II acres would increase slightly over Alternative B, resulting in a slightly greater potential for impacts to locatable minerals.

Impacts from Special Status Species

Impacts would be the same as described for Alternative A

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as described for Alternative N.

Impacts from Recreation

Impacts would be the same as described for Alternative B.

Impacts from Travel Management

Impacts from travel management would be similar to those described for Alternative B, except the acres closed to motorized use and requiring a plan of operations would increase to 683,000 acres. The remainder of the RFO would be limited to designated routes, requiring additional processing time if additional access is needed. This alternative would result in greater impacts to locatable minerals than Alternatives N, A and B, but less than Alternative D.

Impacts from Lands and Realty

Under this alternative, the following areas would be recommended for withdrawal from mineral entry:

- Rainbow Hills ACEC (in total)
- Old Woman Front ACEC (in total)
- Recommended suitable Wild and Scenic Rivers within one-quarter mile each side of the river
- Developed recreation sites including: Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site and Koosharem Picnic Area
- VRM Class II portions of the following ACECs from mineral entry: Dirty Devil/North Wash ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, and Little Rockies ACEC

The impacts would be the same as Alternative N, except that the total acreage of proposed new withdrawals would increase to 176,400 (this is addition to the existing 154,700 acres of withdrawals). These withdrawals, if executed would preclude any mining-related operations and development of minerals under the mining laws. This would result in a greater potential for impacts to mining-related operations than under Alternatives N, A and B. These recreation sites, wild and scenic rivers, and ACECs are generally within areas with a moderate to high potential for the occurrence of locatable minerals. Valid existing rights would be recognized in withdrawn lands.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described for Alternative N.

Wild and Scenic Rivers

All twelve eligible river segments (135 miles) would be recommended for suitability for inclusion in the National Wild and Scenic Rivers System and would be recommended for withdrawal from mineral entry,

increasing the potential for impacts to locatable minerals over Alternatives N, A and B. Stream segments recommended for potential addition to the National Wild and Scenic Rivers System, which includes eligible rivers, would require a plan of operations. If a plan of operations is reviewed and approved under the applicable Federal laws and regulations, mitigation would be required to protect the outstandingly remarkable values of the eligible rivers consistent with a claimant's rights. These requirements would have adverse impacts by delaying the processing time and possibly reducing the feasibility of the proposal. Most of the eligible river segments are within areas that are rated as high potential for the occurrence of locatable minerals. There are no active, recorded mining claims within the eligible river segments.

Areas of Critical Environmental Concern

Sixteen ACECs would be designated. Table 4-45 includes a list of the ACECs and the acreage for each. The total acreage included in the potential ACECs would be 886,810 acres. These potential ACECs, in whole or part, would be withdrawn from mineral entry, and a withdrawal would preclude any mining-related activity and development of locatable minerals. If the above areas are designated as ACECs but not withdrawn, any proposed mining-related operation would require a plan of operations. As part of the review and approval of the plan of operations, mitigation would be required. As these ACECs are subject to NSO or closed to leasing under oil and gas, similar restrictions under the mining laws would not be consistent with a claimant's rights. NSO and closed to leasing are inconsistent with the claimant's right to occupy and use public land, reasonably incident to the mining laws. However, where consistent with claimant's rights, drilling and exploration sites and other facilities would be relocated and the critical resource(s) would be avoided. These requirements would likely result in delays due to processing time. Mining claims are actively recorded on lands within the potential Dirty Devil/North Wash, Henry Mountains, Badlands, Fremont Gorge/Cockscomb, Sevier Canyon, and Rainbow Hills ACECs. Most of these ACECs would be in areas designated a high potential for the occurrence of locatable minerals and include lands where mineral exploration and development have occurred in the past and would occur in the future depending on market conditions. This alternative would result in greater impacts than under Alternatives N, A and B, due to the increase in potential ACEC acreage.

Alternative D

Impacts from Cultural Resources

Impacts would be the same as described for Alternative N.

Impacts from Visual Resources

The types of impacts from management of visual resources would be similar to those described for Alternative N, except the VRM class designations for this alternative would be: Class I - 1,129,500 acres (53% of the RFO); Class II - 67,100 acres (3%); Class III - 356,500 acres (17%); and Class IV - 574,900 acres (27%). VRM Class I areas outside of WSA boundaries include 682,600 acres. VRM Class I is the most restrictive class and allows for minimal or no change to the landscape. VRM Class II requires retention of the character of the landscape with a low level of change. This alternative would have the greatest impact on locatable minerals as VRM Class I is increased by 60% compared to Alternatives A, B and C, and VRM Class II is also increased compared to the other alternatives. This alternative would result in the greatest potential for necessary project modifications resulting in processing delays, additional costs and possibly reducing the feasibility of proposals.

Impacts from Special Status Species

Impacts would be the same as described for Alternative A.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, all 29 areas (682,600 acres) of non-WSA lands with wilderness characteristics would be recommended for withdrawal from entry under the mining laws. No exploration and development of locatable minerals could occur within these withdrawn lands. Due to increased acres of withdrawals, the potential for adverse impacts to mineral development would be greatest under this alternative. Valid existing rights would be recognized in withdrawn lands.

Impacts from Recreation

Impacts would be the same as described for Alternative B.

Impacts from Travel Management

The types of impacts experienced from travel management would be similar to those described for Alternative N, except there would be 1,155,200 acres designated as closed to motor vehicle use. The remainder of the RFO would be limited to designated routes. This alternative is the most restrictive to locatable minerals and would result in the greatest potential for impacts, such as processing delays and increased costs of development, throughout the RFO.

Impacts from Lands and Realty

Under this alternative, the following areas would be recommended for withdrawal from mineral entry:

- Rainbow Hills ACEC
- Old Woman Front ACEC
- All suitable Wild and Scenic Rivers within one-quarter mile each side of river
- All areas identified as non-WSA lands with wilderness characteristics.
- Developed Recreation Sites including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, and Koosharem Picnic Area
- VRM Class II portions of the following ACECs from mineral entry (see ACEC prescriptions for details)—Dirty Devil/North Wash ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, and Little Rockies ACEC.

The impacts would be the same as described under Alternative N, except the total acreage proposed for new withdrawals would increase to 749,200; this is in addition to the 154,700 acres of existing withdrawals. This would be the most acres of proposed withdrawals of any of the alternatives, resulting in the greatest potential for adverse impacts. These withdrawals, if executed, would preclude any mining-related operations and development of minerals under the mining laws. These recreation sites, wild and scenic rivers, and ACECs are generally within areas with a moderate to high potential for the occurrence of locatable minerals. Valid existing rights would be recognized.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as described for Alternative C.

Areas of Critical Environmental Concern

The types of impacts would be the same as described for Alternative C. However, ACEC management prescriptions under alternative D include additional restrictions for non-WSA lands with wilderness characteristics which would result in greater impacts to locatable minerals. This alternative is the most restrictive to locatable minerals.

4.4.6.3 Salable Minerals

Salable minerals are subject to disposal under the Act of July 31, 1947 which is commonly called the Materials Act. The BLM's policy is to make mineral materials available unless detrimental to the public interest, to protect public land resources and the environment, and to minimize damage to public health and safety. Through land use planning, the BLM may designate public land as open or closed to disposals, and the open areas may be designated with special conditions. The designations of open, open with special conditions, and closed would follow the oil and gas leasing designations to the extent practicable. Open with special conditions would include the oil and gas open with minor constraints (timing or controlled surface use) and open with major constraints (no surface occupancy). The provisions for exceptions, modifications, and waivers would also apply to salable minerals.

Methods and Assumptions

The analysis for impacts to salable minerals assumes exploration and development would be regulated under the subject laws and regulations.

Environmental Consequences

The impacts to salable minerals would be similar to impacts to oil and gas exploration and development. However, under Alternative N, the oil and gas leasing restrictions do not apply to salable minerals. Operations for salable minerals do not involve the same operations as oil and gas; however, there are similarities in that exploration and development for salable and fluid minerals require use of public lands and result in disturbances related to that exploration and development. Exploration for salable minerals would include drilling with smaller drill rigs than generally used for oil and gas, testing by excavating trenches or pits, extracting bulk samples, and other activities that would involve surface disturbances. Production would involve surface mines or quarries and associated surface facilities, which would include roads and could include conveyors, crushers, screens, and other equipment. Generally, excavating and hauling equipment would remain on-site during production activities.

Differences between impacts to salable mineral operations and to oil and gas operations would include:

- Timing restrictions could preclude development of a salable mineral resource. Construction and drilling of a well may be reasonably completed during the open season for oil and gas exploration and development. Once development is completed, maintenance of facilities for production can be accomplished by a reduced presence of humans and equipment during the restricted season. For salable minerals, production would involve excavating and removing the earth (mineral) materials from a quarry or pit, the materials would usually be processed for marketing at the quarry, and that mineral product would be hauled from the site to a market. Production of mineral materials requires that humans and equipment be on-site during the restricted season; production cannot continue during a seasonally restricted period if humans and the necessary equipment are not in use. Operations for salable minerals may not be profitable if shut-downs are required for seasonal periods. Thus, a seasonal restriction could make a salable mineral operation unprofitable and could preclude development of the mineral material.
- CSU or distance buffers could preclude development of a salable mineral. A well site for oil and gas may be relocated, and the well may still be practically and feasibly drilled to a subsurface

target, allowing for exploration and development of the oil and gas resources. However, moving a proposed salable mineral pit may preclude development of the mineral resource, if the targeted resource is not present or if mining or extraction is not practical or feasible at the relocated site.

- NSO may preclude development of a salable mineral. An oil and gas well may be practically and feasibly directionally drilled from a well pad that is not located vertically above the subsurface, and oil and gas may be produced by a directional drilled well. However, NSO requirements for salable minerals would in most cases preclude mineral development as the mineral resource would not be available for mining and extraction.

4.5 IMPACTS TO SPECIAL DESIGNATIONS

4.5.1 Wilderness Study Areas

Pursuant to FLPMA and BLM policy, WSAs are managed according to the IMP to protect their suitability for wilderness designation until such time that Congress acts on the BLM's recommendations. This analysis does not analyze the impact of the IMP on other resources and resource uses, or on the wilderness characteristics of the WSAs; that analysis was conducted in the Utah Statewide Wilderness FEIS (BLM 1990b).

WSAs would be managed pursuant to the non-impairment standard, and as such, the BLM cannot allow activities to occur within WSAs that would impair their suitability for preservation as wilderness. Therefore, significant impacts on WSAs (e.g., impairment) would not occur under any of the alternatives. Although impacts on natural resources within WSAs could occur from a variety of uses, they would be non-impairing and therefore would not result in long-term impacts to the wilderness characteristics of the WSAs.

There are 11 WSAs within the RFO totaling 446,900 acres. All except one are located east of Capitol Reef National Park. The Fremont Gorge WSA is located west of Capitol Reef National Park. All are located in Wayne or Garfield county. The management of WSAs focuses on maintaining the wilderness characteristics of appearance of naturalness, outstanding opportunities for solitude and/or primitive, unconfined recreation. Size and management guidelines have already been established for these areas.

Federal law and BLM policy require that WSAs be closed to oil and gas leasing. This management direction protects the wilderness characteristics of the WSAs and the BLM has no discretion to direct otherwise through planning. Thus, the RMP makes only two management decisions specific to WSAs:

- VRM class designations (BLM policy requires that WSAs be designated as VRM Class I).
- Designation of each WSA as either closed or limited to off-highway vehicle use (as displayed in Table 4-41).

In addition, route designation decisions (which are implementation decisions) will also be analyzed in this DRMP/DEIS (as displayed in Table 4-41).

Table 4-41. OHV Area and Route Designations within WSAs

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternatives C and D
OHV Area Designations	Management Direction	Continue current OHV designations (closed and limited) and allow vehicle use on identified routes. (Map 2-12)	Designate all WSAs as limited to OHV use and allow vehicle use on all designated routes. (Map 2-13)	Designate WSAs as either limited or closed to OHV use and allow vehicle use on identified routes. (Map 2-14)	Designate all WSAs as closed to OHV use and allow no vehicle use on inventoried routes. (Maps 2-15 and 2-16)
	Acres closed	188,600	0	188,600	446,900
	Acres limited	258,300	446,900	258,300	0
OHV Route Designations	Miles open	42 (Map 3-10)	60 (Map 2-17)	45 (Map 2-18)	0 (Maps 2-19 and 2-20)

Management actions that could impact these characteristics include managing for the presence or absence of ways and trails, use of motorized vehicles along these ways, construction of fences and other range or wildlife improvements, management of native vegetation communities, land tenure adjustments, or other actions that result in surface disturbing activities.

Methods and Assumptions

The analysis is based on the following assumptions:

- Managing WSAs according to the IMP will protect wilderness characteristics of WSAs in a manner that will not "impair the suitability of such areas for preservation as wilderness" (FLPMA Section 603(c)).
- Management actions that enhance biological or environmental characteristics would improve the wilderness quality and suitability of the WSAs.

Environmental Consequences

Impacts to WSAs could result from actions proposed under the following resource programs:

- Fire and Fuels Management
- Recreation
- Travel Management
- Lands and Realty

Other programs were determined to have little or no impact on WSAs.

Alternative N: No Action

Impacts from Fire and Fuels Management

During and immediately after fire events, access to WSAs and enjoyment of opportunities for primitive recreation associated with them may be restricted or impaired. Full suppression of wildland fires in these areas may be implemented to control fire size and severity, protecting these opportunities. Wildfire

suppression activities could result in short-term impacts, including disturbance to soils, surfaces and groundwater, watershed functions, and vegetation conditions Impacts would be minimized by post-fire rehabilitation efforts. There would also be impacts to solitude due to presence of firefighters and equipment during fire events, but this would be short-term. Appropriate management response within a WSA could limit the use of mechanical suppression activities or other techniques for reducing these impacts. Temporary disturbances may occur to resources and values; however these effects would be short-term while wilderness values are assessed on a long-term scale.

Long-term impacts associated with the use of an appropriate management response to wildfire suppression, wildland fire use and the planned actions of prescribed fire and non-fire fuel treatments on WSAs are the decreased risk of large severe wildfire events and the overall improved ecological health. With the removal of hazardous fuels, a trend towards increasing the preservation of naturalness and opportunities for primitive recreation would be in place. Since fire is a natural and necessary event in maintaining ecological health, a WSA's natural character would not only be protected, but also likely enhanced.

Impacts from Recreation

Visitors may have outstanding opportunities for solitude or primitive and unconfined recreation when the sights, sounds, and evidence of other people are rare or infrequent, where visitors can be isolated, alone or secluded from others, where the use of the area is by non-motorized, non-mechanical means, and where no or minimal developed recreation facilities are encountered. High concentrations of recreation users (large group sizes and/or frequent group encounters) would decrease outstanding opportunities for solitude in WSAs. Continued increases in non-motorized recreation users would reduce opportunities for solitude in those areas. Additionally, large numbers of recreationists in WSAs, especially in the narrow canyons associated with some of the WSAs, would increase the impact to campsites, decreasing the naturalness of WSAs in specific locations. Increasing use of campsites results in increased areas of compacted soils, reducing vegetation and creating unnatural openings in the vegetation. Human waste and trash also increases, especially when campsites are located in confined areas such as canyons.

Impacts from Travel Management

Use of motorized vehicles within WSAs could impact wilderness characteristics. Under Alternative N, some identified routes within the Mount Ellen/Blue Hills, all of the Fremont Gorge, Horseshoe Canyon, Fiddler Butte, and French Springs WSAs would continue to be available for motor vehicle use on the designated route, which would temporarily impact solitude and opportunities for primitive recreation in areas adjacent to the routes. The rugged terrain of these areas has presented a barrier to vehicle intrusions in the past and would likely continue to do so in the future, although advancing vehicle technology could allow vehicles to enter and impact areas they have not been able to access in the past.

Impacts from Lands and Realty

Acquiring inholdings within WSAs would improve their manageability and preclude non-conforming uses on what are currently non-Federal (state and private) lands. Lands within WSAs are not available for rights-of-way or disposal, precluding impacts to wilderness characteristics from these actions.

Alternative A

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Under this alternative, the Dirty Devil SRMA would overlap the Dirty Devil, Horseshoe Canyon South and French Spring/Happy Canyon WSAs. Managing the lands that surround the WSAs for semi-primitive recreation would complement WSA management. However, management under the IMP is usually more restrictive than SRMA prescriptions, so no additional benefit to wilderness characteristics would result from SRMA management.

Impacts from Travel Management

OHV use within WSAs could impact wilderness characteristics. OHV area and route designations by alternative are shown in Table 4-41. Under Alternative A, all WSAs would be designated as limited to OHV use, with 60 miles of routes designated as available for use, which is the most of any alternative. The potential impacts to naturalness and solitude from vehicle intrusions would be the greatest among the alternatives, because more routes would be designated than under any other alternative.

Impacts from Lands and Realty

Impacts would be the same as those described for Alternative N.

Alternative B: Preferred Alternative

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

The Dirty Devil, Henry Mountains, and Capitol Reef Gateway SRMAs overlap the Dirty Devil, Horseshoe Canyon South, French Spring/Happy Canyon, Fremont Gorge, Mount Ellen/Blue Hills, Bull Mountain, Mount Pennell and Mount Hillers WSAs. Managing the lands that surround the WSAs for semi-primitive recreation would complement WSA management. However, management under the IMP is usually more restrictive than SRMA prescriptions, so no additional benefit to wilderness characteristics would result from SRMA management.

Impacts from Travel Management

Use of OHVs within WSAs could impact wilderness characteristics. OHV area and route designations for this alternative are shown in Table 4-41. Area designations under Alternative B would be similar to Alternative N, but an additional three miles of routes would be designated as open to motor vehicle use, resulting in more potential impacts to wilderness characteristics than Alternatives N, C and D, but less than Alternative A.

Impacts from Lands and Realty

Impacts would be the same as those described for Alternative N.

Alternative C

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Impacts would be the same as those described for Alternative N.

Impacts from Travel Management

Use of OHVs within WSAs could impact wilderness characteristics. OHV area and route designations by alternative are shown in Table 4-41. Under Alternative C, all WSAs would be closed to motorized use, which would eliminate any short-term impacts, thereby preserving opportunities for solitude and primitive recreation.

Impacts from Lands and Realty

Impacts would be the same as those described for Alternative N.

Alternative D

Impacts from Fire and Fuels Management

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

The types of impacts would be the same as those described for Alternatives B and C but would include more acres of WSAs and lands adjacent to the WSAs being included within SRMAs. The Dirty Devil, Henry Mountains, Capitol Reef Gateway, Labyrinth Canyon and Little Rockies SRMAs would overlap with all 11 WSAs, complementing the management within those areas.

Impacts from Travel Management

Impacts would be the same as those described for Alternative C.

Impacts from Lands and Realty

Impacts would be the same as those described for Alternative N.

4.5.2 Wild and Scenic Rivers

This section discusses impacts to Wild and Scenic Rivers (WSRs) that would occur from actions associated with the management of other resources. Analysis of impacts to WSRs is limited to the river segment corridor which includes the viewshed within one-quarter mile of each side of the rivers high water mark. In many cases the corridor would be limited to the canyon in which the river segment is located.

The Wild and Scenic River Act includes three possible tentative classifications: “wild,” “scenic,” or “recreational.” These classifications are based on the type and degree of human development associated with the river and the lands adjacent to the river corridor at the time of inventory. Tentative classification also dictates the types of activities and development allowed within the river corridor. “Wild” rivers are the most restrictive of the three classifications, and are associated with rivers free of impoundments, generally are inaccessible except by trail, contain shorelines and watersheds that are essentially primitive and have waters that are unpolluted. “Scenic” rivers are slightly less restrictive than “wild” rivers, accessibility to “scenic” rivers is generally easier and can include existing roads and trails; however, “scenic” rivers are generally free of impoundments, contain shorelines and watersheds that are largely primitive and undeveloped. “Recreational” rivers have the least restrictions placed on them and include rivers that are readily accessible by roads, trails, or railroads, may have some development along their shorelines and may have substantial evidence of human activity.

Outstandingly remarkable values and the criteria associated with each value are as follows:

- **Scenic** - diversity of view, special features, seasonal variations, cultural modifications.

- **Fish -** habitat quality, diversity of species, values of species, abundance of fish, natural reproduction, size and vigor of fish, quality of experience, cultural and historical importance, recreational importance and access.
- **Recreational –** length of season, diversity of use, flow, character of run, scenery and naturalness, access, level of use, associated opportunities, attraction, sites and facilities.
- **Wildlife -** habitat quality, diversity of species, abundance of species, natural reproduction, size and vigor of species, quality of experience, cultural and historic importance, recreational importance and access.
- **Geologic –** feature abundance, diversity of features, and educational or scenic.
- **Historic –** significance, site integrity, education and interpretation, listing and eligibility.
- **Cultural –** significance, current uses, number of cultures, site integrity, educational and interpretation, listing and eligibility.
- **Ecologic** – species diversity, ecological function, rare communities, and educational and scientific.

Methods and Assumptions

The analysis of impacts to WSRs includes an evaluation of where management actions may be inconsistent with the tentative classification given to all eligible or suitable segments as well as potential impacts to the outstandingly remarkable values of any eligible or suitable segment. Impacts to the tentative classification of the segments for each alternative will be discussed first followed by impacts associated with the segment's outstandingly remarkable values.

River segments determined to be eligible for further consideration in land use planning, along with their outstandingly remarkable values and tentative classification, are identified in Table 4-42. Details of the eligibility and classification process are included in the Appendix 2.

Table 4-42. Wild and Scenic River Eligibility and Tentative Classification

River or River Segment		Outstandingly Remarkable Value(s)	Tentative Classification	Miles within WSA	BLM Miles	Total Miles
Dirty Devil Complex	Dirty Devil River	Scenic, recreation, geologic, fish and wildlife, and cultural	Wild	35	54	57
	Beaver Wash Canyon	Scenic and ecological	Wild	6.8	6.8	6.9
	Larry Canyon	Scenic, recreation, wildlife and ecological	Wild	4	4	4
	No Mans Canyon	Scenic, recreation and cultural	Wild	7.1	7.1	7.1
	Robbers Roost Canyon	Scenic, recreation, historic and cultural	Wild	28	31	33
	Sams Mesa Box Canyon	Scenic and wildlife	Wild	9.5	9.5	9.5
	Twin Corral Box Canyon	Scenic and wildlife	Wild	8	9	10
	Fish Creek	Cultural	Scenic	0	0.25	0.25
Fremont River	Fremont Gorge	Scenic	Wild	0	5	6
	Capitol Reef National Park to Caineville Ditch Diversion	Scenic and geologic	Wild	0	4	6

River or River Segment		Outstandingly Remarkable Value(s)	Tentative Classification	Miles within WSA	BLM Miles	Total Miles
	Maidenwater Creek	Scenic, recreation, geologic, fish and wildlife, and ecological	Scenic	0	3	4
	Quitchupah Creek	Cultural	Recreational	0	1.4	1.4
	Total			**98.4**	**135.05**	**145.15**

Suitability, the process of deciding which rivers to recommend for addition to the National Wild and Scenic River System, is part of the resource management planning process. The suitability process is described in Appendix 3. Suitability varies by alternative, as summarized in Table 4-43.

Table 4-43. Suitability Recommendations by Alternative

Alternative N	Alternative A	Alternative B	Alternative C	Alternative D
A suitability decision would not be made. All 12 eligible river segments (135 miles) would continue to be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification.	No eligible river segments would be designated as suitable.	The Dirty Devil River and the Fremont Gorge segment of the Fremont River (59 miles) would be designated and managed as suitable wild and scenic rivers. They would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification.	All 12 eligible river segments (135 miles) would be designated and managed as suitable wild and scenic rivers. They would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification.	

Environmental Consequences

Impacts to the outstandingly remarkable values of the eligible wild and scenic rivers could result from actions proposed under the following resource management programs:

- Vegetation and Fire and Fuels Management
- Cultural Resources
- Visual Resources
- Special Status Species and Fish and Wildlife
- Non-WSA Lands with Wilderness Characteristics
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on wild and scenic rivers.

Alternative N: No Action

Under this alternative, 12 segments, totaling 135 miles, have been identified as eligible for consideration for suitability and as dictated by policy would be managed to protect their free-flowing nature, outstandingly remarkable values, and tentative classification until such time as a suitability determination is made. Eight segments (126 miles) are tentatively classified as "wild", two segments (5 miles) are "recreational", and two segments (3 miles) are tentatively classified as "scenic."

Impacts from Vegetation and Fire and Fuels Management

Allowing for habitat restoration could result in evidence of human activity from surface disturbance along the 126 miles of segments tentatively classified as "wild", however, these impacts would be short-term in duration and would not likely result in a change to the tentative classifications. Performing land treatments to reduce soil loss and maintain vegetation structure would impact WSRs by assisting in maintaining plant diversity and preserving the ecological condition of the segments. Management actions to maintain soil levels and vegetation cover, manage noxious weeds, and enhance wildlife habitat could have short-term impacts on wildlife, scenic, ecological and recreational outstandingly remarkable values by removing vegetation and increasing the potential for erosion and sedimentation, visual intrusions, and loss of habitat; however, over the long-term, such actions would likely increase age and species diversity of plant communities, which would improve or maintain these values.

Indirect protections from management of riparian areas would be provided to eligible river segments due to not allowing new surface disturbance within 500 feet of riparian/wetland areas. This would maintain the integrity of these areas and also provide indirect protections to many of the segments' outstandingly remarkable values, such as scenic and wildlife.

Impacts from Cultural Resources

Management actions associated with cultural resources would be compatible with all 135 miles identified as eligible for suitability because allowable activities and the degree of development within the river corridors would not change and future activities would be minimized or prohibited. In some instances, if inventories and collection were to occur within river corridors, short-term impacts could result from associated surface disturbance, particularly segments with "wild" classifications; however, over the long-term, these impacts would not likely affect tentative classification of the segment. Law and policy guiding cultural resources management would provide indirect protection to those segments that contain cultural or historic outstandingly remarkable values by placing restrictions on surface disturbance activities. Additionally, indirect effects from these restrictions could also occur to segments containing scenic, recreational, fish, wildlife, and ecologic outstandingly remarkable values by providing additional protections within the management of these values. Allowing for inventories and collection within river corridors could potentially cause short-term impacts associated with surface disturbance activities; however, over the long-term, these impacts from associated mitigation measures would be negligible and, in some instances, may provide additional values to segments, particularly if a significant cultural resource was found.

Impacts from Visual Resources

Most of the eligible river segments would continue to be managed as VRM Class II. This requires that the existing character of the landscape be retained and allows only low level changes to the landscape. This would minimize, but not eliminate, impacts from surface disturbing activities to eligible wild and scenic rivers where scenery was identified as the outstandingly remarkable value.

Impacts from Special Status Species and Fish and Wildlife

Management actions associated with special status species and fish and wildlife would be compatible with the tentative classifications of all 12 segments because allowable activities and the degree of development

within the river corridor would not change and future activities would be minimized or prohibited. In some instances short-term impacts could occur within "wild" segments from surface disturbance associated with habitat improvements from the increased potential for erosion and sedimentation impacting water quality and on the natural character of the area. In some instances these actions could also result in short-term impacts to the rivers' wildlife, fish, ecological, scenic and recreational outstandingly remarkable values from any associated improvement and/or development actions; however, over the long-term, these actions would likely assist in upholding the segment's outstandingly remarkable values by maintaining or improving habitat values.

Additionally, legal and policy requirements for protecting special status species habitats would protect eligible river segments where the special status species are the outstandingly remarkable value.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside WSAs are proposed under this alternative, resulting in no additional protection for wild and scenic river outstandingly remarkable values.

Impacts from Livestock Grazing

Proposed decisions to manage livestock grazing could have minor and localized effects on some outstandingly remarkable values. Most river segments are inaccessible to cattle, and although livestock grazing would be allowed within all eligible river corridors, impacts to the outstandingly remarkable scenic and recreational values would be minimal since management of livestock grazing is subject to the *Fundamentals of Rangeland Health*. However, there is a potential that certain rangeland improvements (e.g., fencing, water crossings) could be incompatible in some of the segments tentatively classified as "wild" from visual intrusions to the natural character of the area.

Impacts from Recreation

Under this alternative, there are no SRMAs, therefore SRMA management would have no impact on eligible rivers.

Impacts from Travel Management

Off-highway vehicle use could impact outstandingly remarkable values and tentative classification of the eligible river segments. Under this alternative, some eligible wild and scenic river segments, including the Fremont River east of Capitol Reef National Park, Quitchupah Creek, Fish Creek, Maidenwater Creek, and the Dirty Devil River north and south of the Dirty Devil WSA, would continue to be open to cross-country OHV travel, leaving these areas vulnerable to vehicle intrusions that could adversely impact recreation, scenic, cultural, and wildlife outstandingly remarkable values. The rugged terrain in some of these areas has presented a barrier to vehicle intrusions in the past and would likely continue to do so in the future, although advancing vehicle technology could allow vehicles to enter, and affect, areas they have not been able to access in the past. Eligible river segments within WSAs would be closed or limit OHV use to existing identified routes, which would preclude or reduce threats to outstandingly remarkable values.

Impacts from Lands and Realty

No proposed actions from lands and realty would impact the tentative classification or outstandingly remarkable values of the eligible segments identified under this alternative because allowable lands and realty actions and the degree of development within the corridor would be minimized or prohibited due to the BLM's policy to manage eligible river segments to protect their free-flowing nature, outstandingly remarkable values, and tentative classification. Thus, these river segments would be managed as right-of-way avoidance areas, which would provide additional protection to the outstandingly remarkable values

of the segments from eliminating any surface disturbance or visual intrusions associated with such development actions.

Because the BLM has no control over potential modifications to a river's shoreline or any other type of development on non-public lands, impacts could occur in these areas. Land tenure adjustments that would result in the acquisition of non-BLM lands within these river corridors would provide opportunities to better manage outstandingly remarkable values and to mitigate any efforts that could impact the segments' tentative classification or free-flowing nature.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

There would be no impacts from oil and gas exploration and development to the outstandingly remarkable values of eligible river segments within WSAs (98 of the 135 total miles) since all WSAs are closed to oil and gas leasing under all alternatives. The leasing categories of the 37 miles of eligible river segments outside WSAs (for all alternatives) are shown in Table 4-44.

Table 4-44. Oil and Gas Leasing in Eligible River Segments outside WSAs

Eligible River Segment	Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternatives C and D
Dirty Devil River North	Controlled surface use or timing stipulations	Standard lease terms	Closed to leasing	Closed to leasing
Dirty Devil River South	Controlled surface use or timing stipulations	Standard lease terms	Closed to leasing	Closed to leasing
Dirty Devil tributaries outside WSA	Standard lease terms	Standard lease terms	No surface occupancy	Closed to leasing
Fremont Gorge	No surface occupancy	Controlled surface use or timing stipulations	No surface occupancy	Closed to leasing
Fremont River below Capitol Reef National Park	Controlled surface use or timing stipulations	Controlled surface use or timing stipulations	Controlled surface use or timing stipulations	Closed to leasing
Fish Creek	Open to leasing subject to no surface occupancy	Controlled surface use or timing stipulations	Controlled surface use or timing stipulations	Open to leasing subject to no surface occupancy
Maidenwater Creek	Standard lease terms and closed	Standard lease terms	Controlled surface use or timing stipulations	Closed to leasing
Quitchupah Creek	Standard lease terms	Standard lease terms and controlled surface use or timing stipulations	Standard lease terms and controlled surface use or timing stipulations	Closed to leasing

Although portions of these river segments are open to oil and gas leasing with standard or minor stipulations under Alternative N, the oil and gas leasing stipulations for Alternative N (Appendix 11) also require no surface occupancy within 500 feet of each side of a perennial stream, which would help protect outstandingly remarkable values. This would reduce the potential for surface disturbing activities and their associated visual impacts. The remainder of the eligible river segments would be closed to leasing or open with NSO which would further protect outstandingly remarkable values. The potential for impacts to eligible river segments would be minor.

Leasable Minerals - Coal

No coal resources were identified within the eligible wild and scenic river corridors except for Quitchupah Creek which is located within the Emery Coal Field where development is not expected before 2030. If coal resources were developed within the corridor, there would be potential for disturbance and impacts to the cultural values within that eligible segment.

Non-Energy Solid Leasable Minerals

Under this alternative, leasing within one-quarter mile of eligible wild and scenic rivers would be prohibited, so outstandingly remarkable values would be protected.

Locatable Minerals

While there could be potential impacts from mineral development to the outstandingly remarkable values of eligible rivers, the likelihood of mineral development within the eligible river corridors is small given their remote location and lack of known mineralization. Impacts from mineral exploration and development would be mitigated by the requirement of Federal regulations that a plan of operations be submitted for any operations causing surface disturbance greater than casual use in areas recommended for potential addition to the National Wild and Scenic River System.

Salable Minerals

Under this alternative, disposal of salable minerals within one-quarter mile of eligible wild and scenic rivers would be prohibited, so outstandingly remarkable values would be protected.

Impacts from Special Designations

Wilderness Study Areas

Nearly three-quarters of the eligible river miles (98 of the 135 total miles) are within WSAs, encompassing most of the Dirty Devil River and its side drainages. WSA management pursuant to the IMP would continue to have a beneficial impact on all outstandingly remarkable values within these segments by limiting development within these river corridors.

Wild and Scenic Rivers

No suitability determination would be made under Alternative N and the outstandingly remarkable values of all eligible river segments would continue to be protected by policy until suitability determinations are made.

Areas of Critical Environmental Concern

Continued management of the Beaver Wash ACEC for its relict vegetation (closed to OHV use, closed to oil and gas leasing, unavailable for livestock grazing, acquisition of inholdings, and recommending for mineral withdrawal) would protect the ecological outstandingly remarkable value of the Beaver Wash eligible river segment. Continued management of the other three existing ACECs would have no impact on the other eligible river segments because no segments are located within those ACECs.

Alternative A

Impacts from Vegetation and Fire and Fuels Management

Under Alternative A, maximum treatment acreage limits would be set (averaging 73,600 annually for all treatments). No target (maximum or minimum) treatment acreage limits would be set under Alternative N. It is therefore likely that in some years, fewer acres would be treated under that alternative; however, in other years (when there are numerous wildland fires) more acres could be treated because the 2005 Land Use Plan Amendment for Fire and Fuels Management allows the full range of fire and fuels management actions to achieve ecosystem sustainability.

Under this alternative, no river segments would be recommended as suitable, which means that outstandingly remarkable values would not necessarily be protected. However, if these treatments were to occur in eligible wild and scenic river corridors, the types of impacts experienced would be similar to those described for Alternative N.

Impacts from Cultural Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

The impacts on outstandingly remarkable values of the eligible rivers would depend on the VRM classification of the lands within the river corridor. The eligible river segments within WSAs (98 of the 135 total miles) would be designated as VRM Class I, which would protect the scenic outstandingly remarkable values. River segments outside WSAs where scenery was identified as an outstandingly remarkable value (Dirty Devil and tributaries outside WSA, Fremont Gorge, Fremont River below Capitol Reef National Park, and Maidenwater Creek) would be designated as VRM Classes III or IV since no river segments would be recommended as suitable and no special management to protect outstandingly remarkable values are proposed under this alternative. Thus, management activities that could adversely impact the scenic values could occur in these river corridors.

Impacts from Special Status Species and Fish and Wildlife

Impacts would be similar to those described for Alternative N, with the exception of the 37 miles of river segments outside WSAs. However, legal and policy requirements for protecting special status species habitats would protect eligible river segments where the habitat overlaps a river segment.

Allowing for habitat restoration could result in evidence of human activity from surface disturbance along the 126 miles of segments tentatively classified as “wild”; however, these impacts would be short-term in duration and would not likely result in a change to the tentative classifications. Management actions to enhance wildlife habitat could have short-term impacts on wildlife, scenic, ecological and recreational outstandingly remarkable values by removing vegetation and increasing the potential for erosion and sedimentation, visual intrusions, and loss of habitat; however, over the long-term, such actions would likely increase age and species diversity of plant communities, which would improve or maintain these values.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside WSAs are proposed under this alternative, resulting in no additional protection for wild and scenic river outstandingly remarkable values.

Impacts from Livestock Grazing

Impacts would be similar to those described for Alternative N. Providing no protective management for outstandingly remarkable values would allow more potential for certain rangeland improvements and associated surface disturbance, which could affect outstandingly remarkable values.

Impacts from Recreation

Proposed decisions to identify SRMAs could impact outstandingly remarkable values. Under Alternative A, management direction for the proposed Dirty Devil SRMA would complement the recreational outstandingly remarkable value identified in the eligible Dirty Devil River segment and several of its tributary segments because of the emphasis on providing primitive and semi-primitive recreation opportunities.

Proposed decisions to establish the Factory Butte SRMA with emphasis on motorized recreation could potentially impact outstandingly remarkable values of the eligible Fremont River segment from Capitol Reef National Park to the Caineville Diversion. Management for cross-country OHV use could result in surface disturbances and impacts such as crushing vegetation, compacting soil, and contrasts in visual components within the river corridor, thus impacting the outstandingly remarkable values of this eligible river segment.

No other proposed SRMAs would overlap with eligible WSR segments under this alternative.

Impacts from Travel Management

OHV use could impact outstandingly remarkable values. Within most of the eligible river corridors, OHVs would be limited to designated routes, reducing impacts relative to Alternative N. Fremont Gorge would be open to cross-country OHV use, although the ruggedness of the gorge would prevent most vehicles from entering the area. The Fremont River from Capitol Reef National Park to the Caineville Ditch Diversion would remain open to cross-country OHV use. Terrain would limit motorized access in some locations. However, cross-country OHV use could result in surface disturbance, so impacts to outstandingly remarkable values could occur. Eligible river segments within WSAs would not be affected by OHVs.

Impacts from Lands and Realty

Under Alternative A, none of the eligible river segments would be recommended as suitable or managed to protect their free-flowing nature, outstandingly remarkable values, and tentative classification. The eligible river segments would not be included in withdrawals or right-of-way avoidance areas, which could result in proposals for surface disturbing activities within some of the eligible river corridors such as development of rights-of-way or mining-related activities. These areas could be disposed of under a land tenure adjustment (removing land from management under Federal laws and regulations), and inholdings could be acquired (which would bring lands under Federal jurisdiction, subject to management under Federal laws and regulations). There would continue to be protection from lands and realty actions for 98 of the 135 miles of eligible river miles that are located within WSAs. The potential for impacts to the remaining 37 miles would be dependent on future proposals. This alternative would provide the least protection for the eligible river segments, and as discussed above, could result in impacts to the outstandingly remarkable values from development of rights-of-way or other land use actions, as well as development of lands if disposed from public ownership.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

This alternative would allow the greatest impacts from oil and gas leasing among the alternatives because all eligible segments outside WSAs (37 miles) would be open to leasing under standard terms or

controlled surface use or timing stipulations. However, all eligible river segments except Quitchupah Creek are within an area identified as having low potential for oil and gas development. (Quitchupah Creek is located within an area identified as having moderate potential for gas development.) Since development of oil and gas within these areas is unlikely in the next 15 years, the possibility of such development impacting outstandingly remarkable values of any eligible river is minimal.

Leasable Minerals - Coal

Impacts would be the same as those described for Alternative N.

Non-Energy Solid Leasable Minerals

The 98 miles of eligible river segments located within WSAs would be closed to leasing, indirectly providing protection of the outstandingly remarkable values for those areas. There would be potential for leasing and development within the remaining 37 miles of eligible rivers which could result in surface disturbing activities within those corridors. This alternative would result in the least protection for the eligible river segments.

Locatable Minerals

There could be potential impacts from mineral exploration and development to the outstandingly remarkable values of eligible rivers as portions of the segments have a high potential for locatable minerals and no eligible rivers would be recommended as suitable in this alternative. There has been increasing interest in uranium adjacent to the Dirty Devil River corridor in the vicinity of Poison Spring and North Hatch Canyons, which could result in increased mineral-related traffic on the existing road that crosses the river. The 98 miles of eligible river segments located within the WSAs would be subject to the standards of 43 CFR 3802 and the IMP, which do not allow for impairment to the suitability for inclusion in the Wilderness Preservation System and thus would protect outstandingly remarkable values in these areas. This alternative would result in the least protection for the eligible river segments from locatable mineral exploration and development.

Salable Minerals

Proposed operations for salable minerals are subject to the oil and gas leasing restrictions. Live water would be protected by a buffer of 330 feet, subject to an appropriate exception when there are no practical alternatives and impacts can be fully mitigated. Outstandingly remarkable values would be protected by mitigation to stabilize soil, to prevent unnecessary erosion, and to revegetate disturbed surfaces.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

No eligible river segments would be recommended as suitable under Alternative A and the outstandingly remarkable values would receive no special management. Other proposed decisions in this alternative could allow adverse impacts to eligible river segments outside the WSAs as discussed in other sections of this wild and scenic river analysis.

Areas of Critical Environmental Concern

No ACECs are proposed under this alternative, so there would be no protection of outstandingly remarkable values from ACEC designation and management.

Alternative B: Preferred Alternative

Impacts from Vegetation and Fire and Fuels Management

Impacts would be similar to those described for Alternative A, except within the two river segments (59 miles) recommended for suitability. These river segments, Dirty Devil River and Fremont Gorge, would be managed to protect the outstandingly remarkable values. Proposed treatments in these areas would only be allowed if it was determined that they would not result in impacts to the suitability or tentative classification of the river segments.

Impacts from Cultural Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

The impacts on the outstandingly remarkable values of the eligible rivers not recommended suitable would depend on the VRM classification of the lands within the river corridor. The eligible river segments within WSAs (98 of the total 135 miles) would be designated as VRM Class I, which would protect the scenic, as well as the other, outstandingly remarkable values. River segments outside WSAs would be designated as VRM Class II, which would retain the character of the existing landscape. This would minimize, but not eliminate, possible impacts to the scenic, as well as the other, outstandingly remarkable values in these river segments.

Impacts from Special Status Species and Fish and Wildlife

Impacts would be similar to those described for Alternative A except that 2 river segments (59 miles) would be recommended as suitable under Alternative B, which would ensure protection of the outstandingly remarkable values in those segments.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside WSAs are proposed under this alternative, resulting in no additional protection for wild and scenic river outstandingly remarkable values.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Proposed decisions to establish SRMAs could impact outstandingly remarkable values. Under Alternative B, management direction for the Dirty Devil, Henry Mountains, and Capitol Reef Gateway SRMAs would complement the recreational outstandingly remarkable value identified in the eligible Dirty Devil River segments, several of its tributaries, Maidenwater Creek, and Fremont Gorge because of the emphasis on providing primitive and semi-primitive recreation opportunities. No other proposed SRMAs would overlap with eligible WSR segments under this alternative.

Impacts from Travel Management

OHV use can impact outstandingly remarkable values. However, under this alternative the two river segments designated as suitable wild and scenic rivers (the Dirty Devil River and Fremont Gorge – 59 miles) would be closed to OHVs, precluding impacts from this type of use. The eligible segments within WSAs (the Dirty Devil tributaries) would also be closed to vehicle use. Other eligible segments would be within areas where OHVs would be limited to designated routes, so impacts would be confined to designated routes. Thus, outstandingly remarkable values would not likely be adversely impacted by OHV use under this alternative.

Impacts from Lands and Realty

Impacts would be similar to Alternative A, except that only 24 miles of eligible river segments (which are not recommended as suitable or not within WSAs) would be unprotected and at risk from potential surface disturbing activities. Under Alternative B, decisions for lands and realty would complement the management and protection for the two river segments (59 miles) recommended for suitability. These river segments would be recommended for withdrawal from mineral entry, managed as right-of-way avoidance areas and no wind and solar energy development would be allowed. This would provide additional protection to the outstandingly remarkable values of the segments by eliminating any surface disturbance or visual intrusions associated with such development actions. All or the majority of the Beaver Wash Canyon, Larry Canyon, No Man's Canyon, Robbers Roost Canyon, Sams Mesa Box Canyon and Twin Corral Box Canyon eligible segments (52 miles) are located within WSAs and would continue to be protected by IMP management.

Because the BLM has no control over potential modifications to a river's shoreline or any other type of development on non-public lands, impacts could occur in these areas. Management actions to acquire non-BLM lands within the river corridors would provide opportunities to better manage outstandingly remarkable values and to prevent any actions that could impact the segments' tentative classification or free-flowing nature.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Alternative B would reduce the level of impact compared to Alternative A by recommending two river segments (59 miles) as suitable and managing those river corridors as closed to oil and gas leasing or allowing no surface occupancy. However, the level of protection would not be as great as that provided by Alternatives N, C and D. All remaining eligible river segments except Quitchupah Creek are within an area identified as having low activity level (low development potential) for oil and gas. Quitchupah Creek is located in an area identified as having moderate activity (moderate development potential) for oil and gas. River segments not recommended as suitable within WSAs would continue to be protected by the IMP.

Leasable Minerals - Coal

Impacts would be the same as those described for Alternative N.

Non-Energy Solid Leasable Minerals

Under this alternative, leasing within one-quarter mile of suitable wild and scenic rivers would be prohibited, so outstandingly remarkable values would be protected in the Dirty Devil River and Fremont Gorge (59 miles). In addition, no surface disturbance would be allowed within 330 feet of live water, subject to an appropriate exception when there are no practical alternatives and impacts can be fully mitigated. It is important to note that of the remaining segments, 63 miles are within WSAs (which are closed to leasing), leaving 13 miles on which ground disturbing activities could potentially impact outstandingly remarkable values. This alternative would provide less protection to outstandingly remarkable values than Alternatives N, C or D but would provide more protection than Alternative A.

Locatable Minerals

While there could be potential impacts from mineral development to the outstandingly remarkable values of eligible rivers, the likelihood of mineral development within the eligible river corridors is small given their remote location and lack of known mineralization. Under this alternative, suitable wild and scenic river corridors would be recommended for withdrawal from mineral entry, precluding new mining claims in these areas. Impacts from mineral exploration and development would be mitigated by the requirement of Federal regulations that a plan of operations be submitted for any operations causing surface

disturbance greater than casual use in areas designated for potential addition to the National Wild and Scenic River System.

Salable Minerals

Under this alternative, disposal of salable minerals within one-quarter mile of suitable wild and scenic rivers would be prohibited, so the outstandingly remarkable values of the Dirty Devil and Fremont Gorge (59 miles) would be protected. In addition, no surface disturbance would be allowed within 330 feet of live water, subject to an appropriate exception when there are no practical alternatives and impacts can be fully mitigated. It is important to note that of the remaining segments, 63 miles are within WSAs, which are closed to disposal of salable minerals. This alternative would provide less protection to outstandingly remarkable values than Alternatives N, C or D but more protection than Alternative A.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Under this alternative, the Dirty Devil and Fremont Gorge eligible river segments would be recommended as suitable and would be managed to protect their outstandingly remarkable values. Additionally, these two river segments would be recommended for withdrawal from mineral entry and identified as ROW avoidance areas, protecting the outstandingly remarkable values from these types of surface disturbing activities. Outstandingly remarkable values in other eligible segments would be managed according to management direction contained elsewhere in this RMP. Possible impacts are discussed in other sections of this wild and scenic river analysis.

Areas of Critical Environmental Concern

ACEC designations in this alternative do not overlap any eligible wild and scenic river segments so there would be no impacts to outstandingly remarkable values from ACEC management.

Alternative C

Impacts from Vegetation and Fire and Fuels Management

There would be no impacts to wild and scenic rivers under this alternative, as all 12 eligible river segments would be recommended as suitable for inclusion in the National Wild and Scenic River System. Proposed treatments in these areas would only be allowed if it was determined that they would not result in impacts to the suitability, tentative classification, or outstandingly remarkable values of the river segment.

Impacts from Cultural Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

The impacts on outstandingly remarkable values of the eligible rivers would depend on the VRM classification of the lands within the river corridor. The eligible river segments within WSAs (98 of the total 135 miles) would be designated as VRM Class I, which would protect the scenic, as well as the other, outstandingly remarkable values. River segments outside WSAs would be managed as VRM Class II, which would retain the character of the existing landscape. This would minimize, but not eliminate, possible impacts to the scenic outstandingly remarkable values, and indirectly provide protection of other outstandingly remarkable values for these river segments.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside WSAs are proposed under this alternative, resulting in no additional protection for wild and scenic river outstandingly remarkable values.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Impacts would be the same as those described for Alternative B.

Impacts from Travel Management

All 12 eligible wild and scenic river segments (135 miles) would be designated as suitable under this alternative, and all would be closed to motorized vehicles except for the Poison Spring Road which is a maintained road that crosses the Dirty Devil River segment and provides the only access to this river segment. By closing the other suitable rivers to OHV use, there would be no impact to outstandingly remarkable values or tentative classification under this alternative.

Impacts from Lands and Realty

Impacts would be similar to those described for Alternative B, except that all 12 recommended suitable river segments (135 miles) would be recommended for withdrawal from mineral entry, managed as right-of-way avoidance areas and not considered for wind and solar energy development. This alternative (along with Alternative D) would result in the greatest protection to river segments from lands and realty decisions.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Under this alternative, all 12 eligible rivers would be recommended as suitable, and all would be closed to oil and gas leasing. However, Fish Creek is located in an area identified as having low potential for gas development, so development of oil and gas is unlikely in the next 15 years. Consequently, the possibility of such development impacting outstandingly remarkable values of this river is minimal.

Leasable Minerals - Coal

Impacts would be the same as those described for Alternative N.

Non-Energy Solid Leasable Minerals

Under this alternative, leasing within one-quarter mile of suitable wild and scenic rivers would be prohibited, so outstandingly remarkable values would be protected in all 12 of the eligible rivers (135 miles).

Locatable Minerals

Under this alternative, the 12 suitable wild and scenic river corridors would be recommended for withdrawal from mineral entry, precluding new mining claims in these areas. Impacts from mineral exploration and development would be mitigated by the requirement of Federal regulations that a plan of operations be submitted for any operations causing surface disturbance greater than casual use in areas designated for potential addition to the National Wild and Scenic River System. The likelihood of

mineral development within the suitable river corridors is small given their remote location and lack of known mineralization. Therefore, the potential for impacts from locatable minerals would be minimal.

Salable Minerals

Under this alternative, disposal of salable minerals within one-quarter mile of suitable wild and scenic rivers would be prohibited, so outstandingly remarkable values would be protected in all 12 rivers.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

All eligible river segments would be recommended as suitable under this alternative and would be managed to protect their outstandingly remarkable values. Management of these river segments (including closing to OHV use, closing to oil and gas leasing, recommending for withdrawal from mineral entry, closing to forest and woodland products harvesting, and managing as right-of-way avoidance areas) would protect their outstandingly remarkable values. This alternative (along with Alternative D) would best protect the eligible river segments.

Areas of Critical Environmental Concern

Under this alternative, all suitable wild and scenic river segments would be within potential ACECs. Managing the ACECs to protect relevant and important values would likely protect outstandingly remarkable values within the eligible river corridors as well, since they are often the same or similar values. This alternative (along with Alternative D) would best protect the eligible river segments.

Alternative D

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as described for Alternative C.

Impacts from Cultural Resources

Impacts would be the same as those described for Alternative N.

Impacts from Visual Resources

The impacts on outstandingly remarkable values of the eligible rivers would depend on the VRM classification of the lands within the river corridor. The eligible river segments within WSAs (98 of the total 135 miles) would be designated as VRM Class I, which would protect the scenic, as well as the other, outstandingly remarkable values. River segments outside WSAs but within wilderness characteristic lands (33.35 miles of the Dirty Devil and tributaries outside WSA, Fremont Gorge, Fremont River below Capitol Reef National Park, and Maidenwater Creek) would also be designated as VRM Class I. There would be 0.74 miles of the Fremont River (Capitol Reef National Park to Caineville) and 1.6 miles of Maidenwater Creek designated as VRM Class II, which would also protect outstandingly remarkable values. The potential for impacts to the outstandingly remarkable values would be greatest in the 0.1 mile of the Fremont River (Fremont Gorge) designated as VRM Class III and the 0.25 miles of Fish Creek and 1.4 miles of Quitchupah Creek designated as VRM Class IV, which would allow modifications to the landscape and impact outstandingly remarkable values. However, with only 1.75 miles within these VRM designations, the potential for impacts to the outstandingly remarkable values and tentative classification would be minor.

Impacts from Special Status Species and Fish and Wildlife

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, 10,500 acres (33.35 miles) of suitable wild and scenic river segments would be included within the non-WSA areas managed to protect wilderness characteristics. Because the wilderness characteristics prescriptions are more restrictive than the wild and scenic river prescriptions, (e.g. VRM Class I versus VRM Class II), the eligible segments overlapping non-WSA lands with wilderness characteristics would be afforded a measure of additional protection over that provided in Alternative C.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Impacts would be the same as those described for Alternative B.

Impacts from Travel Management

Impacts would be similar to those described for Alternative C, except that management for protection of non-WSA lands with wilderness characteristics would result in 33.85 additional miles of suitable wild river segments being closed to OHV use. This would provide additional protection for outstandingly remarkable values in these segments.

Impacts from Lands and Realty

Impacts would be similar to those described for Alternative C, except additional acres would be managed for the protection of non-WSA lands with wilderness characteristics, which would provide additional protection for outstandingly remarkable values in overlapping wild and scenic river segments.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Impacts would be similar to those described for Alternative C, except additional acres would be managed for the protection of non-WSA lands with wilderness characteristics, which would provide additional protection for outstandingly remarkable values in overlapping wild and scenic river segments.

Leasable Minerals - Coal

Impacts would be similar to those described for Alternative N, except additional acres would be managed for the protection of non-WSA lands with wilderness characteristics, which would provide additional protection for outstandingly remarkable values in overlapping wild and scenic river segments.

Non-Energy Solid Leasable Minerals

Impacts would be similar to those described for Alternative C, except additional acres would be managed for the protection of non-WSA lands with wilderness characteristics, which would provide additional protection for outstandingly remarkable values in overlapping wild and scenic river segments.

Locatable Minerals

Impacts would be the same as those described for Alternative C.

Salable Minerals

Impacts would be similar to those described for Alternative C, except additional acres would be managed for the protection of non-WSA lands with wilderness characteristics, which would provide additional protection for outstandingly remarkable values in overlapping wild and scenic river segments.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described for Alternative C.

4.5.3 Areas of Critical Environmental Concern

An ACEC is an administrative designation assigned by BLM for "areas within the public lands where special management attention is required." FLPMA defines an ACEC as an area—

> *"within the public lands where special management attention is required (when such areas are developed or used, or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards" (FLPMA Section 103(a)).*

This analysis identifies effects of management decisions on the BLM's ability to protect against and prevent irreparable damage to the relevant and important values associated with each potential ACEC across the alternatives. Protection of relevant and important values can occur as a result of management associated with designating ACECs, management associated with other special designations (e.g., WSAs and wild and scenic rivers), general management of public lands (VRM class designations, restrictions on wildlife habitat, special status species management, SRMAs), or through geographic or topographic characteristics. The most restrictive management that protects an area with relevant and important values will be the focus of the analysis. Analysis of less restrictive management that would not provide additional protection to a relevant and important value will not be addressed. For example, if part of an ACEC with scenic relevant and important values threatened by oil and gas development overlaps a WSA, the WSA management would eliminate the threat of irreparable damage. Therefore, the analysis would not address the impacts of ACEC management for those portions of the ACEC within the WSA.

In concert with BLM guidelines, the impact analysis considers management actions that "defend or guard against damage or loss" to the relevant and important values. This includes damaged values that can be restored over time as well as those that are irreparable. The management actions associated with the alternatives could either degrade or protect the relevant and important values and either cause or prevent irreparable damage to such values.

Table 4-45 lists the existing ACECs, as well as potential ACECs, by alternative.

Table 4-45. Existing and Potential Areas of Critical Environmental Concern

ACEC	Relevant and Important Values	Alternative N (Existing ACECs)	Alternative A	Alternative B (Preferred)	Alternatives C and D	% in WSAs
Existing ACECs						
North Caineville Mesa ACEC	Relict vegetation	2,200 acres	0 acres	2,200 acres	(Within Badlands ACEC)	0
South Caineville Mesa ACEC	Relict vegetation	4,100 acres	0 acres	0 acres	(Within Badlands ACEC)	100%
Gilbert Badlands RNA	Badlands geology	3,680 acres	0 acres	0 acres	(Within Badlands ACEC)	100%
Beaver Wash Canyon ACEC	Desert riparian ecosystem	4,800 acres	0 acres	0 acres	(Within Dirty Devil/North Wash ACEC)	99%
Potential ACECs						
Badlands RNA	Scenic, Special Status Species, Natural Processes, Riparian, Relict Vegetation	0 acres	0 acres	0 acres	88,900 acres	46%
Bull Creek	Archaeological	0 acres	0 acres	0 acres	4,800 aces	0
Dirty Devil/North Wash	Scenic, Cultural, Paleontological, Wildlife, Special Status Species	0 acres	0 acres	0 acres	205,300 acres	64%
Fremont Gorge/ Cockscomb	Cultural, Scenic, Riparian, Plant, Wildlife	0 acres	0 acres	0 acres	34,300 acres	8%
Henry Mountains	Scenic, Bison habitat, Mule deer habitat, Special Status Species, Ecological	0 acres	0 acres	0 acres	288,200 acres	45%
Horseshoe Canyon	Scenic, Cultural, Riparian, Special Status Species	0 acres	0 acres	0 acres	40,900 acres	92%
Kingston Canyon	Mule deer habitat	0 acres	0 acres	0 acres	22,100 acres	0
Little Rockies	Scenic, Bighorn Sheep, Special Status Species	0 acres	0 acres	0 acres	49,200 acres	76%

ACEC	Relevant and Important Values	Alternative N (Existing ACECs)	Alternative A	Alternative B (Preferred)	Alternatives C and D	% in WSAs
Lower Muddy Creek	Scenic, Riparian, Special Status Species	0 acres	0 acres	0 acres	16,200 acres	0
Old Woman Front RNA	Relict Vegetation	0 acres	0 acres	330 acres	330 acres	0
Parker Mountain	Sagebrush Steppe, Sage grouse, Utah prairie dog, Pygmy rabbit	0 acres	0 acres	0 acres	107,900 acres	0
Quitchupah	Archaeological, Native American, Riparian	0 acres	0 acres	0 acres	180 acres	0
Rainbow Hills	Mule deer, Natural system, Special Status Species	0 acres	0 acres	0 acres	4,000 acres	0
Sevier Canyon	Mule deer, Riparian, Special Status Species	0 acres	0 acres	0 acres	8,900 acres	0
Special Status Species	Special Status Species	0 acres	0 acres	0 acres	15,100 acres	0
Thousand Lake Bench	Cultural, Special Status Species, Riparian	0 acres	0 acres	0 acres	500 acres	0
Total		**16,200 acres**	**0 acres**	**4,130 acres**	**886,810 acres**	

Methods and Assumptions

This analysis is based on the following assumption:

- Although management decisions for most resources and resource uses have RFO-wide application, ACEC management prescriptions apply only to those lands within each specific ACEC, as outlined.

Environmental Consequences

Relevant and important values identified for the ACECs and impacts to those values vary based upon the individual ACEC because the relevant and important values vary by ACEC. Thus, the discussion of impacts will be different for each ACEC. Table 4-45 identifies the relevant and important values for each ACEC.

This section is structured by ACEC then by alternative. The ACECs are organized in the order that they appear in Chapter 2.

4.5.3.1 Existing ACECs

4.5.3.1.1 North Caineville Mesa ACEC

The North Caineville Mesa ACEC encompasses 2,200 acres. None of this ACEC is located within a WSA. The relevant and important value is the relict vegetation found on top of the mesa. Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Visual Resources
- Livestock Grazing
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the relict vegetation of this ACEC.

Alternative N: No Action

Impacts from Visual Resources

Scenery is not a relevant or important value of this ACEC. However, under this alternative, the ACEC is managed to meet VRM Class II objectives. This would retain the existing character of the landscape by restricting surface disturbing activities, and would provide protection to the relict vegetation on the mesa.

Impacts from Livestock Grazing

The North Caineville Mesa ACEC is unavailable for grazing. This management prescription provides protection for the relict plant community relevant and important value within this ACEC.

Impacts from Travel Management

The ACEC is closed to OHV use under this alternative, which would provide protection to the relevant and important value from this type of use.

Impacts from Lands and Realty

Under this alternative, the North Caineville Mesa ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. In addition, land acquisitions to acquire non-Federal inholdings from willing sellers would be pursued. Both of these management actions would help to protect the ACEC's relevant and important value.

Impacts from Minerals and Energy

The ACEC is open to oil and gas leasing with no surface occupancy. This would protect the relevant and important value from surface disturbance. The ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. Additionally, the ACEC would be considered for withdrawal from consideration for coal development in subsequent coal planning efforts and therefore would be protected from coal mining surface disturbance.

Impacts from Special Designations

Areas of Critical Environmental Concern

The North Caineville Mesa ACEC is managed to protect its relevant and important relict vegetation community located on top of a mesa. The area would continue to be managed for the protection of its relevant and important value.

Alternative A

Impacts from Visual Resources

Under this alternative, the area would be designated as VRM Class IV. Areas designated as VRM Class IV would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) the relict vegetation on the mesa.

Impacts from Livestock Grazing

Under this alternative, the area would be available for livestock grazing so the relict vegetation would be grazed by domestic livestock. However, management of livestock grazing in accordance with the Standards for Rangeland Health would minimize impacts to the relict plant community on North Caineville Mesa.

Impacts from Travel Management

The North Caineville Mesa area would be designated as open to OHV use under this alternative. This has the potential to lead to direct mortality of vegetation, via the crushing of plants, and indirect mortality from increases in erosion and sedimentation. The increasing use of OHVs on BLM land can also transport noxious and invasive weed seeds from infested areas to un-infested areas. Surface disturbance associated with OHV use (e.g., crushing of vegetation and soil disturbance) has the potential to increase the susceptibility of native plant communities to weed establishment, and can modify localized soil conditions to the point where they are unsuitable for establishment by native species could result in adverse impacts to the relict vegetation. Vehicles driving over the vegetation would crush plants and the relevant and important value could be adversely impacted.

Impacts from Lands and Realty

Under this alternative, the area would not be recommended for mineral withdrawal, and acquisition of non-Federal inholdings would not be pursued. Thus, the relevant and important value of the area would not receive additional protection from lands and realty actions.

Impacts from Minerals and Energy

Under this alternative, the area would be open to oil and gas leasing with standard lease terms. Impacts to vegetation from oil and gas development would include loss or injury of plants due to excavation or trampling, burial under piles of waste material, toxic responses from use of chemicals in mineral extraction or waste pits, and increased exposure to dust and other contaminants associated with construction and use of access roads. In addition, disturbance of reclamation-limited soils could increase the opportunity for exotic plant species and noxious weed infestations. In the worst-case scenario, all vegetation would be removed from a parcel of land and the site would be permanently altered so as to prevent future vegetation growth. Oil and gas development would have significant impacts to the relict vegetation of the area.

Impacts from Special Designations

Areas of Critical Environmental Concern

The North Caineville Mesa ACEC would not be designated under this alternative, and no special management prescriptions would be implemented to specifically protect the relevant and important value of the area.

Alternative B: Preferred Alternative

Impacts from Visual Resources

Designation and protective management would continue for the North Caineville Mesa ACEC under this alternative. Impacts would be the same as those described for Alternative N.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Travel Management

Impacts would be the same as those described for Alternative N.

Impacts from Lands and Realty

Impacts would be the same as those described for Alternative N.

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described for Alternative N.

Alternatives C and D

Impacts from Visual Resources

Impacts would be similar to those described for Alternative N. The North Caineville Mesa ACEC would be included in the larger potential Badlands ACEC which includes protection for additional relevant and important values.

Impacts from Livestock Grazing

Impacts would be similar to those described for Alternative N.

Impacts from Travel Management

Impacts would be similar to those described for Alternative N.

Impacts from Lands and Realty

Impacts would be similar to those described for Alternative N.

Impacts from Minerals and Energy

The potential Badlands ACEC, including the existing North Caineville Mesa ACEC, would be closed to oil and gas leasing under this alternative. This would protect the relevant and important value from surface disturbance. The ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. Additionally, the ACEC would be considered for withdrawal

from consideration for coal development in subsequent coal planning efforts and therefore would be protected from coal mining surface disturbance, which would protect the relict vegetation from adverse impacts.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be similar to those described for Alternative N.

4.5.3.1.2 South Caineville Mesa ACEC

The South Caineville Mesa ACEC encompasses 4,100 acres. This ACEC is located entirely within the Mount Ellen/Blue Hills WSA. The relevant and important value is the relict vegetation found on top of the mesa. Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Visual Resources
- Livestock Grazing
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the relict vegetation of this ACEC.

Alternative N: No Action

Impacts from Visual Resources

Scenery is not a relevant or important value of this ACEC. However, under this alternative, the ACEC is managed to meet VRM Class I objectives due to its location within the Mount Ellen/Blue Hills WSA. This would preserve the existing character of the landscape by restricting surface disturbing activities, and would provide protection to the relict vegetation on the mesa.

Impacts from Livestock Grazing

The South Caineville Mesa ACEC is unavailable for grazing. This management prescription provides protection for the relict vegetation on top of the mesa (this ACEC's relevant and important value) by eliminating the possibility of damage to the vegetation from grazing or trampling by livestock.

Impacts from Travel Management

The ACEC is closed to OHV use under this alternative, which would provide protection to the relevant and important value from this type of use by eliminating the possibility of damage to the vegetation from vehicles crushing plants, compacting soils, or spreading invasive species.

Impacts from Lands and Realty

Under this alternative, the South Caineville Mesa ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. In addition, land acquisitions to acquire non-Federal inholdings from willing sellers would be pursued. Both of these management actions would help to protect the ACEC's relevant and important value.

Impacts from Minerals and Energy

The ACEC is closed to oil and gas leasing due to its location within the Mount Ellen/Blue Hills WSA. This would protect the relevant and important value from surface disturbance. The ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. Additionally, the ACEC would be considered for withdrawal from consideration for coal development in subsequent coal planning efforts and therefore would be protected from coal mining surface disturbance.

Impacts from Special Designations

Wilderness Study Areas

The ACEC is within the Mount Ellen/Blue Hills WSA. Continued management of WSAs under the IMP would limit surface disturbing actions that could adversely relevant and important values. WSAs are closed to oil and gas leasing, precluding any impact from oil and gas development, and are managed as VRM Class I, which further restricts surface disturbing activities.

Areas of Critical Environmental Concern

South Caineville Mesa ACEC is managed to protect its relevant and important relict vegetation that is found on top of the mesa. The area would continue to be managed for the protection of its relevant and important value.

Alternative A

Impacts from Visual Resources

Under this alternative, the area would be designated as VRM Class I due to its location within the Mount Ellen/Blue Hills WSA. This would preserve the existing character of the landscape by restricting surface disturbing activities, and would provide protection to the relict vegetation.

Impacts from Livestock Grazing

Under this alternative, the area would be available for livestock grazing so the relict vegetation would be grazed by domestic livestock. However, management of livestock grazing in accordance with the IMP and Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration would minimize impacts to the relict vegetation on South Caineville Mesa.

Impacts from Travel Management

Motorized and mechanized travel in the South Caineville Mesa area would be designated as limited to designated routes under this alternative, but no routes have been identified for designation on the South Caineville Mesa. Should any routes be designated, there could be localized impacts to the relict vegetation from motorized vehicles. However, due to the non-impairment standard of the IMP (for management of WSAs), the relevant and important value should not be adversely impacted.

Impacts from Lands and Realty

Under this alternative, the area would not be recommended for mineral withdrawal, and acquisition of non-Federal inholdings would not be pursued. Thus, the relevant and important value of the area would not receive additional protection from lands and realty actions.

Impacts from Minerals and Energy

Impacts would be similar to those described for Alternative N except that the area would not be recommended for mineral withdrawal; however, the ACEC's location within a WSA would continue to provide protection from surface disturbing activities associated with locatable mineral development

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

The ACEC would not be designated under this alternative, and no special management prescriptions would be implemented to specifically protect the relevant and important value of the area. However, since South Caineville Mesa area is within the Mount Ellen/Blue Hills WSA, the area would be managed pursuant to the IMP, which would protect the relict vegetation.

Alternative B: Preferred Alternative

Impacts from Visual Resources

Impacts would be the same as those described for Alternative A.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative A.

Impacts from Travel Management

Impacts would be the same as those described for Alternative A.

Impacts from Lands and Realty

Impacts would be the same as those described for Alternative A.

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative A.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

Impacts would be the same as those described for Alternative A.

Alternatives C and D

Impacts from Visual Resources

Impacts would be similar to those described for Alternative N. The existing South Caineville Mesa ACEC would be included in the larger potential Badlands ACEC which includes additional management protection for additional relevant and important values.

Impacts from Livestock Grazing

Impacts would be similar to those described for Alternative N.

Impacts from Travel Management

Impacts would be similar to those described for Alternative N.

Impacts from Lands and Realty

Impacts would be similar to those described for Alternative N.

Impacts from Minerals and Energy

Impacts would be similar to those described for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

Impacts would be similar to those described for Alternative N.

4.5.3.1.3 Beaver Wash Canyon ACEC

The Beaver Wash Canyon ACEC encompasses 4,800 acres. Ninety-nine percent of this ACEC is located within the Dirty Devil WSA. The relevant and important value is its desert riparian ecosystem. Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Vegetation
- Visual Resources
- Livestock Grazing
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the desert riparian ecosystem of this ACEC.

Alternative N: No Action

Impacts from Vegetation

Under this alternative, no surface disturbing activities would be allowed within 500 feet of riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the desert riparian ecosystem from surface disturbing activities, but it could restrict potentially beneficial actions such as riparian areas restoration and vegetation treatment.

Impacts from Visual Resources

Scenery is not a relevant or important value of this ACEC. However, under this alternative, all but 68 acres (which are outside the WSA) are managed to meet VRM Class I objectives due to its location within the Dirty Devil WSA. This would preserve the existing character of the landscape by restricting surface disturbing activities, and would provide protection to the desert riparian ecosystem. The 68 acres outside the WSA would be managed to meet VRM Class IV objectives. Areas designated as VRM Class IV would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) the vegetation in the area.

Impacts from Livestock Grazing

The Beaver Wash Canyon ACEC is unavailable for grazing from the south boundary of Section 25 northward and fencing has been installed to restrict livestock in that portion of the ACEC. This management prescription provides protection for the desert riparian ecosystem relevant and important value within this ACEC. The remainder of the ACEC (approximately 800 acres) is available for grazing. Management of livestock grazing in accordance with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration would protect this area as well.

Impacts from Travel Management

The ACEC is closed to OHV use under this alternative, which would provide protection to the relevant and important value from this type of use.

Impacts from Lands and Realty

Under this alternative, the Beaver Wash Canyon ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. In addition, land acquisitions to acquire non-Federal inholdings from willing sellers would be pursued. Both of these management actions would help to protect the ACEC's relevant and important value.

Impacts from Minerals and Energy

The ACEC is closed to oil and gas leasing due to its location within the Dirty Devil WSA. This would protect the relevant and important value from surface disturbance. The ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. Additionally, the ACEC would be considered for withdrawal from consideration for coal development in subsequent coal planning efforts and therefore would be protected from coal mining surface disturbance. Thus, no surface disturbing activities would be allowed, which would result in protection of the area's desert riparian ecosystem.

Impacts from Special Designations

Wilderness Study Areas

The majority of the Beaver Wash Canyon ACEC is within the Dirty Devil WSA. Continued management of WSAs under the IMP would limit surface disturbing actions that could adversely relevant and important values. WSAs are closed to oil and gas leasing, precluding any impact from oil and gas development, and are managed as VRM Class I, which further restricts surface disturbing activities.

Wild and Scenic Rivers

The Beaver Wash Canyon eligible Wild and Scenic River is within the existing Beaver Wash Canyon ACEC. Although no suitability determination would be made, BLM policy requires the protection of the outstandingly remarkable values and free-flowing nature of all eligible wild and scenic rivers. This interim management would provide protection of the ACEC's relevant and important values.

Areas of Critical Environmental Concern

Beaver Wash ACEC is managed to protect its relevant and important cold riparian ecosystem located in an otherwise desert environment. The area would continue to be managed for the protection of its relevant and important value.

Alternative A

Impacts from Vegetation

Under this alternative, no surface disturbing activities would be allowed within 330 feet of riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the desert riparian ecosystem from surface disturbing activities, but it could restrict potentially beneficial actions such as riparian areas restoration and vegetation treatment. The area of protection would be less under this alternative than under Alternative N, which may not provide as much protection to the area's relevant and important value.

Impacts from Visual Resources

Under this alternative, the area within the Dirty Devil WSA would be designated as VRM Class I. This would preserve the existing character of the landscape by restricting surface disturbing activities, and would provide protection to the desert riparian ecosystem. The 68 acres outside the WSA would be managed to meet VRM Class III or IV objectives. Areas designated as VRM Classes III or IV would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) the vegetation in the area.

Impacts from Livestock Grazing

Under this alternative, the entire Beaver Wash Canyon area would be available for grazing. However, management of livestock grazing in accordance with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration would minimize impacts to vegetation in the area.

Impacts from Travel Management

Motorized and mechanized travel in the Beaver Wash Canyon area would be limited to designated routes under this alternative, but no routes have been identified for designation. Should any routes be designated, there could be localized impacts to the relict vegetation from motorized vehicles. However, due to the non-impairment standard of the IMP (for management of WSAs), the relevant and important value should not be adversely impacted.

Impacts from Lands and Realty

Under this alternative, the area would not be recommended for mineral withdrawal, and acquisition of non-Federal inholdings would not be pursued. Thus, the relevant and important value of the area would not receive additional protection from lands and realty actions.

Impacts from Minerals and Energy

Impacts would be similar to those described for Alternative N except that the area would not be recommended for mineral withdrawal, so surface disturbing activities associated with locatable mineral development (and impacts to the relevant and important value of the area) could occur.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

The Beaver Wash Canyon eligible river segment would not be recommended as suitable under this alternative, with no special management to protect its outstandingly remarkable values and free-flowing nature. This would provide no additional protection to the area's relevant and important value.

Areas of Critical Environmental Concern

The Beaver Wash Canyon ACEC would not be designated under this alternative, and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. However, since the majority of the area is within the Dirty Devil WSA, the area would be managed pursuant to the IMP, which would protect the area's desert riparian ecosystem.

Alternative B: Preferred Alternative

Impacts from Vegetation

Impacts would be the same as those described for Alternative A.

Impacts from Visual Resources

Impacts would be similar to those described for Alternative A except the 68 acres outside the WSA would be designated as VRM Class IV, which would allow greater landscape modification and therefore greater potential for surface disturbance.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative A.

Impacts from Travel Management

Impacts would be the same as those described for Alternative A.

Impacts from Lands and Realty

Impacts would be the same as those described for Alternative A.

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative A.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative A.

Areas of Critical Environmental Concern

Impacts would be the same as those described for Alternative A.

Alternatives C and D

Impacts from Vegetation

Impacts would be similar to those described for Alternative N. The existing Beaver Wash Canyon ACEC would be included in the larger potential Dirty Devil ACEC which includes additional management prescriptions for the protection of its relevant and important values. The buffer zone around riparian

areas where no surface disturbing activities would be allowed would be 660 feet. This would protect the widest area around the desert riparian ecosystem from surface disturbing activities, but it could also restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

Impacts would be similar to those described for Alternative A.

Impacts from Livestock Grazing

Impacts would be similar to those described for Alternative N.

Impacts from Travel Management

Impacts would be similar to those described for Alternative N.

Impacts from Lands and Realty

Impacts would be similar to those described for Alternative N.

Impacts from Minerals and Energy

Impacts would be similar to those described for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Impacts would be similar to those described for Alternative N except that Beaver Wash Canyon would be recommended as suitable for inclusion in the National Wild and Scenic River System, and tentatively classified as a wild river. The river would be managed to protect the outstandingly remarkable values and free-flowing nature of the river, including closing to oil and gas leasing, closing to OHV use, and recommending for withdrawal from mineral entry. These management prescriptions would provide protection of the ACEC's relevant and important value.

Areas of Critical Environmental Concern

Impacts would be similar to those described for Alternative N.

4.5.3.1.4 Gilbert Badlands RNA ACEC

The Gilbert Badlands RNA ACEC encompasses 3,680 acres. This ACEC is located entirely within the Mount Ellen/Blue Hills WSA. The relevant and important value is the badlands geology. Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Visual Resources
- Livestock Grazing
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the badlands geology of this ACEC.

Alternative N: No Action

Impacts from Visual Resources

Scenery is not a relevant or important value of this ACEC. However, under this alternative, the ACEC is managed to meet VRM Class I objectives due to its location within the Mount Ellen/Blue Hills WSA. This would preserve the existing character of the landscape by restricting surface disturbing activities, and would provide protection to the geomorphology of the area.

Impacts from Livestock Grazing

The ACEC is available for grazing. However, there is little to no threat to the Gilbert Badlands ACEC from livestock grazing because of topographic isolation and the lack of vegetation and water within the Mancos Shale badlands to support livestock.

Impacts from Travel Management

The ACEC is closed to OHV use under this alternative, which would provide protection to the relevant and important value from this type of use.

Impacts from Lands and Realty

Under this alternative, the ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. In addition, land acquisitions to acquire non-Federal inholdings from willing sellers would be pursued. Both of these management actions would help to protect the ACECs relevant and important value.

Impacts from Minerals and Energy

The ACEC is closed to oil and gas leasing due to its location within the Mount Ellen/Blue Hills WSA. This would protect the relevant and important value from surface disturbance. The ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. Additionally, the ACEC would be considered for withdrawal from consideration for coal development in subsequent coal planning efforts and therefore would be protected from coal mining surface disturbance. Thus, no surface disturbing activities would be allowed, which would result in protection of the area's relevant and important value.

Impacts from Special Designations

Wilderness Study Areas

Gilbert Badlands ACEC is within the Mount Ellen/Blue Hills WSA. Continued management of WSAs under the IMP would limit surface disturbing actions that could adversely relevant and important values. WSAs are closed to oil and gas leasing, precluding any impact from oil and gas development, and are managed as VRM Class I, which further restricts surface disturbing activities.

Areas of Critical Environmental Concern

The Gilbert Badlands ACEC is also a research natural area, a pre-FLPMA administrative designation that was elected to be carried forward. The ACEC is managed to protect its relevant and important geomorphology (Mancos Shale badlands). The area would continue to be managed for the protection of its relevant and important value.

Alternative A

Impacts from Visual Resources

Under this alternative, the area would be designated as VRM Class I due to its location within the Mount Ellen/Blue Hills WSA. This would preserve the existing character of the landscape by restricting surface disturbing activities, and would provide protection to the shale badlands.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Travel Management

Motorized and mechanized travel in the Gilbert Badlands area would be designated as limited to designated routes under this alternative. However, due to the topographic isolation of the area, and rough nature of the badlands, and location within the Mount Ellen/Blue Hills WSA, it is unlikely that routes would be designated across the badlands. If motorized vehicles were to drive across the badlands, damage to the geologic features could occur.

Impacts from Lands and Realty

Under this alternative, the area would not be recommended for mineral withdrawal, and acquisition of non-Federal inholdings would not be pursued. Thus, the relevant and important value of the area would not receive additional protection from lands and realty actions.

Impacts from Minerals and Energy

Impacts would be similar to those described for Alternative N except that the area would not be recommended for mineral withdrawal, so surface disturbing activities associated with locatable mineral development (and impacts to the relevant and important value of the area) could occur. However, since the area is entirely within the Mount Ellen/Blue Hills WSA, the area would be managed pursuant to the IMP, which would preclude surface disturbing activities and protect the area's relevant and important value.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

The Gilbert Badlands ACEC would not be designated under this alternative, and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. However, since this area is entirely within the Mount Ellen/Blue Hills WSA, the area would be managed pursuant to the IMP, which would protect the area's relevant and important values.

Alternative B: Preferred Alternative

Impacts from Visual Resources

Impacts would be the same as those described for Alternative A.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Travel Management

Impacts would be the same as those described for Alternative A.

Impacts from Lands and Realty

Impacts would be the same as those described for Alternative A.

Impacts from Minerals and Energy

Impacts would be the same as those described for Alternative A.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

Impacts would be the same as those described for Alternative A.

Alternatives C and D

Impacts from Visual Resources

Impacts would be similar to those described for Alternative N. The existing Gilbert Badlands ACEC would be included in the larger potential Badlands ACEC which includes additional management prescriptions for the protection of its relevant and important values.

Impacts from Livestock Grazing

Impacts would be similar to those described for Alternative N.

Impacts from Travel Management

Impacts would be similar to those described for Alternative N.

Impacts from Lands and Realty

Impacts would be similar to those described for Alternative N.

Impacts from Minerals and Energy

Impacts would be similar to those described for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Areas of Critical Environmental Concern

Impacts would be similar to those described for Alternative N.

4.5.3.2 Potential ACECs

4.5.3.2.1 Badlands Potential RNA ACEC

The Badlands Potential Research Natural Area ACEC encompasses 88,900 acres of public lands in the Caineville area of eastern Wayne County and includes the existing North and South Caineville Mesa ACECs and Factory Butte. Forty-six percent of the area is within the Mount Ellen/Blue Hills WSA. The relevant and important values of the area are scenic, special status plant species, natural processes (wind erosion), riparian and relict vegetation values.

The special status species (notably Wright fishhook cactus and Winkler pincushion cactus) and scenic relevant and important values would be threatened with irreparable damage by ground disturbance associated with cross-country off-highway vehicle use. The natural process (wind erosion) value, per se, would not be affected by OHV use, but the badlands topography and soils, the results of wind erosion, could be affected. Preliminary research suggests that the soil erosion increases between 20 and 500% in badlands areas heavily used by off-highway vehicles. Soils would be threatened with irreparable harm by OHV open area designations.

The riparian value would not be threatened with irreparable harm due to protective management, such as surface disturbance protection in riparian areas, in each alternative.

The relict vegetation relevant and important values (North and South Caineville Mesas) could be threatened with irreparable damage if these areas were made available for livestock grazing, although topography, access, and lack of water make it difficult to graze livestock on the mesa tops. Historically, limited grazing may have occurred in these areas during wet winter seasons. Making the mesas available for grazing would present some risk to the relict vegetation.

Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Visual Resources
- Special Status Species
- Non-WSA Lands with Wilderness Characteristics
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Visual Resources

Visual resource management classes within the potential ACEC vary by alternative, as shown in Table 4-46. The higher VRM Classes (I and II) would better protect the scenic values and, by limiting surface disturbing activities, also benefit other relevant and important values.

Scenery is identified as a relevant and important value of this ACEC. Although none of the lands within this potential ACEC are classified as VRM Class I, the portion within the Mount Ellen/Blue Hills WSA (40,400 acres) would be managed to meet VRM Class I objectives. This would preserve the existing character of the landscape by restricting surface disturbing activities, and would provide protection to the area. VRM Class II would protect scenic values within 77% of the area. In the remaining 23% of the area (which are managed as either VRM Class III or Class IV), activities that could adversely impact relevant and important values would be allowed.

Table 4-46. VRM Class Designations within Badlands Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Class I	Acres	0*	40,400	40,400	40,400	75,800
	% ACEC	0%	46%	46%	46%	85%
Class II	Acres	68,300	0	23,200	28,400	7,700
	% ACEC	77%*	0%	26%	32%	9%
Class III	Acres	4,000	400	3,700	4,000	500
	% ACEC	4%	0%	4%	4%	1%
Class IV	Acres	16,600	48,100	21,600	16,100	5,000
	% ACEC	19%	55%	24%	18%	5%

* By BLM policy, the portion of the potential ACEC within the Mount Ellen/Blue Hills WSA would be managed to meet VRM Class I objectives. The lands within the WSA were inventoried as VRM Class II, and are represented as such in this table.

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification or fragmentation of listed species habitat, maintaining the integrity of special status species habitat, and habitat improvements would benefit special status species. In Alternatives A, B, C and D, additional strategies (such as utilizing seasonal and spatial buffers for surface disturbing activities and complying with raptor protection guidelines for power line construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the special status species relevant and important values.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for visual resources.

Impacts from Livestock Grazing

Portions of the ACEC (North and South Caineville Mesas) would continue to be unavailable for grazing, which would continue to provide protection to the relict vegetation on the mesa tops. Grazing in the remainder of the area would be managed in accordance with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration, which would minimize impacts to the relevant and important values. There would be little to no threat to the Gilbert Badlands from livestock grazing because of topographic isolation and lack of vegetation and water within the Mancos shale badlands to support livestock. This would continue to provide protection to the relevant values of the area.

Impacts from Recreation

Under Alternative N, no SRMAs are proposed so there would be no impacts to relevant and important values. However, visitor use is expected to increase throughout the RFO. Under this alternative, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified that would limit or control recreational activities. Thus, intensively used recreation sites (such as Factory Butte) would experience impacts to vegetation and other resources. These impacts would occur from off-road vehicle use and use by large numbers of visitors in a limited space. These activities result in loss of vegetation cover and soil compaction, as well as a decrease in

riparian ecological condition. Thus, impacts to relevant and important values of this potential ACEC from recreation could continue under this alternative, or even increase as visitor use increases.

Impacts from Travel Management

OHV area designations vary by alternative, as shown in Table 4-47.

Table 4-47. OHV Area Designations within Badlands Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	Acres	40,800	40,400	2,600	0	0
	% area	46%	45%	3%	0%	0%
Limited	Acres	1,800	48,500	41,800	6,000	4,100
	% area	2%	55%	47%	7%	5%
Closed	Acres	46,300	0	44,500	82,900	84,800
	% area	52%	0%	50%	93%	95%

The greatest impacts to relevant and important values from cross-country OHV use could occur under Alternative N. Forty-six percent of the area would be designated open to OHVs, and relevant and important values would continue to be adversely impacted by vehicles running over vegetation and compacting soil. Two percent of the area would be limited and 52% would be closed to OHV use, protecting relevant and important values from ground disturbance caused by cross-country OHV use.

Impacts from Lands and Realty

Withdrawing land from mineral entry would benefit all relevant and important values by protecting them from ground disturbing activities associated with the exploration and development of locatable minerals. Under Alternative N, the proposal to withdraw North Caineville Mesa (2,200 acres) would benefit the relict vegetation value on the mesa by protecting it from ground disturbance caused by exploration and development of mineral resources. Alternative N would also propose to withdraw South Caineville Mesa (4,100 acres) and Gilbert Badlands (3,680 acres).

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Lands open to oil and gas leasing vary by alternative, as shown in Table 4-48. There would be no impacts to relevant and important values within the WSA, which is closed to oil and gas leasing. The WSA represents 46% of the potential ACEC. An additional 3% of the potential ACEC is open to leasing with no surface occupancy, which would result in minimal impacts to the relevant and important values. In the remainder of the area, impacts to relevant and important values from oil and gas leasing could occur due to surface disturbing activities.

In addition, the potential ACEC is in a portion of the RFO identified as having low development potential for oil and gas development. Few wells are expected to be drilled in this area in the next 15 to 20 years.

Table 4-48. Leasing Stipulations within Badlands Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Standard Lease Terms	Acres	25,100	47,300	24,400	0	0
	% area	28%	53%	27%	0%	0%
Controlled surface use or timing stipulations	Acres	20,000	1,200	20,200	0	0
	% area	23%	1%	23%	0%	0%
No Surface Occupancy	Acres	3,400	0	3,900	0	0
	% area	3%	0%	4%	0%	0%
Closed	Acres	40,400	40,400	40,400	88,900	88,900
	% area	46%	46%	46%	100%	100%

Leasable Minerals – Coal

There are limited coal resources within the ACEC. Under this alternative, the 2,200-acre North Caineville Mesa ACEC and the 4,100 acre South Caineville Mesa ACEC would be identified as withdrawn from consideration for leasing for surface coal mining. The remainder of the potential ACEC would be available for consideration for leasing for surface coal mining, which would cause irreparable harm to the relevant and important values in the area where surface mining occurred.

Locatable Minerals

There is potential for uranium, vanadium and copper mineralization within the area. Under Alternative N, 36% of the potential ACEC (the area outside the WSA), could be impacted by mineral exploration and development. However, difficulty of access due to location of the WSA makes development unlikely within the next 15 years. Additionally, within a designated ACEC, Federal regulations (43 CFR 3809.11 (c) (3)) require that a plan of operations be submitted for any operation causing surface disturbance greater than casual use. This regulation would mitigate the impacts of mining exploration and development on relevant and important values.

Impacts from Special Designations

Wilderness Study Areas

The potential ACEC encompasses 40,400 acres of the Mount Ellen/Blue Hills WSA. Within this area (46% of the potential ACEC), continued management of WSAs under the IMP would limit surface disturbing actions that could adversely impact relevant and important values. WSAs are closed to oil and gas leasing, precluding any impact from oil and gas development, and are managed as VRM Class I, which further restricts surface disturbing activities.

Wild and Scenic Rivers

The Fremont River between Capitol Reef National Park and the Caineville Ditch diversion was determined to be an eligible wild and scenic river. Under this alternative, managing to protect its outstandingly remarkable values would also benefit the scenic and riparian relevant and important values within the river corridor.

Areas of Critical Environmental Concern

The North and South Caineville Mesa, and Gilbert Badlands ACECs (9,980 combined acres) would be continued under Alternative N, which represent 11% of the Badlands Potential ACEC. Management of these ACECs would allow no uses that would cause irreparable damage to relevant and important values.

Alternative A

Impacts from Visual Resources

Under this alternative, the portion of the potential ACEC located within the Mount Ellen/Blue Hills WSA (40,400 acres) would be designated as VRM Class I. This would preserve the existing character of the landscape by restricting surface disturbing activities, and would provide protection to the relevant and important values. The remaining 54% of the area would be designated VRM Classes III and IV. Scenic values could be adversely impacted because the objectives for these VRM classes allow actions that can result in moderate to major landscape modification, and therefore greater surface disturbance. Among the alternatives, Alternative A would allow the greatest impacts to scenic resources.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for visual resources.

Impacts from Livestock Grazing

Under this alternative, North and South Caineville Mesas would be available for livestock grazing, which could adversely impact the relict vegetation value. However, because access and water are extremely limited on the mesa, the potential for such use is low. In addition, grazing would be managed in accordance with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration, which would minimize impacts to the relevant and important values of the area.

Impacts from Recreation

Under this alternative, the Factory Butte SRMA would include much of the proposed Badlands ACEC that is outside of the WSA. Management for cross-country OHV use would adversely impact several relevant and important values by vehicles running over vegetation, compacting soil, and possibly causing increased erosion.

Impacts from Travel Management

Forty-five percent of the area would be designated open to OHVs under Alternative A, so relevant and important values could be adversely impacted by cross-country vehicle use. Fifty-five percent of the area would be limited to OHV use, protecting relevant and important values from ground disturbance caused by cross-country OHV use.

Impacts from Lands and Realty

Under this alternative, the area would not be recommended for mineral withdrawal. Thus, the relevant and important value of the area would not receive additional protection from land and realty actions.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Lands open to oil and gas leasing are shown in Table 4-48. There would be no impacts to relevant and important values within the WSA, which is closed to oil and gas leasing. The WSA represents 46% of the potential ACEC. In the remainder of the area, impacts to relevant and important values from oil and gas leasing and development could occur due to surface disturbing activities. However, the potential ACEC is in a portion of the RFO identified as having low development potential for oil and gas development. Therefore, few wells are expected to be drilled in this area in the next 15 to 20 years. Thus, it is unlikely that surface disturbing activities from oil and gas development would occur that would impact the relevant and important values of this area.

Leasable Minerals – Coal

There are limited coal resources within the ACEC. Under this alternative, the potential ACEC would be available for consideration for leasing for surface coal mining, which would cause irreparable harm to the relevant and important values in the area where surface mining occurred.

Locatable Minerals

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Under this alternative, the Fremont River between Capitol Reef National Park and the Caineville Ditch diversion would not be recommended as suitable, with no special management to protect its outstandingly remarkable values and free-flowing nature. This would provide no additional protection to the area's relevant and important values.

Areas of Critical Environmental Concern

The potential Badlands ACEC would not be designated under this alternative, and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. However, since much of the potential ACEC (46%) is within the Mount Ellen/Blue Hills WSA, that portion of the potential ACEC would be managed pursuant to the IMP, which would protect the relevant and important values in that area.

Alternative B: Preferred Alternative

Impacts from Visual Resources

VRM Classes I and II would protect scenic values within 72% of the area. This would preserve or retain the existing character of the landscape by restricting surface disturbing activities, and would provide protection to the relevant and important values. The remaining 28% would be designated as either VRM Class III or Class IV. Scenic values could be adversely impacted because the objectives for these VRM classes allow actions that can result in moderate to major landscape modification, and therefore greater surface disturbance.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for visual resources.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Under this alternative, a 2,600-acre area north of Highway 24 would be included in the Factory Butte SRMA. This would provide for cross-country OHV use which could adversely impact all relevant and important values. In addition, the portion of the potential ACEC south of Highway 24 is included in the Henry Mountains SRMA. This SRMA would be managed for a combination of semi-primitive and motorized recreation. Managing recreation use would help protect relevant and important values from ground disturbing activities associated with recreation.

Impacts from Travel Management

Three percent of the area would be designated open to OHVs under Alternative B, so relevant and important values could be adversely impacted by cross-country vehicle use. Forty-seven percent of the area would limit OHV use to designated routes, protecting relevant and important values from ground disturbance caused by cross-country OHV use; 50% of the area would be closed to OHV use, which would result in no impacts from motorized vehicles.

Impacts from Lands and Realty

Under Alternative B, the proposal to withdraw North Caineville Mesa (2,200 acres) would benefit the relict vegetation value on the mesa by protecting it from ground disturbance caused by exploration and development of mineral resources.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Impacts would be the same as those described for Alternative N.

Leasable Minerals – Coal

There are limited coal resources within the ACEC. Under this alternative, the 2,200-acre North Caineville Mesa ACEC would be identified as withdrawn from consideration for leasing for surface coal mining. The remainder of the potential ACEC would be available for consideration for leasing for surface coal mining, which would cause irreparable harm to the relevant and important values in the area where surface mining occurred.

Locatable Minerals

Impacts would be the same as those described for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative A.

Areas of Critical Environmental Concern

Under Alternative B, the existing North Caineville Mesa ACEC (2,200 acres) would continue to be designated to protect the relict vegetation relevant and important value. The remainder of the area within the potential Badlands ACEC (including the South Caineville Mesa area) would not be designated, and no special management prescriptions would be implemented to specifically protect the relevant and important values of that area. The portion of the potential Badlands ACEC located within the WSA would continue to receive protection under the IMP.

Alternative C

Impacts from Visual Resources

Impacts would be similar to those described for Alternative B. As shown in Table 4-46, the VRM class designations between the two alternatives are very similar, the main difference being that Alternative C designates Class A scenery outside of the WSA as VRM Class II and designates fewer VRM Class IV areas, which would provide more protection to relevant and important values by allowing less surface disturbing activities.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for visual resources.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Under this alternative, the portion of the potential ACEC south of Highway 24 is included in the Henry Mountains SRMA. This SRMA would be managed for a combination of semi-primitive and motorized recreation. Managing recreation use would help protect relevant and important values from ground disturbing activities associated with recreation.

Impacts from Travel Management

Alternative C would close 93% of the area to off-highway vehicles (including the mesa tops), and would limit OHVs to designated routes in the remaining 7% of the area. This would protect relevant and important values from ground disturbances caused by this activity.

Impacts from Lands and Realty

Impacts would be similar to those described for Alternative N except that substantially more acres would be recommended for withdrawal under Alternative C. Under Alternative C, 27,800 acres would be recommended for withdrawal from mineral entry, which would protect scenic values, as well as other values, by precluding those areas from surface disturbing activities associated with locatable mineral development.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Under this alternative, the entire ACEC would be closed to oil and gas leasing, precluding any impacts from this type of activity.

Leasable Minerals – Coal

Under this alternative, the potential Badlands ACEC would be closed to leasing for coal resources, precluding any impacts from this type of activity.

Locatable Minerals

There is potential for uranium, vanadium and copper mineralization within the area. Under Alternative C, 13% of the potential ACEC could be impacted by mineral exploration and development. However, difficulty of access makes development unlikely within the next 15 years. Additionally, within a designated ACEC, Federal regulations (43 CFR 3809.11 (c) (3)) require that a plan of operations be submitted for any operation causing surface disturbance greater than casual use. This regulation would mitigate the impacts of mining exploration and development on relevant and important values.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

The Fremont River between Capitol Reef National Park and the Caineville Ditch diversion (4 miles) was determined to be an eligible wild and scenic river and recommended suitable under this alternative. Managing to protect the river's outstandingly remarkable values would also benefit the scenic and riparian relevant and important values within the river corridor portion of the potential Badlands ACEC.

Areas of Critical Environmental Concern

Under Alternative C, the Badlands ACEC and RNA would be designated on 88,900 acres of public land to protect and provide special management for the relevant and important values. In addition to the management direction associated with Alternative C related to other resource programs (described above), designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

Alternative D

Impacts from Visual Resources

This alternative provides the most protection to scenic resources of all the alternatives. Ninety-four percent of the potential ACEC would be designated as either VRM Class I or II, which would preserve or retain the existing character of the landscape by restricting surface disturbing activities. The remaining 6% of the area would be designated as either VRM Class III or IV. Scenic values in these areas could be adversely impacted because the objectives for these VRM classes allow actions that can result in moderate to major landscape modification, and therefore greater surface disturbance.

Impacts from Special Status Species

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Portions of the Mount Ellen/Blue Hills (6,214 acres), Muddy Creek/Crack Canyon (17,719 acres), Red Desert (834 acres) and Wild Horse Mesa (10,597 acres) non-WSA lands with wilderness characteristics lie within the 88,900 acre potential Badlands ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Badlands ACEC would provide an additional layer of protection for relevant and important values on 35,364 acres. Specifics are disclosed in the visual resource management, travel management, lands and realty, and minerals discussions in this section.

Impacts from Livestock Grazing

Impacts would be the same as those described for Alternative N.

Impacts from Recreation

Under Alternative D, portions of the Badlands Potential RNA ACEC would be included in the Capitol Reef Gateway, Henry Mountains and San Rafael Swell SRMAs. The proposed management direction of these SRMAs with its emphasis on primitive and semi-primitive recreation would help protect relevant and important values from ground disturbing activities associated with some types of motorized recreation.

Impacts from Travel Management

Alternative D would best protect relevant and important values from cross-country OHV use among the alternatives. Ninety-five percent of the area would be closed to OHVs and 5% of the ACEC would limit OHVs to designated routes, protecting relevant and important values from ground disturbances caused by this activity.

Impacts from Lands and Realty

Impacts would be similar to those described for Alternative C except that a much larger area (42,700 acres) would be recommended for withdrawal under Alternative D to protect scenic values. This alternative would best protect the relevant and important values from the ground disturbing activities associated with mining exploration and development.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Impacts would be the same as those described for Alternative C.

Leasable Minerals – Coal

Impacts would be the same as those described for Alternative C.

Locatable Minerals

There is potential for uranium, vanadium and copper mineralization within the area. Under Alternative D, 6% of the potential ACEC (the area outside the WSA), could be impacted by mineral exploration and development. However, difficulty of access due to location of the WSA makes development unlikely within the next 15 years. Additionally, within a designated ACEC, Federal regulations (43 CFR 3809.11 (c) (3)) require that a plan of operations be submitted for any operation causing surface disturbance greater than casual use. This regulation would mitigate the impacts of mining exploration and development on relevant and important values.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described for Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described for Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described for Alternative C.

4.5.3.2.2 Bull Creek Potential ACEC

The Bull Creek Potential ACEC encompasses 4,800 acres of public lands located in Wayne County several miles south of Hanksville. The relevant and important value is cultural resources (archaeological). None of the proposed decisions would threaten archaeological values with irreparable harm and the archaeological values could be protected without designating the area as an ACEC. However, designating the ACEC would enhance those values. Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Cultural Resources
- Travel Management
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the archaeological values of this potential ACEC.

Impacts from Cultural Resources

Under Alternatives N, A, and B, management of the Bull Creek Archaeological District would be consistent with properties listed on the National Register of Historic Places, which would protect the values for which the district was nominated. Under Alternative C, special management for the ACEC would include the following prescriptions: increase public awareness of cultural resource values; increase law enforcement presence; and if necessary, install fencing or other direct protection of important sites. These prescriptions would provide added protection for the archaeological district. Special management under Alternative D would increase public awareness of cultural resource values and increase law enforcement presence, but no fencing would be allowed in non-WSA lands with wilderness characteristics, which may not protect the archaeological district as much as Alternative C.

Impacts from Travel Management

Under all alternatives, continuing to limit vehicles to designated roads and trails would protect the cultural resources from surface disturbance caused by cross-country motor vehicle travel. In Alternative D, the 322 acres of the potential Bull Creek Archaeological District ACEC overlapping non-WSA lands with wilderness characteristics would be closed to OHV use, providing additional protection to cultural resources.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Under all alternatives, the Bull Creek Archaeological District would continue to be open to leasing subject to no surface occupancy, precluding surface disturbances.

Locatable Minerals

Under all alternatives, locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources, including cultural values. This would minimize impacts of mining activities on cultural resources. Additionally, designating the area as an ACEC (Alternatives C and D) would require the filing of a plan of operation and analyzing impacts with a site-specific environmental assessment (EA) before mineral development would be allowed.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternatives N, A, and B, no ACEC would be designated. Under Alternatives C and D, designating the Bull Creek ACEC would provide increased management emphasis for protecting cultural resources. Alternative C, special management for the ACEC, would include the following prescriptions: increase public awareness of cultural resource values; increase law enforcement presence; and if necessary, install fencing or other direct protection of important sites. Special management under Alternative D would increase public awareness of cultural resource values and increase law enforcement presence, but no fencing would be allowed in non-WSA lands with wilderness characteristics, which may not protect the archaeological district as much as Alternative C.

4.5.3.2.3 Dirty Devil/North Wash Potential ACEC

The Dirty Devil/North Wash Potential ACEC includes the Dirty Devil River and side canyons and totals 205,300 acres. It is located southeast of Hanksville in Wayne and Garfield counties. Sixty-four percent of the potential ACEC is within WSAs where management under the IMP would protect all relevant and important values from surface disturbing activities. The potential ACEC includes the existing Beaver Wash Canyon ACEC; the Dirty Devil, French Spring/Happy Canyon, and Fiddler Butte Wilderness Study Areas; and the Dirty Devil River, Beaver Wash Canyon, Larry Canyon, No Mans Canyon, Robbers Roost Canyon, Sams Mesa Box Canyon and Twin Corral Box Canyon eligible wild and scenic rivers. Relevant and important values are: scenic, cultural, paleontological, wildlife (bighorn sheep), and special status species (plant species and the Mexican spotted owl).

OHV use could adversely impact the scenic, cultural, wildlife, and special status species values if OHVs travel where these values are present. Plants could be crushed, damaged or destroyed; cultural resources could be damaged or destroyed and new trails could be established in scenic areas. OHV use could also disturb desert bighorn sheep and special status animal species. Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Vegetation
- Cultural Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Impacts from Vegetation

Under all alternatives, no surface disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the desert riparian ecosystem from surface disturbing activities, but it could restrict potentially beneficial actions such as riparian areas restoration and vegetation treatment. Buffer zones by alternative are:

- **Alternative N:** 500 feet
- **Alternatives A and B:** 330 feet
- **Alternatives C and D:** 660 feet

Impacts from Cultural Resources

Under Alternatives N, A, and B, no special management prescriptions for cultural resources (other than that already afforded by existing laws) would be provided. Alternative C, as part of the special management for the ACEC, would include the following prescriptions: increase public awareness of cultural resource values; increase law enforcement presence; and if necessary, install fencing or other direct protection of important sites. These prescriptions would provide added protection for cultural resources in the area. Special management under Alternative D would increase public awareness of cultural resource values and increase law enforcement presence, but no fencing would be allowed in non-WSA lands with wilderness characteristics, which may not protect the cultural resources in the area as much as Alternative C.

Impacts from Visual Resources

Visual resource management classes within the potential ACEC vary by alternative, as shown in Table 4-49. The higher VRM Classes (I and II) would better protect the scenic values and, by limiting surface disturbing activities, also benefit other relevant and important values. Alternative D would best protect these values by designating 99% of the area as VRM I. Alternatives B and C would protect 86 and 87%, respectively, of the potential ACEC as VRM I or II. Alternatives N and A would provide less protection for these values by designating 74% and 64%, respectively, of the potential ACEC as VRM I or II.

Table 4-49. VRM Class Designations within Dirty Devil/North Wash Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Class I	Acres	0	130,700	130,700	130,700	203,900
	% ACEC	0%	64%	64%	64%	99%
Class II	Acres	151,300	0	46,300	47,600	900
	% ACEC	74%	0%	22%	23%	<1%
Class III	Acres	22,000	64,800	5,700	5,400	100
	% ACEC	11%	31%	3%	3%	<1%
Class IV	Acres	32,000	9,800	22,600	21,600	400
	% ACEC	15%	5%	11%	10%	<1%

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification or fragmentation of listed species habitat, maintaining the integrity of special status species habitat, and habitat improvements would benefit special status species. In Alternatives A, B, C and D, additional strategies (such as utilizing seasonal and spatial buffers for surface disturbing activities and complying with raptor protection guidelines for power line construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the special status species relevant and important value.

Impacts from Fish and Wildlife

Managing desert bighorn sheep in accordance with the existing habitat management plan (HMP) would benefit this relevant and important value. The habitat management plan was specifically prepared to direct and provide for management of this wildlife species. Prohibiting the changing in class of livestock from cattle to sheep would protect the desert bighorn sheep from diseases that could be contracted from domestic sheep. Seasonal and spatial restrictions on activities within bighorn sheep habitat vary by alternative:

- **Alternatives N and A:** Implementing less seasonal or spatial restrictions on human presence or surface disturbing activity could result in greater impacts to desert bighorn sheep during critical periods, such as lambing.
- **Alternatives B, C and D:** Implementing greater seasonal and spatial restrictions on human presence or surface disturbing activities could result in benefits to desert bighorn sheep since they would be afforded protection from disturbances during critical periods. Other special status species could also benefit if they were in the same areas as the desert bighorn sheep.

Impacts from Fire and Fuels Management

Special management prescriptions associated with the ACEC (designated under Alternatives C and D) would allow no prescribed or wildland fire use in Mexican spotted owl core and nest protection areas. In addition, all wildland fires that threaten Mexican spotted owl core areas and nest protection areas would be suppressed. While these actions would minimize short-term loss of habitat from fire, these decisions would preclude habitat manipulations to improve habitat condition, which could adversely impact the Mexican spotted owl in the long-term.

Impacts from Non-WSA Lands with Wilderness Characteristics

Portions of the Dirty Devil/French Spring (58,051 acres), Fiddler Butte (12,027 acres), Flat Tops (8 acres) and Little Rockies (3,190 acres) non-WSA lands with wilderness characteristics lie within the 205,300-acre potential Dirty Devil/North Wash ACEC. No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under any alternative except Alternative D. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Dirty Devil/North Wash ACEC would provide an additional layer of protection for relevant and important values on 73,276 acres. Specifics are disclosed in the visual resource management, travel management, fluid minerals, and mineral withdrawal discussions in this section.

Impacts from Livestock Grazing

Under all alternatives, the majority of the potential ACEC would be available for livestock grazing. The North Wash drainage and the Big Ridge would continue to be unavailable for grazing in all alternatives. Beaver Wash Canyon would be unavailable for grazing in Alternatives N, C and D, which would provide additional protection of the desert riparian ecosystem. Grazing would be managed in accordance with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration, which would minimize impacts to the relevant and important values of the area.

Impacts from Recreation

The establishment of SRMAs would vary by alternative. No SRMA is proposed in Alternative N. Under Alternatives A and B, the Dirty Devil SRMA (290,000 acres) would encompass the northern two-thirds of the Dirty Devil/North Wash Potential ACEC. Under Alternatives C and D, an expanded Dirty Devil SRMA would encompass all of the potential ACEC. The Dirty Devil SRMA management emphasis on primitive and semi-primitive recreation would complement the relevant and important values by focusing recreational use and limiting development. Because the SRMA under Alternatives C and D encompasses the entire potential ACEC, it would best protect relevant and important values from the impacts of recreational use.

Impacts from Travel Management

Off-highway vehicle area designations vary by alternative, as shown in Table 4-50. Alternative N would continue to allow cross-country vehicle travel within 31% of the potential ACEC, which could adversely impact the scenic, cultural, wildlife, and special status plant species values if the OHVs traveled where these values were present. Plants could be crushed, damaged or destroyed; cultural resources could be damaged or destroyed and new trails could be established in scenic areas. OHV use could also disturb desert bighorn sheep and special status animal species. Under all action alternatives, adverse impacts from cross-country motorized travel would be virtually eliminated. Under Alternative A, vehicles would be limited to designated routes. Under Alternative B, vehicles would be limited to designated routes within 48% of the potential ACEC, and the remaining 52% would be closed to motor vehicles. Under Alternatives C and D, virtually the entire area would be closed to OHVs. Limiting OHV use would reduce the impacts to relevant and important values since use would be confined to designated routes, although there could be some impacts if relevant and important values were located on or adjacent to open routes. In closed areas, impacts to relevant and important values from OHV use would be eliminated.

Table 4-50. OHV Area Designations within Dirty Devil/North Wash Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	**Acres**	64,100	0	0	0	0
	% area	31%	0%	0%	0%	0%
Limited	**Acres**	61,500	205,300	99,600	600	500
	% area	30%	100%	49%	Negligible	Negligible
Closed	**Acres**	79,700	0	105,700	204,700	204,800
	% area	39%	0%	51%	100%	100%

Impacts from Lands and Realty

Withdrawing land from mineral entry would benefit all relevant and important values by protecting them from ground disturbing activities associated with the exploration and development of locatable minerals. A withdrawal of 47,400 acres (23% of the potential ACEC) to protect Class A scenery outside the WSAs is proposed in Alternative C as part of the ACEC designation and a withdrawal of 100,500 acres (49% of the potential ACEC) is proposed under Alternative D to protect non-WSA lands with wilderness characteristics located within the ACEC.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Lands open to oil and gas leasing varies by alternative, as shown in Table 4-51. Under all alternatives, there would be no impacts to relevant and important values within the WSAs, which are closed to oil and gas leasing by law. WSAs represent 64% of the potential ACEC.

- **Alternative N:** Under Alternative N, 29% of the potential ACEC would be open to oil and gas leasing under standard terms, and 7% would be open under controlled surface use or timing stipulations. The seasonal restriction would prohibit exploration and development April 15 through June 15 to reduce impacts to bighorn sheep during the lambing season. Among the alternatives, Alternative N would have the greatest potential of impacting relevant and important values.
- **Alternative A:** Under Alternative A, 3% of the potential ACEC would be open to oil and gas leasing under standard terms, and 33% would be open under controlled surface use or timing stipulations. Compared with Alternative N, Alternative A would reduce potential impacts to bighorn sheep by placing more land under seasonal restrictions.
- **Alternative B:** Under Alternative B, 1% of the potential ACEC would be open to oil and gas leasing under standard terms, 11% open under controlled surface use or timing stipulations (seasonal) stipulations, 22% open under major stipulations (no surface occupancy) and 66% closed to leasing (an additional 2% over WSA acreage). Compared with Alternatives N and A, Alternative B would reduce potential impacts to all relevant and important values.
- **Alternative C:** Under Alternative C, 96% of the potential ACEC would either be closed to leasing or open with no surface occupancy. The remaining 4% would be open to leasing with controlled surface use or timing (seasonal) stipulations. Given these restrictions, there would be virtually no impacts to relevant and important values.
- **Alternative D:** Under Alternative D, virtually all of the potential ACEC would be closed to leasing, precluding any impacts to relevant and important values.

In addition, the potential ACEC is in a portion of the lands managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years. Thus, it is unlikely that surface disturbing activities from oil and gas development would occur that would impact the relevant and important values of this potential ACEC.

Table 4-51. Leasing Stipulations within Dirty Devil/North Wash Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Standard Lease Terms	Acres	59,200	5,800	2,100	400	200
	% area	29%	3%	1%	Negligible	Negligible
Controlled surface use or timing stipulations	Acres	15,300	68,800	22,500	7,200	100
	% area	7%	33%	11%	4%	Negligible
No surface occupancy	Acres	100	0	44,900	32,200	700
	% area	Negligible	0%	22%	16%	Negligible
Closed	Acres	130,700	130,700	135,800	165,500	204,300
	% area	64%	64%	66%	80%	100%

Locatable Minerals

Under Alternatives N, A, and B, 36% of the potential ACEC (the area outside the WSAs) could be impacted by mineral exploration and development. Under Alternative C, 13% of the potential ACEC (the area outside the WSAs and outside proposed withdrawals) could be impacted. Under Alternative D, virtually none of the ACEC would be open to mineral exploration. There is potential for uranium, vanadium and copper mineralization within the area. There has been increasing interest in uranium adjacent to the Dirty Devil River corridor in the vicinity of Poison Spring and North Hatch Canyons, which could result in increased mineral-related activities within the potential ACEC. Within a designated ACEC, Federal regulations (43 CFR 3809.11 (c) (3)) require that a plan of operation be submitted for any operation causing surface disturbance greater than casual use. This regulation would mitigate, but not eliminate, the impacts of mining exploration and development on relevant and important values in Alternatives C and D.

Salable Minerals

Under Alternatives N and A, the effects of mineral material sales on relevant and important values would be determined on a case-by-case basis. Under Alternatives B and C, no material sales would be allowed in Class A Scenery areas, resulting in no surface disturbance and no impact to the relevant and important scenic values. Under Alternative D, no mineral material sales would be allowed within the ACEC. The effect of mineral material sales on relevant and important values outside the Class A Scenery would be determined on a case-by-case basis.

Impacts from Special Designations

Wilderness Study Areas

The potential ACEC encompasses 130,700 acres of wilderness study areas, including all of the Dirty Devil and French Spring/Happy Canyon WSAs and part of the Fiddler Butte WSA. Within the WSAs, which represent 64% of the potential ACEC, relevant and important values would be protected from ground disturbing activities by management under the IMP to protect the wilderness characteristics of the area.

Wild and Scenic Rivers

Wild and scenic river designations, by alternative, are shown in Table 4-52. Seven eligible wild and scenic rivers are within the potential ACEC and recommended suitable under Alternatives C and D: Dirty Devil River, Beaver Wash Canyon, Larry Canyon, No Mans Canyon, Robbers Roost Canyon, Sams Mesa Box Canyon, and Twin Corral Box Canyon. Protecting the river-related outstandingly remarkable values of all segments under Alternatives N, C and D would also protect relevant and important values within about 19% of the potential ACEC. Protecting the river-related outstandingly remarkable values of the Dirty Devil River under Alternative B would also protect the relevant and important values within 8% of the ACEC. However, most of these river segments are within WSAs, so management to protect the river values would add little or no additional protection for the ACEC values over what is afforded by WSA management direction.

Table 4-52. Eligible/Suitable Wild and Scenic Rivers within Dirty Devil/North Wash Potential ACEC

		Eligible	Suitable		
Eligible/ Suitable Rivers		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternatives C and D
Eligible/ Suitable Rivers	# of segments	7	0	1	7
	River miles	121	0	54	121
	Acres	38,400	0	17,280	38,400
	% potential ACEC	19%	0%	8%	19%

Areas of Critical Environmental Concern

Under Alternative A, no ACEC would be designated. Under Alternative N, the existing Beaver Wash Canyon ACEC (4,800 acres) would continue to be designated to protect its unique desert riparian ecosystem. Under Alternatives C and D, Dirty Devil/North Wash ACEC would be designated on 205,300 acres of public land to protect and provide special management for the relevant and important values. In addition to management direction associated with Alternatives C and D described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

4.5.3.2.4 Fremont Gorge/Cockscomb Potential ACEC

The Fremont Gorge/Cockscomb Potential ACEC is located on public lands west of Capitol Reef National Park in the Torrey-Teasdale-Grover area of central Wayne County. The potential ACEC totals 34,300 acres and includes the Fremont Gorge WSA and Fremont Gorge and Fish Creek eligible wild and scenic rivers. Relevant and important values are cultural, scenic, riparian, plant and wildlife (mule deer).

Some vegetation manipulation activities, which would benefit the mule deer, could be restricted by vegetation (riparian) decisions, and VRM Class I and II management objectives. Designation of areas as open to OHVs would threaten all relevant and important values, possibly with irreparable damage.

Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation (Riparian)
- Visual Resources
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Impacts from Vegetation

Under all alternatives, no surface disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface disturbing activities, but it could restrict potentially beneficial actions such as riparian areas restoration and vegetation treatment. Buffer zones by alternative are:

- **Alternative N:** 500 feet
- **Alternatives A and B:** 330 feet
- **Alternatives C and D:** 660 feet

Impacts from Visual Resources

Visual resource management classes within the potential ACEC, by alternative, are shown in Table 4-53. The higher VRM Classes (I and II) would best protect the scenic values and, by limiting surface disturbing activities, also benefit the cultural and riparian values. Alternative D would best protect these values by designating 59% of the potential ACEC as VRM Class I or II. Alternative C would designate 22% of the potential ACEC as VRM Class I or II and Alternative B would designate 17% as VRM I or II. Conversely, the lower VRM Classes (III and IV) would permit greater flexibility in vegetation management, a benefit to the mule deer value. Alternatives N and A, which designate 92% and 91%, respectively, of the potential ACEC as VRM III or IV would least restrict vegetation management activities.

Table 4-53. VRM Class Designations within Fremont Gorge/Cockscomb Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Class I	Acres	0	2,800	2,800	2,800	18,700
	% ACEC	0%	8%	8%	8%	55%
Class II	Acres	2,800	0	2,900	4,700	1,300
	% ACEC	8%	0%	9%	14%	4%
Class III	Acres	11,400	15,700	9,000	26,800	14,200
	% ACEC	33%	46%	26%	78%	41%
Class IV	Acres	20,100	15,800	19,600	0	0
	% ACEC	59%	46%	57%	0%	0%

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Fremont Gorge/Cockscomb ACEC would provide an additional layer of protection for relevant and important values on 15,941 acres. Specifics are disclosed in the visual resource management, travel, lands and realty, and minerals discussions in this section. However, some of the prescriptions associated with protecting wilderness characteristics could limit opportunities for managing vegetation for the mule deer relevant and important value.

Impacts from Recreation

SRMAs within the potential ACEC vary by alternative. No SRMAs are proposed within the potential ACEC in Alternatives N and A; hence there would be no impacts to relevant and important values from SRMA identification under these alternatives. In Alternatives B, C and D, the Capitol Reef Gateway SRMA would overlap 37% (12,800 acres) of the potential ACEC east of Highway 12 and west of Capitol Reef National Park. Identifying the SRMA for primitive and semi-primitive motorized and non-motorized recreation would, in and of itself, have no impact on the relevant and important values. However, the management of recreational uses associated with the SRMA could help protect relevant and important values in portions of the potential ACEC.

Impacts from Travel Management

Off-highway vehicle area designations within the potential ACEC vary by alternative, as shown in Table 4-54. The ground disturbance caused by cross-country vehicle travel within open areas would adversely impact all relevant and important values. Additionally, vehicle travel cross-country would harass mule deer. Adverse impacts would be the greatest in Alternatives N and A, which designate 85% and 43% of the potential ACEC as open to cross-country vehicle use. Adverse impacts would be reduced in areas limited or closed to OHV use. Alternatives B, C and D would protect relevant and important values by designating no open areas within the potential ACEC.

Table 4-54. OHV Area Designations within Fremont Gorge/Cockscomb Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	Acres	29,200	14,700	0	0	0
	% area	85%	43%	0%	0%	0%
Limited	Acres	2,800	19,600	32,800	11,100	13,900
	% area	8%	57%	95%	32%	41%
Closed	Acres	2,300	0	1,500	23,200	20,400
	% area	7%	0%	5%	68%	59%

Impacts from Lands and Realty

Lands identified as available for sale under FLPMA Section 203 vary by alternative. Under Alternatives A and B, 2,300 acres (7% of the potential ACEC) are identified as available for possible sale. No lands within the potential ACEC are identified as available for sale under the other alternatives. Impacts to relevant and important values would be as follows:

- **Cultural and Riparian:** Impacts to these values would be assessed in site-specific environmental analysis conducted prior to the sale of any parcel. Lands with high-value cultural or riparian values would likely not be offered for sale.
- **Scenery:** By and large, the lands identified for sale include no Class A scenery, so sales of land would have no impact on the scenic relevant and important value.
- **Mule Deer:** All lands within the potential ACEC are identified as crucial mule deer habitat. Any sale of land within the potential ACEC would result in a loss of habitat in Federal ownership. Actual impacts to mule deer populations and habitat would depend upon the acreage sold and how the land is used and developed after it leaves Federal ownership.

Withdrawing land from mineral entry would benefit all relevant and important values by protecting them from ground disturbing activities associated with the exploration and development of locatable minerals. Alternative C proposes withdrawing 4,500 acres (14% of the potential ACEC). Alternative D proposes withdrawing 17,300 acres (50% of the potential ACEC).

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Lands open to oil and gas leasing varies by alternative, as shown in Table 4-55. Alternative N would provide the least protection to relevant and important values by leaving 48% open to oil and gas leasing with standard terms. All of the action alternatives would protect the mule deer relevant and important value from being impacted by oil and gas leasing by placing seasonal restrictions on large portions of the potential ACEC (40% to 92%). Alternative D would best protect scenic, cultural and riparian relevant and important values from ground disturbance caused by oil and gas exploration and development by closing or allowing no surface occupancy within 60% of the potential ACEC. It is important to note that the potential ACEC is within a portion of the lands managed by the RFO identified as having low potential for oil and gas development, so the likelihood of any impact from these activities on any relevant and important value would be small.

Table 4-55. Oil and Gas Leasing Stipulations within Fremont Gorge/Cockscomb Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Standard Lease Terms	Acres	16,400	0	0	0	0
	% area	48%	0%	0%	0%	0%
Controlled surface use or timing stipulations	Acres	11,600	31,500	30,000	26,700	13,800
	% area	34%	92%	87%	78%	40%
No Surface Occupancy	Acres	3,500	0	1,500	3,100	1,600
	% area	10%	0%	5%	9%	5%
Closed	Acres	2,800	2,800	2,800	4,500	18,900
	% area	8%	8%	8%	13%	55%

Impacts from Special Designations

Wilderness Study Areas

Managing the Fremont Gorge WSA (8% of the potential ACEC) to protect its wilderness characteristics under the IMP would generally benefit all relevant and important values by limiting ground disturbing activities.

Wild and Scenic Rivers

Wild and scenic river designations vary by alternative, as shown in Table 4-56. Two eligible wild and scenic river segments are within the potential ACEC: Fremont Gorge, five miles and Fish Creek, one-quarter mile. Managing to protect the river-related outstandingly remarkable values of both segments under Alternatives N, C and D, and the Fremont Gorge under Alternative B would also protect the

relevant and important values within about 5% of the potential ACEC. No suitable wild and scenic rivers are proposed under Alternative A.

Table 4-56. Eligible/Suitable Wild and Scenic Rivers within Fremont Gorge/Cockscomb Potential ACEC

		Eligible	Suitable		
		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternatives C and D
Eligible/Suitable Rivers	# of segments	2	0	1	2
	River miles	5.25	0	5	5.25
	Acres	1680	0	1600	1680
	% area	5%	0%	5%	5%

Areas of Critical Environmental Concern

Under Alternatives N, A and B, no ACEC would be designated. Under Alternatives C and D, Fremont Gorge/Cockscomb ACEC would be designated on 34,300 acres of public land in Wayne County. In addition to management direction for other resource programs associated with Alternatives C and D (described above), designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

4.5.3.2.5 Henry Mountains Potential ACEC

The Henry Mountains Potential ACEC is located in the Henry Mountains south of Hanksville and totals 288,200 acres. Forty-five percent of the potential ACEC is within the Mount Hillers, Mount Pennell, and Bull Mountain WSAs and the southern portion of the Mount Ellen/Blue Hills WSA. Relevant and important values are scenic, wildlife (bison and mule deer), special status species (Townsend's big-eared bat, ferruginous hawk, burrowing owl, hole-in-the-rock prairie clover, Dana's milkvetch, Barneby milkvetch), and ecological values (riparian areas and relict vegetation).

The portion of the potential ACEC that is within WSAs would be managed under the IMP, which would protect the relevant and important values from surface disturbing activities. Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation and Fire and Fuels Management
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy

- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Impacts from Vegetation and Fire and Fuels Management

Managing vegetation and fire and fuels could enhance bison and deer habitat and riparian values, and could adversely impact scenic, cultural, and special status species values. Under Alternatives N and A, managing vegetation with a full range of tools – mechanical, biological, manual, fire and chemical – would have beneficial impacts on deer and bison habitat but could have adverse impacts on scenic values. Under Alternatives C and D, utilizing only natural processes to treat vegetation could limit the success of treatments, adversely impacting bison and mule deer values. Under Alternative B, a full-range of tools would be permitted and more of the potential ACEC would be designated as VRM Class II, balancing impacts to wildlife and scenic values.

Vegetation and fire and fuels treatments could have indirect impacts on cultural resources from increased erosion and displacement and destruction of surface artifacts and, in some cases, destruction of surface and buried structures and features. Overall impacts from vegetation management would result in direct and indirect impacts to cultural resources, which could be partially mitigated during compliance with NEPA and Section 106 of the NHPA. Projects would be redesigned to avoid historic properties or those eligible for or listed on the NRHP, thus mitigating some of the direct and indirect impacts.

Vegetation treatment methods include mechanical, prescribed fire, and chemical treatments. Surface disturbing activities, such as the use of heavy equipment, cause crushing and mortality of individual plants and alter habitat. The use of herbicides or pesticides in occupied habitat could render the habitat unsuitable for use by some species. Chemical weed controls could also affect potential pollinators of special status plant species by eliminating their habitat.

Removing vegetation with heavy equipment could temporarily reduce potential breeding and nesting habitats. Human disturbance and noise associated with the use of heavy equipment could also temporarily displace special status bird species from foraging and nesting habitats. For example, the Southwestern willow flycatcher and the yellow-billed cuckoo have been known to nest in tamarisk and Russian olive. Vegetation treatments to remove these invasive plant species could result in habitat loss and disrupt nesting and foraging behavior.

Under all alternatives, no surface disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface disturbing activities, but it could restrict potentially beneficial actions such as riparian areas restoration and vegetation treatment. Buffer zones by alternative are:

- **Alternative N:** 500 feet
- **Alternatives A and B:** 330 feet
- **Alternatives C and D:** 660 feet

Impacts from Visual Resources

Visual resource management classes within the potential ACEC, by alternative, are shown in Table 4-57. The higher VRM Classes (I and II) would better protect the scenic values and, by limiting surface disturbing activities, also benefit other values. Alternative D would best protect these values by

designating 86% of the potential ACEC as VRM Class I or II, followed by Alternative C which would designate 64% of the potential ACEC as VRM Class I or II, and Alternative B which would designate 60% as VRM I or II. Conversely, the lower VRM Classes (III and IV) would permit greater flexibility in vegetation management, a benefit to the mule deer and bison value. Alternatives N and A, which designate 56% and 55%, respectively, of the potential ACEC as VRM Class III or IV would least restrict vegetation management activities.

Table 4-57. VRM Class Designations within Henry Mountains Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Class I	Acres	0	130,000	130,000	130,000	222,500
	% ACEC	0%	45%	45%	45%	78%
Class II	Acres	127,600	0	43,900	54,200	23,200
	% ACEC	44%	0%	15%	19%	8%
Class III	Acres	43,300	34,700	0	24,600	15,100
	% ACEC	15%	12%	0%	8%	5%
Class IV	Acres	117,300	123,500	114,300	79,400	27,400
	% ACEC	41%	43%	40%	28%	9%

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification or fragmentation of listed species habitat, maintaining the integrity of special status species habitat, and habitat improvements would benefit special status species. In Alternatives A, B, C and D, additional strategies (such as utilizing seasonal and spatial buffers for surface disturbing activities and complying with raptor protection guidelines for power line construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the special status species relevant and important values.

Impacts from Fish and Wildlife

Management actions for the benefit of bison and mule deer would benefit those relevant and important values. These management prescriptions and seasonal and spatial restrictions on activities with the potential ACEC vary by alternative:

- **Alternative N:** This alternative would provide no special management for Henry Mountains bison or mule deer. Current seasonal closures to OHV use on Swap Mesa and Cave Flat and restrictions of oil and gas activities in crucial bison and mule deer habitat during sensitive seasons would benefit the relevant and important values of bison and mule deer. These seasonal restrictions would protect fewer acres and for a shorter time frame than Alternatives B, C and D.
- **Alternative A:** Implementing the fewest specific management prescriptions and seasonal or spatial restrictions on human presence or surface disturbing activities could result in greater impacts to mule deer and bison during critical periods. There would be no special management for Henry Mountains bison or mule deer. Seasonal or spatial restrictions on surface disturbing activity could be added as mitigation but would not be required. However, limiting OHV use to designated routes in crucial bison habitat and allowing the use of prescriptive grazing to favor

forage production for big game crucial winter range would benefit habitats and the relevant and important values of bison and mule deer.

- **Alternative B:** Alternative B would provide more specific management prescriptions and seasonal or spatial restrictions on human presence or surface disturbing activities than Alternatives N and A, but less than Alternatives C and D. A habitat management plan for bison, mule deer and other big game species within the Henry Mountains area would be developed and prescriptive grazing would be used to favor forage production for big game high-priority and crucial winter range. OHV use would be limited to designated routes in mule deer and bison crucial habitat and seasonal restrictions of surface disturbing activities would be required in crucial bison, and crucial and high value mule deer habitats.
- **Alternatives C and D:** Implementing additional management prescriptions in support of the potential ACEC and greater seasonal and spatial restrictions on human presence or surface disturbing activities could result in benefits to the relevant and important values of mule deer and bison. Under Alternative C and D, prescriptive grazing would be used to favor forage production for big game ranges. Manipulation of habitat and range improvements (outside of non-WSA lands with wilderness characteristics in Alternative D) would be allowed to benefit wildlife. A HMP would be developed for bison and mule deer within the ACEC. OHV use in deer crucial winter range and crucial bison habitat would be limited to designated routes or closed, with the largest acres closed to OHV use in Alternative D. Seasonal restrictions would apply to surface disturbing activities in crucial bison, and crucial and high value mule deer habitats. Alternatives C and D would provide the greatest protection for the relevant and important values of mule deer and bison.

Impacts from Non-WSA Lands with Wilderness Characteristics

All of the Mount Hillers (1,757 acres) and portions of the Bull Mountain (2,821 acres), Mount Ellen/Blue Hills (17,771 acres), Mount Pennell (45,731 acres) and Ragged Mountain (24,408 acres) non-WSA lands with wilderness characteristics lie within the 288,200 acre potential Henry Mountains ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Henry Mountains ACEC would provide an additional layer of protection for relevant and important values on 92,488 acres. Specifics are disclosed in the vegetation, visual resource management, travel, lands and realty (withdrawals), and minerals discussions in this section.

Impacts from Forestry and Woodland Products

Allowing for the harvest of forest and woodland products in the Henry Mountains outside the WSAs could have an adverse impact on scenery (Class A) due to potential changes in the landscape character. These potential impacts would be greater with commercial harvest of timber and woodland products than with smaller scale non-commercial harvesting of woodland products for personal use. There could be short-term impacts to riparian and other relevant and important values from surface disturbances associated with harvesting activities. Effects would be determined in site-specific environmental analysis and mitigating measures would likely be developed. Proposed decisions for areas open to forest and woodland products harvest vary by alternative:

- **Alternative N:** No commercial timber harvesting would be allowed within the Henry Mountains. Non-commercial use of woodlands products outside WSAs by permit would continue. Demand for these products has been low and mostly occurs within seeding areas where continued harvest of woodland products is beneficial to maintenance of these areas for wildlife. Potential impacts to the relevant and important values would be low.
- **Alternatives A and B:** Commercial and non-commercial harvesting of forest and woodland products would be allowed (outside WSAs) where feasible, sustainable and compatible with restoring, maintaining or improving forest health. This could indirectly benefit wildlife species

by improving habitat conditions. If demand for products increased, potential impacts to scenic values would be greatest under these alternatives.

- **Alternative C:** No commercial timber harvest would be allowed. Commercial and non-commercial use of forest and woodland products would continue outside WSAs, where feasible, sustainable and compatible with restoring, maintaining or improving forest health. Impacts would be similar to Alternative N.
- **Alternative D:** Prohibiting commercial and non-commercial use of forest and woodland products (including timber harvesting in the Henry Mountains) would result in no impacts to relevant and important values caused by this activity, but would preclude any wildlife habitat improvements that could result from harvest.

Impacts from Livestock Grazing

Under all alternatives, implementing the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration and maintaining or improving rangeland productivity would be beneficial to mule deer, bison, and riparian relevant and important values.

Impacts from Recreation

The establishment of SRMAs would vary by alternative. No SRMA is proposed in Alternatives N or A so there would be no impact to relevant and important values. Under Alternatives B, C and D, the Henry Mountains SRMA (533,900 acres) would encompass all of the Henry Mountains Potential ACEC. Management emphasis on primitive and semi-primitive recreation would complement the relevant and important values by focusing recreational use and limiting development and surface disturbing activities.

Impacts from Travel Management

Off-highway vehicle area designations, by alternative, are shown in Table 4-58. Cross-country OHV use could adversely impact the scenic, riparian, and special status plant species values if OHVs traveled where these values were present. Plants could be crushed, damaged or destroyed, cultural resources could be damaged or destroyed, and new trails could be established in scenic areas. OHV use could also disturb bison and mule deer.

- **Alternative N:** Fifty-four percent of the potential ACEC would continue to be open to cross-country motorized travel, adversely impacting scenic, wildlife (bison and mule deer), special status species, and ecological values if the OHVs traveled in the areas where these values are present. Plants could be crushed and damaged or destroyed, and new trails could be established in areas containing Class A scenery. In closed areas (12%), relevant and important values would benefit since OHV use and associated surface disturbances and human caused disruptions would be essentially eliminated. Seasonal OHV closures on Cave Flat and Swap Mesa would continue to benefit bison by reducing human disturbances during the critical winter period.
- **Alternatives A and B:** Off-highway vehicles would be limited to designated routes within the entire potential ACEC which would reduce impacts on relevant and important values compared with Alternative N.
- **Alternative C:** Off-highway vehicles would be limited to designated routes within 28% of the potential ACEC. Seventy-two percent of the area would be closed to off-highway vehicle use, which would reduce impacts on relevant and important values compared to Alternatives N, A and B.
- **Alternative D:** Off-highway vehicles would be limited to designated routes within 20% of the potential ACEC. Eighty percent of the area would be closed to off-highway vehicle use. Among the alternatives, Alternative D would best protect relevant and important values from ground disturbance and harassment caused by off-highway vehicles.

Table 4-58. OHV Area Designations within Henry Mountains Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	Acres	155,800	0	0	0	0
	% area	54%	0%	0%	0%	0%
Limited	Acres	98,000	288,200	288,200	81,000	57,800
	% area	34%	100%	100%	28%	20%
Closed	Acres	34,400	0	0	207,200	230,400
	% area	12%	0%	0%	72%	80%

Impacts from Lands and Realty

Withdrawing land from mineral entry would benefit all relevant and important values by protecting them from ground disturbing activities associated with the exploration and development of locatable minerals. A withdrawal of 53,400 acres (19% of the potential ACEC) to protect Class A scenery outside the WSAs is proposed in Alternative C as part of the ACEC designation and a withdrawal of 115,400 acres (40% of the potential ACEC) is proposed in Alternative D to protect the non-WSA lands with wilderness characteristics.

Impacts from Minerals and Energy

Leasable Minerals – Oil and Gas

Lands open to oil and gas leasing varies by alternative, as shown in Table 4-59. Under all alternatives, there would be no impacts to relevant and important values within the WSAs, which are closed to oil and gas leasing by law. WSAs represent 45% of the potential ACEC.

- **Alternative N:** Under Alternative N, 37% of the potential ACEC would be open to oil and gas leasing under standard terms and 18% would be open to leasing subject to controlled surface use and/or timing stipulations where exploration and development activities would be restricted in portions of the deer and bison range during the winter and spring. Among the alternatives, Alternative N would have the greatest potential to impact all relevant and important values.
- **Alternative A:** Under Alternative A, 55% of the potential ACEC would be open to oil and gas leasing subject to controlled surface use and/or timing restrictions where exploration and development activities would be restricted in the deer and bison range during the winter and spring. Compared with Alternative N, Alternative A would reduce impacts to bison and mule deer by placing more land under seasonal restrictions.
- **Alternative B:** Under Alternative B, 40% of the potential ACEC would be open to oil and gas leasing under controlled surface use or timing (seasonal) stipulations and 15% open under major stipulations (no surface occupancy) Compared with Alternatives N and A, Alternative B would reduce potential impacts to all relevant and important values.
- **Alternative C:** Under Alternative C, 37% of the potential ACEC would be open to oil and gas leasing subject to controlled surface use and/or timing limitations. The remainder of the potential ACEC would either be open to leasing with no surface occupancy (6%) or closed to leasing (57%; 12% in addition to WSAs), reducing impacts to relevant and important values compared with Alternative N, A and B.
- **Alternative D:** Under Alternative D, 83% of the potential ACEC would be closed to oil and gas leasing. Among the alternatives, Alternative D would best protect the relevant and important

values from surface disturbance and harassment caused by oil and gas exploration and development.

In addition, the potential ACEC is in a portion of the lands managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years.

Table 4-59. Leasing Stipulations within Henry Mountains Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Standard Lease Terms	Acres	105,700	200	200	0	0
	% area	37%	Negligible	Negligible	0%	0%
Controlled surface use or timing stipulations (seasonal)	Acres	51,700	158,000	114,300	106,200	43,500
	% area	18%	55%	40%	37%	15%
No Surface Occupancy	Acres	800	0	43,700	17,200	5,200
	% area	Negligible	0%	15%	6%	2%
Closed	Acres	130,000	130,000	130,000	164,800	239,500
	% area	45%	45%	45%	57%	83%

Leasable Minerals – Coal

Development of coal resources, particularly surface mining, could adversely impact all relevant and important values. In the Henry Mountains coal field, 8,134 acres of coal resources acceptable for leasing by underground mining methods and 3,013 acres acceptable for surface mining methods would be closed to leasing due to the management of the Henry Mountains and Badlands ACECs. Closing these public lands to coal leasing would preclude exploration and development of coal resources within those portions of the ACECs, thus eliminating the potential for impacts to relevant and important values.

Locatable Minerals

Exploration and development of locatable minerals could impact relevant and important values sensitive to surface disturbance and harassment, including scenic values. The development of gold and copper (if found in economic quantities in the Henry Mountains) is possible, though probably on a small scale. Development is most likely in the Bromide Basin/Crescent Creek area. There is also potential for uranium development in the southern half of the Henry Mountains. Potential impacts would be mitigated under Alternatives C and D because plans of operations are required for mineral development within ACECs. Impacts to relevant and important values through direct ground disturbance and harassment of wildlife would be greatest under Alternatives N and A, less under Alternatives B and C (where 19% of the potential ACEC is proposed for withdrawal from mineral entry) and least under Alternative D (where 40% of the potential ACEC is proposed for withdrawal from mineral entry).

Salable Minerals

Under Alternatives N and A, the effects of mineral material sales on relevant and important values would be determined on a case-by-case basis. Under Alternatives B, C, and D, no material sales would be

allowed in Class A scenery areas, resulting in no surface disturbance and no impact to the relevant and important scenic value. The effects of mineral material sales on relevant and important values outside the Class A scenery would be determined on a case-by-case basis.

Impacts from Special Designations

Wilderness Study Areas

The potential ACEC encompasses 130,000 acres of WSAs, including all of the Mount Hillers, Mount Pennell and Bull Mountain WSAs and the southern portion of the Mount Ellen/Blue Hills WSA. Within the WSAs, which represent 45% of the potential ACEC, relevant and important values would be protected from ground disturbing activities by management under the IMP, which requires BLM to protect these areas' suitability for wilderness.

Wild and Scenic Rivers

The only eligible wild and scenic river within the potential ACEC is a portion of Maidenwater Creek. Due to the small portion of the potential ACEC encompassed by Maidenwater Creek, neither recommending nor not recommending it as a suitable wild and scenic river would have any perceptible impact on any relevant and important values.

Areas of Critical Environmental Concern

Under Alternatives N, A, and B, no ACEC would be designated. Under Alternatives C and D, the Henry Mountains ACEC would be designated on 288,200 acres of public land to protect and provide special management for the relevant and important values. In addition to management direction associated with Alternatives C and D described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

4.5.3.2.6 Horseshoe Canyon Potential ACEC

The Horseshoe Canyon Potential ACEC includes Horseshoe Canyon, a tributary to the Green River, and totals 40,900 acres. It is located in northeastern Wayne County. It includes portions of the Horseshoe Canyon North and Horseshoe Canyon South WSAs. Relevant and important values are scenic, cultural (Cowboy Cave), special status species (Townsend's big-eared bat), and riparian. Ninety-two percent of the potential ACEC is within WSAs where management under the IMP would protect all relevant and important values from surface disturbing activities. Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation (Riparian)
- Visual Resources
- Special Status Species
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Impacts from Vegetation

Under all alternatives, no surface disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts can be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Buffer zones by alternative are:

- **Alternative N:** 500 feet
- **Alternatives A and B:** 330 feet
- **Alternatives C and D:** 660 feet

Impacts from Visual Resources

Visual resource management classes within the potential ACEC, by alternative, are shown in Table 4-60. The higher VRM Classes (I and II) would better protect the scenic values and, by limiting surface disturbing activities, also benefit other relevant and important values. Alternative D would best protect the scenic values. However, because most of the potential ACEC is within the Horseshoe Canyon WSA, scenic values would be protected under any of the alternatives.

Table 4-60. VRM Class Designations within the Horseshoe Canyon Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Class I	Acres	0	37,800	37,800	37,800	40,800
	% ACEC	0%	92%	92%	92%	100%
Class II	Acres	40,400	0	2,900	2,900	100
	% ACEC	99%	0%	7%	7%	Negligible
Class III	Acres	500	3,100	200	200	0
	% ACEC	1%	8%	<1%	<1%	0%
Class IV	Acres	0	0	0	0	0
	% ACEC	0%	0%	0 %	0%	0%

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification or fragmentation of listed species habitat, maintaining the integrity of special status species habitat, and habitat improvements would benefit special status species. In Alternatives A, B, C and D, additional strategies (such as utilizing seasonal and spatial buffers for surface disturbing activities and complying with raptor protection guidelines for power line construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the special status species relevant and important value.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Horseshoe Canyon South (2,934 acres) and Labyrinth Canyon (1 acre) non-WSA lands with wilderness characteristics lie within the 40,900 acre (RFO portion only) potential Horseshoe Canyon ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Horseshoe Canyon potential ACEC would provide an additional layer of protection for relevant and

important values on 2,935 acres. Specifics are disclosed in the visual resources, travel management, minerals and energy, and lands and realty discussion in this section.

Impacts from Recreation

No SRMA is proposed in Alternative N, but under Alternatives A, B, C and D the Dirty Devil SRMA would encompass the Horseshoe Canyon Potential ACEC. The Dirty Devil SRMA management emphasis on primitive and semi-primitive recreation would complement the relevant and important values by focusing recreational use and limiting development.

Impacts from Travel Management

Off-highway vehicle use would not threaten relevant and important values under any of the alternatives for several reasons. First, no OHV open areas are proposed under any of the alternatives, precluding impacts from cross-country OHV use. Second, only seven miles of open motorized routes were inventoried, a nominal amount in such a large area. These routes would remain open under Alternatives N, A, and B and be reduced to two miles of open routes under Alternatives C and D. Third, much of the terrain within the potential ACEC is too rugged to be accessible to vehicles in any case. OHV area designations by alternative are shown in Table 4-61.

Table 4-61. OHV Area Designations within the Horseshoe Canyon Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternatives C and D
Open	Acres	0	0	0	0
	% area	0%	0%	0%	0%
Limited	Acres	40,900	40,900	32,800	100
	% area	100%	100%	80%	<1%
Closed	Acres	0	0	8,100	40,800
	% area	0%	0%	20%	>99%

Impacts from Lands and Realty

Under Alternatives N, A, and B, proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in Federal ownership, having a beneficial or adverse impact on relevant and important values that would be determined in site-specific environmental analysis. Under Alternatives C and D, proposed decisions for land tenure adjustments would benefit all relevant and important values by keeping the land in Federal ownership and protecting it from development. Also under Alternative D, proposed withdrawal from mineral entry of the 2,900 acres outside the WSA (to protect the non-WSA lands with wilderness characteristics) would protect relevant and important values from surface disturbance caused by mineral exploration and development.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Under Alternatives N, A, B and C, 92% of the potential ACEC (the portion within the WSA) would be closed to oil and gas leasing, precluding any impacts from oil and gas exploration or development activities. Oil and gas stipulations in the area outside the WSA vary by alternative, as shown in Table 4-62 below. Alternatives N and A would allow oil and gas exploration and development within 8% of the potential ACEC, which could impact relevant and important values. Impacts to values would be unlikely under Alternatives B and C, which place restrictions (no surface occupancy) on most or all of the ACEC

outside the WSA. Impacts from oil and gas leasing would be precluded under Alternative D, which closes all but a small portion of the potential ACEC to oil and gas leasing.

Table 4-62. Leasing Stipulations within the Horseshoe Canyon Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Standard Lease Terms	Acres	3,100	0	0	0	0
	% area	8%	0%	0%	0%	0%
Controlled surface use or timing stipulations	Acres	0	3,100	300	0	0
	% area	0%	8%	1%	0%	0%
No Surface Occupancy	Acres	0	0	2,800	3,100	100
	% area	0%	0%	7%	8%	Negligible
Closed	Acres	37,800	37,800	37,800	37,800	40,800
	% area	92%	92%	92%	92%	100%

Locatable Minerals

Under all alternatives, only 8% of the potential ACEC could be impacted by mineral exploration and development (because the remainder is within the WSA). Under Alternative C, the area outside the WSA, but within the ACEC, would be subject to Federal regulations (43 CFR 3809.11 (c)(3)) requiring that a plan of operation be submitted for any operation causing surface disturbance greater than casual use. Due to the remoteness and low mineral potential within the area, it would be unlikely that mining activity would impact the relevant and important values. Under Alternative D, 2,900 acres outside the WSA would be proposed for withdrawal from mineral entry to protect non-WSA lands with wilderness characteristics, which would also protect relevant and important values.

Impacts from Special Designations

Wilderness Study Areas

The potential ACEC encompasses 37,800 acres of the Horseshoe Canyon WSA. Within the WSA, which represents 92% of the potential ACEC, relevant and important values would be protected from ground disturbing activities by management under the IMP.

Areas of Critical Environmental Concern

Under Alternatives N, A, and B, no ACEC would be designated. Under Alternatives C and D, the Horseshoe Canyon ACEC would be designated on 40,900 acres of public land to protect and provide special management for the relevant and important values. In addition to management direction associated with Alternative C described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

4.5.3.2.7 Kingston Canyon Potential ACEC

The Kingston Canyon Potential ACEC encompasses 22,100 total acres of public lands located in the side canyons north and south of the Sevier River between the towns of Kingston and Antimony in Sevier County. Relevant and important values are mule deer, mule deer habitat, and riparian areas.

Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation
- Fish and Wildlife
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Travel Management
- Lands and Realty
- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Impacts from Vegetation

Under all alternatives, no surface disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface disturbing activities, but it could restrict potentially beneficial actions such as riparian areas restoration and vegetation treatment. Buffer zones by alternative are:

- **Alternative N:** 500 feet
- **Alternatives A and B:** 330 feet
- **Alternatives C and D:** 660 feet

Impacts from Fish and Wildlife

Fish and wildlife management actions for the benefit of mule deer and their habitat would benefit those relevant and important values. These management prescriptions and seasonal and spatial restrictions on activities with the potential ACEC vary by alternative:

- **Alternative N:** A seasonal restriction on oil and gas exploration and development would be required in crucial and high value mule deer habitat during sensitive seasons, such as fawning. These seasonal restrictions would provide greater protection for the mule deer and habitat relevant and important values than Alternative A, but less than under Alternatives B, C, and D.
- **Alternative A:** No seasonal or spatial restrictions of human presence or surface disturbing activities would be required under this alternative, which could result in greater impacts to mule deer and habitats during critical periods.
- **Alternative B:** Seasonal or spatial restriction of human presence or surface disturbing activities under this alternative could provide greater benefits to mule deer and/or habitats than Alternatives N and A, but less than Alternatives C and D. Prescriptive grazing would be used to favor forage production for big game high-priority and crucial winter range. OHV use would be limited to designated routes in mule deer crucial habitat and seasonal restrictions of surface disturbing activities would be required in crucial and high value mule deer habitats.
- **Alternatives C and D:** Under Alternative C and D, prescriptive grazing would be used to favor forage production for big game ranges. OHV use in mule deer crucial winter range would be limited to designated routes or closed, with the largest acres closed to OHV use in Alternative D. Seasonal restrictions would apply to surface disturbing activities in crucial and high value mule

deer habitats. Alternatives C and D would provide the greatest protection for the relevant and important values of mule deer and mule deer habitat.

Impacts from Fire and Fuels Management

Under Alternative C and D, the proposed decision to suppress unwanted wildfire in crucial mule deer habitats would benefit the mule deer by protecting the browse species that could otherwise be damaged by wildland fire and subsequently out-competed by undesirable species.

Impacts from Non-WSA Lands with Wilderness Characteristics

All of the Phonolite Hill (7,908 acres) and portions of the Kingston Ridge (2,126 acres) and Rocky Ford (6,429 acres) non-WSA lands with wilderness characteristics lie within the 22,100 acre potential Kingston Canyon ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Kingston Canyon ACEC would provide an additional layer of protection for relevant and important mule deer value on 16,463 acres, but could limit options for managing mule deer habitat.

Impacts from Travel Management

Proposed OHV area designations, by alternative, are shown in Table 4-63.

- **Alternative N:** Continuing to manage the area as open to OHV use would cause the greatest adverse impacts to deer and riparian values by allowing harassment of deer, crushing and removal of riparian vegetation, and loss of habitat.
- **Alternative A:** Managing the area as open and limited would continue most of the impacts in the open areas and reduce impacts in limited use areas. Adverse impacts under Alternative A would be slightly less than Alternative N.
- **Alternatives B and C:** Limiting vehicles to designated routes would reduce adverse impacts to deer habitat and harassment to the deer populations caused by cross-country vehicle use compared with Alternatives N and A.
- **Alternative D:** Closing 74% of the potential ACEC to vehicle use would reduce adverse impacts to deer habitat and harassment to the deer populations caused by cross-country vehicle use compared with all other alternatives.

Table 4-63. OHV Area Designations within the Kingston Canyon Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	Acres	22,100	18,800	0	0	0
	% area	100%	85%	0%	0%	0%
Limited	Acres	0	3,300	22,100	22,100	5,700
	% area	0%	15%	100%	100%	26%
Closed	Acres	0	0	0	0	16,400
	% area	0%	0%	0%	0%	74%

Impacts from Lands and Realty

No lands within the Kingston Canyon Potential ACEC have been identified as available for FLPMA Section 203 sales. Under Alternatives N, A and B, proposed decisions for land tenure adjustments could maintain, increase or decrease the land in Federal ownership, having a beneficial or adverse impact on

relevant and important values that would be determined in site-specific environmental analysis. Under Alternatives C and D, proposed decisions for land tenure adjustments benefit all relevant and important values by keeping the land in Federal ownership and protecting it from development.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternatives N, A, and B, no ACEC would be designated. Under Alternatives C and D, Kingston Canyon ACEC would be designated on 22,100 acres of public land to protect and provide special management for the mule deer (e.g., mule deer habitat) and riparian relevant and important values. In addition to management direction associated with Alternatives C and D described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

4.5.3.2.8 Little Rockies Potential ACEC

The Little Rockies Potential ACEC totals 49,200 acres located in the southeast corner of Garfield County. It includes the entire Little Rockies National Natural Landmark – a National Park Service designation. Seventy-six percent of the potential ACEC is within the Little Rockies WSA. Relevant and important values are scenic, wildlife (bighorn sheep), special status species (Townsend's big-eared bat and hole-in-the-rock prairie clover), and ecological (riparian) values.

Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Non-WSA Lands with Wilderness Characteristics
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Impacts from Vegetation

Under all alternatives, no surface disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Buffer zones by alternative are:

- **Alternative N:** 500 feet
- **Alternatives A and B:** 330 feet
- **Alternatives C and D:** 660 feet

Impacts from Visual Resources

Visual resource management classes within the potential ACEC, by alternative, are shown in Table 4-64. Under Alternatives N, B, C and D, all lands within the potential ACEC would be designated VRM Class I or II, protecting scenic values. In Alternative A, lands outside the WSA would be designated VRM Class IV which could allow activities that would adversely impact the scenic values within 24% of the potential ACEC. Scenic values would be best protected under Alternative D, which would designate 94% of the potential ACEC as VRM Class I to protect the existing character of the landscape.

Table 4-64. VRM Class Designations within Little Rockies Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Class I	Acres	0	37,400	37,400	37,400	46,300
	% ACEC	0%	76%	76%	76%	94%
Class II	Acres	49,200	0	11,800	11,800	2,900
	% ACEC	100%	0%	24%	24%	6%
Class III	Acres	0	0	0	0	0
	% ACEC	0%	0%	0%	0%	0%
Class IV	Acres	0	11,800	0	0	0
	% ACEC	0%	24%	0%	0%	0%

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification or fragmentation of listed species habitat, maintaining the integrity of special status species habitat, and habitat improvements would benefit special status species. In Alternatives A, B, C and D, additional strategies (such as utilizing seasonal and spatial buffers for surface disturbing activities and complying with raptor protection guidelines for power line construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the special status species relevant and important values.

Impacts from Fish and Wildlife

Under all alternatives, proposed decisions prohibiting the conversion of class of livestock from cattle to sheep would benefit the bighorn sheep value by eliminating the threat of disease spread by domestic sheep. The proposed decision to allow desert bighorn sheep reintroductions would have a beneficial impact by augmenting the herd to provide for genetic diversity, which would increase the health of the population. The proposed decision to limit surface disturbing activities near springs would have a beneficial impact on riparian vegetation, bighorn sheep, and other riparian species. Proposed decisions for limiting ground disturbing activities in desert bighorn sheep habitat vary by alternative:

- **Alternatives N and A:** Not limiting activities in bighorn sheep habitat during lambing and other sensitive seasons could adversely affect the bighorn sheep by allowing disturbance and harassment during critical periods.
- **Alternatives B, C and D:** Limiting activities in bighorn sheep habitat during lambing and other sensitive seasons would benefit bighorn sheep by minimizing disturbance and harassment during critical periods.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Little Rockies (8,692 acres) non-WSA lands with wilderness characteristics lies within the 49,200 acre potential Little Rockies ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Little Rockies ACEC would provide an additional layer of protection for relevant and important values on 8,692 acres. Specifics are disclosed in the visual resource management, travel, fluid minerals, and lands and realty (withdrawals) discussions in this section.

Impacts from Travel Management

Off-highway vehicle area designations, by alternative, are shown in Table 4-65.

- **Alternative N:** Continuing to allow cross-country travel in 19% of the potential ACEC would threaten relevant and important values in that area with ground disturbance and/or harassment.
- **Alternative A:** Limiting OHV use to designated routes throughout the potential ACEC would reduce vehicle impacts to relevant and important values compared with Alternative N.
- **Alternative B:** Closing the WSA to OHVs and restricting OHVs to designated routes in the remaining portion of the potential ACEC would reduce vehicle impacts to relevant and important values compared with Alternatives N and A.
- **Alternative C:** Closing the WSA and bighorn sheep habitat outside the WSA to OHVs and limiting vehicles to designated routes in the rest of the potential ACEC would protect relevant and important values from vehicle impacts.
- **Alternative D:** Closing the WSA and the non-WSA lands with wilderness characteristics to OHVs (95% of the potential ACEC) would best protect relevant and important values from vehicle impacts.

Table 4-65. OHV Area Designations within Little Rockies Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	Acres	9,200	0	0	0	0 ac
	% area	19%	0%	0%	0%	0%
Limited	Acres	2,500	49,200	11,800	10,800	2,300
	% area	5%	100%	24%	22%	5%
Closed	Acres	37,500	0	37,400	38,400	46,900
	% area	76%	0%	76%	78%	95%

Impacts from Lands and Realty

In Alternatives C and D, the potential ACEC outside the WSA is proposed to be withdrawn from mineral entry, precluding locatable mineral development which would protect the relevant and important values from ground disturbance caused by mineral exploration and development. If the area is not withdrawn but an ACEC is designated, a plan of operations would be required that would address the effects on relevant and important values and other resource concerns.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Lands open to oil and gas leasing, by alternative, are shown in Table 4-66. Under all alternatives, there would be no impacts to relevant and important values within the WSA, which is closed to oil and gas

leasing. The Little Rockies WSA represents 76% of the potential ACEC. Alternative D would best protect relevant and important values from ground disturbing activities associated with oil and gas exploration and development by closing 95% of the potential ACEC to oil and gas leasing and allowing leases with no surface occupancy stipulations in the remaining 5%. Potential impacts would be greatest under Alternative A, which would make lands outside the WSA available for leasing under standard lease terms. However, the potential ACEC is in a portion of the lands managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years.

Table 4-66. Leasing Stipulations within Little Rockies Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Standard Lease Terms	Acres	5,400	11,800	800	0	0
	% area	11%	24%	2%	0%	0%
Controlled surface use or timing stipulations (seasonal)	Acres	0	0	11,000	0	0
	% area	0%	0%	22%	0%	0%
No Surface Occupancy	Acres	0	0	0	11,800	2,300
	% area	0%	0%	0%	24%	5%
Closed	Acres	43,800	37,400	37,400	37,400	46,900
	% area	89%	76%	76%	76%	95%

Locatable Minerals

Under Alternatives N, A, and B, 24% of the potential ACEC (the area outside the WSA) could be impacted by mineral exploration and development. Under Alternatives C and D, the area outside the WSA would be proposed for withdrawal from mineral entry, protecting the relevant and important values from disturbances associated with mining exploration and development. Additionally, within a designated ACEC, Federal regulations (43 CFR 3809.11 (c)(3)) require that a plan of operation be submitted for any operation causing surface disturbance greater than casual use. This regulation would mitigate the impacts of mining exploration and development on relevant and important values.

Salable Minerals

In Alternatives N, A, and B, the effects of salable mineral disposal on relevant and important values would be considered on a case-by-case basis outside the WSA. Disposal of salable minerals would not be allowed within the WSA. In Alternatives C and D, no disposal of salable minerals would be allowed in the ACEC, resulting in no surface disturbance and no impact to the relevant and important values.

Impacts from Special Designations

Wilderness Study Areas

The potential ACEC encompasses 37,400 acres of the Little Rockies WSA. Within the WSA, relevant and important values would be protected from ground disturbing activities by management under the IMP.

Wild and Scenic Rivers

- **Alternative N:** Protecting Maidenwater Creek below Highway 276 as an eligible wild and scenic river would protect the riparian and scenic values within the river corridor, a very small portion of the potential ACEC.
- **Alternatives A and B:** No wild and scenic rivers are proposed under these alternatives.
- **Alternatives C and D:** Protecting Maidenwater Creek below Highway 276 as a suitable wild and scenic river would protect the riparian and scenic values within the river corridor.

Areas of Critical Environmental Concern

Under Alternatives N, A, and B, no ACEC would be designated. Under Alternatives C and D, Little Rockies ACEC would be designated on 49,200 acres of public land to protect and provide special management for the relevant and important values. In addition to management direction associated with Alternatives C and D described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

4.5.3.2.9 Lower Muddy Creek Potential ACEC

The Lower Muddy Creek Potential ACEC, located along Muddy Creek north of Hanksville, totals 16,200 acres of the RFO with additional acreage to the north in the lands managed by the Price Field Office. The discussion here is limited to the RFO portion.

Relevant and important values of this potential ACEC are scenic, special status species (Wright fishhook cactus and Heil's beavertail cactus), and riparian. Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation
- Visual Resources
- Special Status Species
- Non-WSA Lands with Wilderness Characteristics
- Travel Management
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

<u>Impacts from Vegetation</u>

Under all alternatives, no surface disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Buffer zones by alternative are:

- **Alternative N:** 500 feet
- **Alternatives A and B:** 330 feet
- **Alternatives C and D:** 660 feet

Impacts from Visual Resources

VRM class designations, by alternative, are shown in Table 4-67. The higher VRM Classes (I and II) would better protect the scenic values and, by limiting surface disturbing activities, also benefit other relevant and important values. Alternative D would best protect these values by designating most of the potential ACEC as VRM Class I. Conversely, areas designated as VRM Classes III or IV would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. Alternative A would provide no protection for scenic values by designating all of the potential ACEC as VRM Class IV.

Table 4-67. VRM Class Designations within Lower Muddy Creek Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Class I	Acres	0	0	0	0	15,800
	% ACEC	0%	0%	0%	0%	98%
Class II	Acres	15,600	0	15,600	16,200	400
	% ACEC	97%	0%	97%	100%	2%
Class III	Acres	400	0	400	0	0
	% ACEC	2%	0%	2%	0 %	0%
Class IV	Acres	200	16,200	200	0	0
	% ACEC	1%	100%	1%	0%	0%

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification or fragmentation of listed species habitat, maintaining the integrity of special status species habitat, and habitat improvements would benefit special status species. In Alternatives A, B, C and D, additional strategies (such as utilizing seasonal and spatial buffers for surface disturbing activities and complying with raptor protection guidelines for power line construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the special status species relevant and important value.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Wild Horse Mesa (15,778 acres) non-WSA lands with wilderness characteristics lie within the 16,200 acre (RFO portion only) potential Lower Muddy Creek ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Lower Muddy Creek ACEC would provide an additional layer of protection for relevant and important values on 15,778 acres (98% of the potential ACEC). Specifics are described in the visual resources, travel management, minerals and energy, and lands and realty discussions in this section.

Impacts from Travel Management

Off-highway vehicle area designations, by alternative, are shown in Table 4-68. Alternatives N and A would continue to allow cross-country vehicle travel within all of the potential ACEC, which would adversely impact the scenic, riparian, and special status plant species values if the OHVs travel where these values are present. Plants could be crushed, damaged or destroyed, riparian areas disrupted, and new trails established in scenic areas. Under Alternatives B and C, no areas would be open to cross-country travel. Under Alternative B, vehicles would be limited to designated routes. Under Alternative

C, vehicles would be limited to designated routes within 10% of the potential ACEC and the remaining 90% would be closed to motor vehicles. Limiting OHV use would reduce the impacts to relevant and important values since use would be confined to designated routes, although there could be some impacts if relevant and important values were located on or adjacent to open routes. Under Alternative D, 98% of the potential ACEC would be closed to motor vehicles. Consequently, Alternative D would best protect the relevant and important values from motorized vehicle use.

Table 4-68. OHV Area Designations within Lower Muddy Creek Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	Acres	16,200	16,200	0	0	0
	% area	100%	100%	0%	0%	0%
Limited	Acres	0	0	16,200	1,600	300
	% area	0%	0%	100%	10%	2%
Closed	Acres	0	0	0	14,600	15,900
	% area	0%	0%	0%	90%	98%

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Lands open to oil and gas leasing, by alternative, are shown in Table 4-69.

- **Alternatives N and A:** All of the potential ACEC would be open to oil and gas leasing under standard lease terms. Among the alternatives, this proposed decision would pose the greatest risk to relevant and important values from surface disturbance caused by oil and gas exploration.
- **Alternative B:** Under Alternative B, 96% of the potential ACEC would be open to oil and gas leasing under major stipulations (no surface occupancy) that would protect the relevant and important values from surface disturbances caused by oil and gas exploration and development within most of the area.
- **Alternatives C and D:** Under Alternatives C and D, all of the potential ACEC would be closed to leasing, precluding any impacts to relevant and important values from oil and gas leasing.

In addition, the potential ACEC is in a portion of land managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years.

Table 4-69. Lease Stipulations within Lower Muddy Creek Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Standard Lease Terms	Acres	16,200	16,200	0	0	0
	% area	100%	100%	0%	0%	0%
Controlled surface use or timing	Acres	0	0	700	0	0
	% area	0%	0%	4%	0%	0%

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
stipulations						
No Surface Occupancy	Acres	0	0	15,500	0	0
	% area	0%	0%	96%	0%	0%
Closed	Acres	0	0	0	16,200	16,200
	% area	0%	0%	0%	100%	100%

Locatable Minerals

Under Alternatives N, A, and B, exploration and development of locatable minerals could impact relevant and important values sensitive to surface disturbance. Special status species would be protected by law and BLM policy. Under Alternatives C and D, ACEC policy requires a plan of operations be prepared prior to allowing locatable mineral exploration and development to proceed. Additionally, under Alternative D, 15,800 acres (98% of the potential ACEC) would be proposed for withdrawal from mineral entry, precluding impacts to relevant and important values from mining exploration and development.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternatives N, A, and B, no ACEC would be designated. Under Alternatives C and D, Lower Muddy Creek ACEC would be designated on 16,200 acres of public land to protect and provide special management for the relevant and important values. In addition to management direction associated with Alternatives C and D described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

4.5.3.2.10 Old Woman Front Potential ACEC

The Old Woman Front Research Natural Area Potential ACEC is located in eastern Sevier County, adjacent to the Old Woman Plateau Research Natural Area on the Fishlake National Forest. It encompasses 330 acres. Designating this area as an ACEC would complement the adjacent Forest Service RNA and provide a logical topographical boundary for the area. The relevant and important value of the area is its relict vegetation.

Impacts to the relevant and important value of this ACEC could occur from the following resource management programs

- Fish and Wildlife
- Fire and Fuels Management
- Forest and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Impacts from Fish and Wildlife

Under Alternatives N and A, vegetation treatments to meet terrestrial, aquatic, and riparian habitat objectives could pose risks to relict vegetation. Under Alternatives B, C, and D, no wildlife habitat manipulation would be allowed, thus eliminating the risks to relict vegetation from these types of treatments.

Impacts from Fire and Fuels Management

Alternatives N and A would allow fire and fuels management and suppression activities that could crush and/or remove relict vegetation. Under Alternatives B, C, and D, requirements to utilize fire to accomplish the objectives of the area, use "light on the land" techniques (which minimize disturbance), and avoiding the use of heavy equipment would best protect the relevant and important value of relict vegetation.

Impacts from Forest and Woodland Products

Alternatives N and A would allow the harvest of forest and woodland products. However, due to the remote location and lack of access, the potential of harvest and the associated impacts to relict vegetation would both be low. Under Alternatives B, C, and D, these activities would not be allowed, providing the best protection of the relevant and important value.

Impacts from Livestock Grazing

Under Alternatives N and A, the Old Woman Front potential ACEC would be available for livestock grazing so the relict vegetation could be grazed by domestic livestock. Management of livestock grazing in accordance with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration would minimize impacts to the relict plant community, but these alternatives would pose some risks to the relevant and important value of relict vegetation. Under Alternatives B, C, and D, the potential ACEC would be unavailable to grazing, eliminating the risks from livestock grazing.

Impacts from Recreation

Management in Alternative N and A could allow Special Recreation Permits (SRPs) to be issued within the potential ACEC. There has been little to no demand for SRPs within this area. Prior to issuance of an SRP, site-specific analysis would be required and could provide mitigation for relict vegetation. Alternatives B, C, and D would preclude issuance of SRPs and would allow no impacts from this type of activity.

Impacts from Travel Management

Under Alternatives N, the Old Woman Front is open to OHV use (including cross-country travel) which presents the greatest risk to relict vegetation from motorized vehicles. Alternative A, would limit OHV use to designated roads within the potential ACEC, reducing the risks greatly over Alternative N. No routes are currently identified within this area, but if routes were designated, this motorized activity could pose some risk to relevant and important relict vegetation by potential disturbance adjacent to these routes. Under Alternatives B, C, and D, the potential ACEC would be closed to OHV use, eliminating any impacts to the relict vegetation.

Impacts from Lands and Realty

The potential ACEC is not recommended for withdrawal under Alternatives N and A, which would allow mineral activities to be proposed within the area, which could result in vegetation loss. In Alternatives B, C, and D, the potential ACEC is proposed to be withdrawn from mineral entry, precluding locatable mineral development which would protect the relevant and important values from ground disturbance caused by mineral exploration and development. If the area is not withdrawn but an ACEC is designated,

a plan of operations would be required that would address the effects on relevant and important values and other resource concerns.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Lands open to oil and gas leasing, by alternative are:

- **Alternatives N and A:** All of the potential ACEC would be open to oil and gas leasing under standard lease terms or with minor restrictions. Among the alternatives, this proposed decision would pose the greatest risk to relevant and important relict vegetation values from surface disturbance caused by oil and gas exploration.
- **Alternatives B, C, and D:** Under Alternatives C and D, all of the potential ACEC would be open to leasing subject to major constraints (no surface occupancy), precluding any impacts to relevant and important values from oil and gas leasing.

Locatable Minerals

Under Alternatives N and A, exploration and development of locatable minerals could impact relevant and important relict vegetation values which are sensitive to surface disturbance. Under Alternatives B, C, and D, ACEC policy requires a plan of operations to be prepared prior to allowing locatable mineral exploration and development to proceed.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternatives N and A, no ACEC would be designated. Under Alternatives B, C and D, Old Woman Front RNA ACEC would be designated on 330 acres of public land in eastern Sevier County, adjacent to the Old Woman Plateau Research Natural Area on the Fishlake National Forest. In addition to management direction associated with Alternatives B, C and D described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

4.5.3.2.11 Parker Mountain Potential ACEC

The Parker Mountain Potential ACEC is located in western Wayne County on the Awapa Plateau. The area totals 107,900 acres. Relevant and important values are sagebrush-steppe habitat and special status species (greater sage grouse, Utah prairie dog, and pygmy rabbit).

Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Special Status Species
- Fish and Wildlife
- Travel Management
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification or fragmentation of listed species habitat, maintaining the integrity of special status species habitat, and habitat improvements would benefit special status species. In Alternatives A, B, C and D, additional strategies (such as utilizing seasonal and spatial buffers for surface disturbing activities and complying with raptor protection guidelines for power line construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the special status species relevant and important values.

Impacts from Fish and Wildlife

Proposed decisions to manage surface disturbing activities within wildlife habitat could affect the sage grouse, prairie dog, and pygmy rabbit values.

- **Alternative N:** The proposed decision to continue prohibiting surface disturbing activities from March 1 through July 15 during sage grouse lekking activities, in sage grouse brooding habitat from April 1 through June 15, and restricting oil and gas activities in crucial pronghorn antelope habitat from December 1 through April 30 would have beneficial impacts to sage grouse, prairie dogs, and pygmy rabbits during those times of the year when the restrictions are in place.
- **Alternative A:** The proposed decision to prohibit surface disturbing activities within one-quarter mile of sage grouse leks from March 15 through June 1 would have beneficial impacts to sage grouse, prairie dogs, and pygmy rabbits during those times of the year when the restrictions are in place. However, having no surface disturbance requirements for sage grouse brooding habitat or crucial antelope habitat poses a greater risk to relevant and important values than the other alternatives.
- **Alternative B:** The proposed decision to limit surface disturbing activities in sage grouse habitat would have beneficial impacts to sage grouse, prairie dogs, and pygmy rabbits during those times of the year when the restrictions are in place. Surface disturbing activities would be restricted within one-half mile of sage grouse leks from March 15 through June 1, and within brooding/nesting habitat from April 1 through July 15. Restricting surface disturbing activities in crucial pronghorn antelope habitat from May 15 through June 15 would provide additional benefits to sage grouse, prairie dogs and pygmy rabbits over Alternative A.
- **Alternatives C and D:** In addition to restrictions on surface disturbance in sage grouse habitat which is extended to within two miles of sage grouse leks, Alternatives C and D would limit surface disturbing activities in crucial pronghorn antelope habitat May 15 through June 15. Among the alternatives, Alternatives C and D would have the greatest beneficial impacts on the identified wildlife values.

Impacts from Travel Management

Off-highway vehicle area designations within the potential ACEC, by alternative, are shown in Table 4-70. Under Alternative N, continuing to allow cross-country OHV use within 97% of the potential ACEC would adversely impact wildlife habitat due to ground disturbance, and wildlife itself due to harassment and displacement. Limiting vehicles to designated routes within most or all of the potential ACEC under Alternatives A, B, C, and D would greatly reduce these impacts. The greatest beneficial impact would be under Alternatives C and D, where no areas are open to cross-country motorized vehicle travel.

Table 4-70. OHV Area Designations within Parker Mountain Potential ACEC

		Alternative N (No Action)	Alternative A	Alternative B (Preferred)	Alternative C	Alternative D
Open	Acres	104,500	9,300	300	0	0
	% area	97%	9%	<1%	0%	0%
Limited	Acres	3,400	98,600	107,600	107,900	107,900
	% area	3%	91%	>99%	100%	100%
Closed	Acres	0	0	0	0	0
	% area	0%	0%	0%	0%	0%

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Lands open to oil and gas leasing varies by alternative, as shown in Table 4-71. All of the action alternatives would protect wildlife values by placing seasonal restrictions on oil and gas development.

Table 4-71. Oil and Gas Leasing Stipulations within Parker Mountain Potential ACEC

		Alternative N (No Action)	Alternatives A – D
Standard Lease Terms	Acres	24,400	0
	% area	23%	0%
Controlled surface use or timing stipulations	Acres	77,400	107,900
	% area	72%	100%
No Surface Occupancy	Acres	6,100	0
	% area	5%	0%
Closed	Acres	0	0
	% area	0%	0%

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternatives N, A, and B, no ACEC would be designated. Under Alternatives C and D, Parker Mountain ACEC would be designated on 107,900 acres of public land in Wayne County. In addition to management direction associated with Alternatives C and D described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

4.5.3.2.12 Quitchupah Potential ACEC

The Quitchupah Potential ACEC is located in eastern Sevier County along Quitchupah Creek and totals 180 acres. The potential ACEC boundary includes the riparian corridors and associated cultural resource sites and areas that have spiritual value to American Indians. Relevant and important values are cultural

resources and riparian values. Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation
- Cultural Resources
- Non-WSA Lands with Wilderness Characteristics
- Travel Management
- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Impacts from Vegetation

Under all alternatives, no surface disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface disturbing activities, but it could restrict potentially beneficial actions such as riparian areas restoration and vegetation treatment. Buffer zones by alternative are:

- **Alternative N:** 500 feet
- **Alternatives A and B:** 330 feet
- **Alternatives C and D:** 660 feet

Impacts from Cultural Resources

Under Alternatives N, A, and B, management of cultural resources within the potential ACEC would be in accordance with existing cultural resource laws, which would protect this relevant and important value. Under Alternative C, special management for the ACEC would include the following: increase public awareness of cultural resource values; increase law enforcement presence; and if necessary, install fencing or other direct protection of important sites. These prescriptions would provide added protection for the cultural resources in the area. Special management under Alternative D would increase public awareness of cultural resource values and increase law enforcement presence, but no fencing would be allowed in non-WSA lands with wilderness characteristics, which may not protect the cultural resources as much as Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Wildcat Knolls (27 acres) non-WSA lands with wilderness characteristics lie within the 180 acre potential Quitchupah ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Quitchupah ACEC would provide an additional layer of protection for relevant and important values on 27 acres (15% of the potential ACEC). Specifics are described in the travel management discussion in this section.

Impacts from Travel Management

Proposed OHV area designations vary by alternative:

- **Alternative N:** Trough Hollow is closed to OHV use (54 acres, or 30% of the ACEC) which would protect the relevant and important values. For Quitchupah Creek, Link Canyon, and Water Hollow (121 acres – 67% of the ACEC), unrestricted OHV use would continue to pose a threat to cultural resources, Native American concerns, and riparian values.

- **Alternatives A and B:** Limiting vehicles to designated roads and trails on 175 acres (97% of the ACEC) would help protect the cultural resources, Native American concerns, and riparian values from disturbance.
- **Alternatives C and D:** Closing portions of the area to OHV use (Alternative C, 90 acres; Alternative D, 110 acres;), with the remaining acres limited to designated roads would protect the cultural resources, Native American concerns, and riparian values from disturbance.

Impacts from Special Designations

Wild and Scenic Rivers

- **Alternative N:** Managing Quitchupah Creek as an eligible wild and scenic river to protect its free-flowing nature and cultural outstandingly remarkable value would protect and enhance the cultural and riparian relevant and important values.
- **Alternatives A and B:** There would be no protective management for Quitchupah Creek since it is not designated as a suitable wild and scenic river under Alternatives A and B and would lose its eligibility status.
- **Alternatives C and D:** Designating Quitchupah Creek as a suitable wild and scenic river to protect its free-flowing nature and cultural outstandingly remarkable value would protect and enhance the cultural and riparian relevant and important values of the potential ACEC.

Areas of Critical Environmental Concern

Under Alternatives N, A, and B, no ACEC would be designated. Under Alternative C and D, designating the Quitchupah Archaeological ACEC to protect relevant and important archaeological, riparian and Native American concerns would provide increased management emphasis for protecting these relevant and important values.

4.5.3.2.13 Rainbow Hills Potential ACEC

The Rainbow Hills Potential ACEC is located just east of Richfield and encompasses the colorful Arapien Shale outcropping. It totals 4,000 acres of public lands. Relevant and important values are mule deer, mule deer habitat, special status plants (Utah phacelia, Arapien stickleaf, Wards penstemon, rainbow rabbitbrush, Sigurd townsendia, and Glenwood milkvetch), and the naturally-functioning ecosystem. Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Special Status Species
- Fish and Wildlife
- Fire and Fuels Management
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification or fragmentation of listed species habitat, maintaining the integrity of special status species habitat, and habitat improvements would benefit special status species. In Alternatives A, B, C, and D, additional

strategies (such as utilizing seasonal and spatial buffers for surface disturbing activities and complying with raptor protection guidelines for power line construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the special status species relevant and important value.

Impacts from Fish and Wildlife

Fish and wildlife management actions for the benefit of mule deer and their habitat would benefit those relevant and important values. These management prescriptions and seasonal and spatial restrictions on activities with the potential ACEC vary by alternative:

- **Alternative N:** A seasonal restriction on oil and gas exploration and development would be required in crucial and high value mule deer habitat during sensitive seasons, such as fawning. These seasonal restrictions would provide greater protection for the mule deer and habitat relevant and important values than Alternative A, but less than under Alternatives B, C, and D.
- **Alternative A:** No seasonal or spatial restrictions of human presence or surface disturbing activities would be required under this alternative, which could result in greater impacts to mule deer and habitats during critical periods.
- **Alternative B:** Seasonal or spatial restriction of human presence or surface disturbing activities under this alternative could provide greater benefits to mule deer and/or habitats than Alternatives N and A, but less than Alternatives C and D. Prescriptive grazing would be used to favor forage production for big game high-priority and crucial winter range. OHV use would be limited to designated routes in mule deer crucial habitat, and seasonal restrictions of surface disturbing activities would be required in crucial and high value mule deer habitats.
- **Alternatives C and D:** Under Alternatives C and D, prescriptive grazing would be used to favor forage production for big game ranges. OHV use in deer crucial winter range would be limited to designated routes or closed, with the most acres closed to OHV use in Alternative D. Seasonal restrictions would apply to surface disturbing activities in crucial and high value mule deer habitats. Alternatives C and D would provide the greatest protection for the relevant and important values of mule deer and mule deer habitat.

Impacts from Fire and Fuels Management

Under Alternatives C and D, the proposed decision to suppress unwanted wildfire in crucial mule deer habitats would benefit the mule deer by protecting the browse species that could otherwise be damaged by wildland fire and subsequently out-competed by undesirable species.

Impacts from Travel Management

Proposed OHV area designations, by alternative, are shown in Table 4-72.

- **Alternatives N and A:** Continuing to manage Rainbow Hills as an open OHV area could have adverse impacts on the relevant and important values because cross-country travel could disrupt wildlife use patterns and habitat. Special status species would also continue to be impacted by vehicle travel resulting in vegetation disturbance.
- **Alternative B:** Limiting OHVs to designated routes in the Rainbow Hills area would reduce the impacts created by cross-country use. But vehicle travel on designated routes near feeding and other occupied areas could temporarily disrupt mule deer. Impacts to special status species would be improved by restricting OHV use to designated routes.
- **Alternatives C and D:** Closing the Rainbow Hills to OHV use would eliminate the potential impacts from motorized travel described above.

Table 4-72. OHV Area Designations within Rainbow Hills Potential ACEC

		Alternative N (No Action	Alternative A	Alternative B (Preferred)	Alternatives C and D
Open	Acres	4,000	3,800	700	0
	% area	100%	95%	17%	0%
Limited	Acres	0	200	3,300	0
	% area	0%	5%	83%	0%
Closed	Acres	0	0	0	4,000
	% area	0%	0%	0%	100%

Impacts from Lands and Realty

Under Alternatives N, A, and B, proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in Federal ownership, having a beneficial or adverse impact on relevant and important values that would be determined in site-specific environmental analysis. Under Alternatives C and D, proposed decisions for land tenure adjustments would benefit all relevant and important values by keeping the land in Federal ownership and protecting it from development. Also under Alternatives C and D, proposed withdrawal from mineral entry would protect relevant and important values from surface disturbance caused by mineral exploration and development.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

The Rainbow Hills area is within the Covenant Oil Field, is presently encompassed by authorized oil and gas leases, and the producing oil field in this RFD area overlaps this potential ACEC. Under Alternatives N, A, and B, exploration and development activities could affect relevant and important values due to surface and human caused disturbances. The effects of any proposals on relevant and important values would be analyzed in site-specific analysis. Under Alternatives C and D, management prescriptions would allow leasing with no surface occupancy to protect special status and endemic plants and the naturally functioning system relevant and important values. However, the existing leases are a valid existing right and would have priority over the ACEC designation, and those leases are not subject to no surface occupancy. Surface disturbing activities from these existing leases could continue to pose risks to the relevant and important values.

Locatable Minerals

There is a low to moderate potential for occurrence of locatable mineral resources within the area. Currently, there is little interest in development. Impacts to relevant and important values from future exploration and development are expected to be low. Under Alternatives C and D, withdrawing the area from locatable mineral entry would protect relevant and important values from disturbances caused by mining activities.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternatives N, A, and B, no ACEC would be designated. Under Alternatives C and D, Rainbow Hills ACEC would be designated on 4,000 acres of public land to protect and provide special management for the mule deer, mule deer habitat, special status plants, and the naturally-functioning

ecosystem relevant and important values. Under Alternatives C and D, the proposed decision to designate a Rainbow Hills ACEC would (1) allow no uses that would cause irreparable damage to relevant and important values and (2) prescribe management to protect and enhance all relevant and important values.

4.5.3.2.14 Sevier Canyon Potential ACEC

The Sevier Canyon Potential ACEC encompasses the gorge bordering the Sevier River located between the towns of Marysvale and Sevier and totals 8,900 acres of public land. Relevant and important values are mule deer, mule deer habitat, special status species, and riparian areas Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation
- Special Status Species
- Fire and Fuels Management
- Travel Management
- Lands and Realty
- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Impacts from Vegetation

Under all alternatives, no surface disturbing activities would be allowed within buffer zones (which vary by alternative) of riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts can be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface disturbing activities and benefit special status species utilizing these habitats for foraging, but it could restrict potentially beneficial actions such as restoration and vegetation treatment in riparian areas. Buffer zones by alternative are:

- **Alternative N:** 500 feet
- **Alternatives A and B:** 330 feet
- **Alternatives C and D:** 660 feet

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification or fragmentation of listed species habitat, maintaining the integrity of special status species habitat, and habitat improvements would benefit special status species. In Alternatives A, B, C, and D, additional strategies (such as utilizing seasonal and spatial buffers for surface disturbing activities and complying with raptor protection guidelines for power line construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the special status species relevant and important value.

Impacts from Fire and Fuels Management

Under Alternatives C and D, the proposed decision to suppress unwanted wildfire in crucial mule deer habitats would benefit the mule deer by protecting the browse species that could otherwise be damaged by wildland fire and subsequently out-competed by undesirable species.

Impacts from Travel Management

Proposed OHV area designations, by alternative, are shown in Table 4-73.

- **Alternatives N and A:** Continuing to manage the area as open to cross-country OHV use could adversely impact mule deer, special status species and riparian values by allowing disruption, crushing, and removal of vegetation, and loss of habitat.
- **Alternatives B, C, and D:** Limiting vehicles to designated routes would reduce adverse impacts to riparian areas and deer habitat and reduce the potential for harassment of mule deer and special status species. Impacts would be less than Alternatives N and A.

Table 4-73. OHV Area Designations within Sevier Canyon Potential ACEC

		Alternatives N and A	Alternatives B, C and D
Open	Acres	8,900	0
	% area	100%	0%
Limited	Acres	0	8,900
	% area	0%	100%

Impacts from Lands and Realty

Under Alternatives N, A, and B, proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in Federal ownership, having a beneficial or adverse impact on relevant and important values that would be determined in site-specific environmental analysis. Under Alternatives C and D, proposed decisions for land tenure adjustments would benefit all relevant and important values by keeping the land in Federal ownership and protecting it from development.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternatives N, A, and B, no ACEC would be designated. Under Alternatives C and D, Sevier Canyon ACEC would be designated on 8,900 acres of public land to protect and provide special management for the mule deer and riparian relevant and important values. In addition to management direction associated with Alternatives C and D described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

4.5.3.2.15 Special Status Species Potential ACEC

The Special Status Species Potential ACEC encompasses documented locations of special status species identified in the evaluations of the various ACEC proposals. In total this represents 15,100 acres of public lands. Relevant and important values are the following special status species: Winkler pincushion cactus, Wright fishhook cactus, last change townsendia, Rabbit Valley gilia, Cronquist wild buckwheat, Creutzfeldt flower, Wards penstemon, Basalt milkvetch, Bicknell milkvetch, hole-in-the rock prairie clover, Dana’s milkvetch, Barneby milkvetch, Psoralea globemallow, Heil’s beavertail, Jane’s globemallow, flat-top wild buckwheat, Townsend's big eared bat, Allen's big eared bat, big free-tailed bat, fringed miotis, ferruginous hawk, bald eagle, burrowing owl, long-billed curlew, southwestern willow flycatcher, Williamsons sapsucker, northern goshawk, greater sage grouse, bluehead sucker, flannelmouth sucker, round-tail sucker, leatherside chub, and desert night lizard.

Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation
- Special Status Species

- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the special status species of this potential ACEC.

Impacts from Vegetation

Under all alternatives, no surface disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface disturbing activities, but it could restrict potentially beneficial actions such as restoration and vegetation treatment in riparian areas. Buffer zones by alternative are:

- **Alternative N:** 500 feet
- **Alternatives A and B:** 330 feet
- **Alternatives C and D:** 660 feet

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification or fragmentation of listed species habitat, maintaining the integrity of special status species habitat, and habitat improvements would benefit special status species. In Alternatives A, B, C and D, additional strategies (such as utilizing seasonal and spatial buffers for surface disturbing activities and complying with raptor protection guidelines for power line construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the special status species relevant and important values.

Impacts from Travel Management

Proposed decisions for off-highway vehicle open areas under Alternatives N and A would pose the threat of irreparable damage to some of the special status plant species. The threat would be much reduced under Alternative B where less than 1% of the lands managed by the RFO are designated open, and virtually eliminated under Alternatives C and D which designate no open areas.

Impacts from Lands and Realty

Under Alternatives N, A, and B, proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in Federal ownership, having a beneficial or adverse impact on relevant and important values that would be determined in site-specific environmental analysis. Under Alternatives C and D, proposed decisions for land tenure adjustments would benefit special status species by keeping the land in Federal ownership and pursuing acquisition of non-Federal lands from willing sellers where determined necessary for special status species. Also under Alternatives C and D, rights-of-way and other land use authorizations would be avoided if they would impact special status species or their habitats.

Impacts from Minerals and Energy

Potential impacts of energy and mineral development to special status plant species include direct mortality from construction equipment and vehicles in occupied habitats. Also, habitat could be lost or modified by constructing well pads, pipelines, and associated facilities in occupied and suitable habitats,

and disturbing habitat of the species' pollinators. Potential impacts of energy and mineral development to special status animal species include disturbance and harassment, which could interrupt/affect animals during critical activities (such as breeding or foraging) which could impact survival. Special status species are scattered in various locations throughout the RFO, which could involve areas open to oil and gas, areas suitable for coal exploration and development, locatable minerals development, and mineral material disposal.

Leasable Minerals - Oil and Gas

Special status species that are located in open areas, or areas open to leasing subject to controlled surface use or timing stipulations, are at greatest risk from oil and gas activities. In Alternatives C and D, special status species areas would be managed as open to oil and gas leasing subject to controlled surface use and/or timing limitations which would reduce risks compared to Alternatives N, A and B.

Leasable Minerals - Coal

Any direct impacts of coal development on listed plant and animal species would be precluded by Coal Unsuitability Criterion 9 which states that, "Federally-designated habitat for listed threatened or endangered plant and animal species or species proposed for listing…shall be considered unsuitable."

Locatable Minerals

Special status species could be adversely affected by surface disturbing activities resulting from locatable minerals development. Closing or withdrawing areas from mineral operations would prevent impacts to special status species if they occur within those areas. Alternative N would recommend the fewest acres for withdrawal (169,480 acres), then increasing with each alternative with the most acres recommended for withdrawal in Alternative D (903,900 acres).

Salable Minerals

Existing areas of salable mineral disposals have already been substantially impacted. Therefore, it is likely that special status species do not occur in these areas. Authorization of new sites would be subject to NEPA review and consultation with USFWS, which would protect special status species. Alternatives C and D would provide additional protection for special status species by managing disposal subject to controlled surface use and/or timing limitations.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternatives N, A, and B, no ACEC would be designated. Under Alternatives C and D, the Special Status Species ACEC would be designated (15,100 acres of public land) to protect and provide special management for special status species values within the potential ACEC by protecting them from ground disturbing activities.

4.5.3.2.16 Thousand Lake Bench Potential ACEC

The Thousand Lake Bench ACEC is located in southeastern Sevier County, south of Interstate 70 and east of Thousand Lake Mountain. It is 500 acres, located in several small areas. Relevant and important values are cultural resources, special status species (bald eagle, last chance townsendia and Wright fishhook cactus), and riparian areas. Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Cultural Resources
- Special Status Species

- Non-WSA Lands with Wilderness Characteristics
- Travel Management
- Special Designations

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Impacts from Cultural Resources

Under Alternatives N, A, and B, management of cultural resources within the potential ACEC would be in accordance with existing cultural resource laws, which would protect this relevant and important value. Under Alternative C, special management for the ACEC would include the following: increase public awareness of cultural resource values; increase law enforcement presence; and if necessary, install fencing or other direct protection of important sites. These prescriptions would provide added protection for the cultural resources in the area. Special management under Alternative D would increase public awareness of cultural resource values and increase law enforcement presence, but no fencing would be allowed in non-WSA lands with wilderness characteristics, which may not protect the cultural resources as much as Alternative C.

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification or fragmentation of listed species habitat, maintaining the integrity of special status species habitat, and habitat improvements would benefit special status species. In Alternatives A, B, C and D, additional strategies (such as utilizing seasonal and spatial buffers for surface disturbing activities and complying with raptor protection guidelines for power line construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the special status species relevant and important values.

In addition to the above management strategies, Alternatives C and D prescribe increasing law enforcement presence in order to deter unauthorized collection of Wright fishhook cactus. This would provide added protection for this special status species within the potential ACEC.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Jones Bench (43 acres) and Limestone Cliffs (385 acres) non-WSA lands with wilderness characteristics lie within the 500 acre potential Thousand Lakes Bench ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Thousand Lakes Bench ACEC would provide an additional layer of protection for relevant and important values on 428 acres (86% of the potential ACEC). Specifics are described in the travel management discussion in this section.

Impacts from Travel Management

Off-highway vehicle area designations, by alternative, are shown in Table 4-74.

- **Alternative N:** Continuing to manage the area as open to cross-country OHV use would leave relevant and important values vulnerable to direct impacts from cross-country vehicle use.

- **Alternatives A and B:** Limiting vehicles to designated routes would reduce direct impacts to cultural, special status plant species, and riparian areas, and would reduce the disturbance to bald eagle. Impacts would be less than Alternative N.
- **Alternatives C and D:** Alternatives C and D, would close the potential ACEC to OHV use, thus eliminating the risks associated with motorized use and protecting the relevant and important values.

Table 4-74. OHV Area Designations within Thousand Lake Bench Potential ACEC

		Alternative N (No Action)	Alternatives A and B	Alternatives C and D
Open	Acres	500	0	0
	% area	100%	0%	0%
Limited	Acres	0	500	0
	% area	0%	100%	0%
Closed	Acres	0	0	500
	% area	0%	0%	100%

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternatives N, A, and B, no ACEC would be designated. Under Alternatives C and D, Thousand Lake Bench ACEC would be designated (500 acres of public land) to protect and provide special management for the special status species, cultural resources, and riparian areas values within the potential ACEC by protecting them from ground disturbing activities.

4.6 IMPACTS TO THE SOCIAL AND ECONOMIC ENVIRONMENT

This section is subdivided into three general areas:

- Impacts to social and economic conditions
- Impacts to environmental justice
- Impacts to public safety

4.6.1 Social and Economic Conditions

This section discusses impacts to the social and economic conditions of the five-county socioeconomic study area from management actions contained within the various RMP alternatives. Such impacts may result from specific individual management actions, but also often reflect the collective effect of a number of actions under a particular alternative. Thus, this section presents impacts *from* the specific management actions of various resource programs and alternatives, in terms of impacts *to* the local economy, population, community services, public finance, and social customs and culture. Environmental justice is also addressed.

Potential *economic impacts* include changes in employment, income, business costs, and tax revenue to local, State and Federal Government entities. Changes in employment and income can then cause indirect socioeconomic impacts, such as changes in population, which can lead to community impacts on housing,

infrastructure, and other government services. These economic impacts may then produce *social impacts*, such as changes in community structure as new people move in to take new jobs. Changes in management of resources under all alternatives can also have direct social impacts for residents and visitors, affecting livelihoods, lifestyles, attitudes, opinions, quality of life, and social structures.

The socioeconomic impact analysis and conclusions are based on BLM knowledge of resource uses in the socioeconomic study area; review of existing literature; and information provided by BLM specialists, local and State cooperating entities, and industry contacts. Impacts are quantified where possible and described in qualitative terms in the absence of reliable quantitative data. The analysis of socioeconomic impacts is intended to capture the most notable, overall socioeconomic impacts under each alternative, and cannot address all potential impacts.

Methods and Assumptions

This analysis was based on the following socioeconomic assumption:

- Baseline population growth in the planning area over the next 20 years would follow projections made by the Governor of Utah's Office of Planning and Budget, Demographic and Economic Analysis Section, as shown in Table 4-75. (Deviations from these baseline projections due to management alternatives were noted, if any.)

Table 4-75. Population Projections in the Five-County Area

County	1990 Population	2000 Population	2010 Projected Population	2020 Projected Population	2030 Projected Population	Percent Change 2000 – 2030
Garfield*	3,980	4,763	4,955	5,973	6,747	42 %
Piute	1,277	1,436	1,503	1,790	1,797	25 %
Sanpete	16,259	22,846	27,904	32,902	35,181	54 %
Sevier	15,431	18,938	21,038	24,855	26,892	42 %
Wayne	2,177	2,515	2,764	3,469	3,943	57 %
Socioeconomic Study Area Totals	39,124	50,498	58,164	68,989	74,560	48 %
Utah Totals	1,722,850	2,246,553	2,833,337	3,486,218	4,086,319	82 %

Source: U.S. Census Bureau 2005, Utah Governors Office of Planning and Budget 2005.
*Most of Garfield County's population lives outside the portion of the county within the RFO boundary.

Additional assumptions related to particular resource programs are important to the analysis of socioeconomic impacts. These are noted in the analyses below as needed.

Estimation of employment and income impacts required an economic model and a series of inputs specific to the RFO socioeconomic study area. Current uses of public lands and how these uses could change under each alternative provided quantitative input necessary for the economic impact analysis (e.g., number of gas wells, animal unit months). Quantitative measures were only possible for some resource uses, specifically, livestock grazing, fuels management, recreation, and minerals (coal and fluid minerals). The estimates of annual employment and income generated in this study represent *only* the

economic activity *directly attributable to activities on BLM-administered lands within the planning area*, based on the data and assumptions described in the methodology sections for each specific resource use. Economic activity that does not result from use of the RFO, such as jobs and income derived from livestock forage outside of BLM-administered lands, is not reported in this analysis.

It should be noted that for each resource use, future economic activity is dependent on a variety of factors beyond the control of BLM. For instance, the extent, pace, and timing of energy development activities depend on national and international energy demand and prices, production factors within each industry, and business strategies of operators. Because the pace of energy development in the planning area is unknown, a constant rate of production is assumed in this analysis for both coal production and oil and gas drilling and production. Likewise, utilization of livestock AUMs is assumed to be constant throughout the study period, based on the AUM allocations for each alternative. Actual economic impacts may vary if the rate of production in any of these industries changes over the study period.

Environmental Consequences

Impacts to socioeconomics would likely result from actions proposed under the following resource programs:

- Vegetation
- Visual Resources
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on socioeconomic conditions.

Alternative N: No Action

Impacts from Vegetation

Vegetation treatments (including weed control and pest control) could provide some benefits to economic uses of BLM rangelands (e.g., livestock grazing and harvesting of forest and woodland products), and could result in inflows of dollars and provide contracts, income, and employment in the five-county study area. Insufficient information exists to quantify these benefits, but differences between the alternatives are discussed qualitatively.

Impacts from Visual Resources

Visual resource management (VRM) decisions represent a collection of restrictions placed on various resource programs, depending on the class of scenery identified through visual resource inventories. The VRM class itself does not represent a restriction; restrictions result from management decisions for other resources which potentially affect scenic qualities. The socioeconomic impacts of management decisions result from those separate resource decisions for the specific acreages within each VRM class designations. As with other resources, these decisions vary by alternative.

Impacts on socioeconomics from VRM decisions would most likely result from actions proposed under vegetation, fire and fuels management, non-WSA lands with wilderness characteristics, livestock grazing, recreation, travel management, lands and realty, minerals and energy, and special designations.

It must be reemphasized that restrictions within these *other* resources provide the tools that the BLM can use in managing scenic resources.

Alternative N contains no acreage in VRM Class I, and is thus potentially the least restrictive of the alternatives. This is somewhat misleading, in that Alternative N does not include WSA acreage as VRM Class I, as do Alternatives A, B, C and D. By policy, all WSAs must be managed under IMP. The prescriptions of IMP, which bar almost all forms of development or surface-disturbing activities, have the same net impact as managing as VRM Class I. The impacts to socioeconomics would be similar to the impacts discussed for other resources in this alternative that directly affect scenic quality as described in Section 4.3.7. The lower degree of protection of scenic resources under this alternative has the potential to adversely impact those businesses and individuals whose livelihood depends all, or in part, on local recreation spending by those visitors who place a high value on the scenic qualities of the planning area.

Impacts from Fire and Fuels Management

Wildland fires pose significant threats to human life and property. Personal, social, and economic losses from wildland fires, particularly in the Wildland Urban Interface, can be substantial. Strains on the resources of communities to fight fires can also be considerable. The wildland fire risk management and fire-fighting policies and programs of the alternatives would reduce risks and eventual losses. The extent of socioeconomic impacts of fire cannot be projected given the unpredictability in the locations and intensities of wildfire. Post-fire stabilization and rehabilitation costs could result in inflows of dollars to the socioeconomic study area and provide opportunities for contracts, income, and employment in the study area. However, the resulting economic activity from suppression activities cannot be quantified or differentiated between the alternatives due to unpredictability in the locations and intensities of wildfire and rehabilitation requirements.

For fuels treatments, however, it is possible to quantify expenditures, and their impact on the local economy. In the Richfield Fire District (of which the BLM is a partner), approximately 10,000 acres per year have been mechanically treated in recent years. In the Richfield area, the cost of this treatment is about $100 per acre, with about 70% of that amount going to a local contractor (conversation between Bill Stevens, Moab Field Office and Stan Anderson, USFS, Richfield Interagency Fire Center, June 29, 2007). This has resulted in at least $70,000 per year being put into the local economy from mechanical fuels treatments. Contracts for such services are awarded competitively, so there is no assurance that such contracts will continue to be locally awarded. This analysis, however, makes that assumption.

Alternative N is not specific as to acres treated per year, as decisions are made on a case-by-case basis. In recent years, as noted above, approximately 10,000 acres have been treated annually, contributing an estimated $70,000 to the local economy.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional impacts on socioeconomics.

Impacts from Forestry and Woodland Products

Insufficient information on current harvests and harvest potential (e.g., areas suitable for timber harvest) is available to quantify the economic value, jobs, and income produced from forest and woodland products on public lands.

Commercial timber harvesting on public land in the RFO has historically been very limited. At present, commercial harvests are prohibited east of Capitol Reef National Park, including in the Henry Mountains, which have commercially harvestable species. Public lands are also used for commercial seed and live plant collection. These operations are believed to support jobs and income in the socioeconomic study area. Non-commercial harvests of Christmas trees, posts and poles, and fuelwood also have economic, social and cultural significance to local residents. Under this alternative, forest and woodland product harvests, and any resulting jobs and significance to local custom and culture, would continue to follow recent patterns.

Impacts from Livestock Grazing

Grazing decisions were analyzed as follows. First, historical grazing use (licensed AUMs per year) within the RFO was obtained from BLM records. This data is provided in Chapter 3. Next, the average values of AUMs in Utah for cattle and sheep were estimated, which is also discussed in Chapter 3.

Grazing use of public lands would continue to provide income and jobs in the socioeconomic study area. Levels of grazing would likely continue at recent levels. Use of public lands in the Richfield planning area averaged 50,827 cattle AUMs and 9,756 sheep AUMs over the 10-year period from 1994 to 2003. This base period includes a number of good, average, and low grazing years, ranging from 76,591 total AUMs in 2001 to 39,921 total AUMs in 2003. Based on this average use and average Utah production values per AUM, the annual value of livestock production from AUMs on public lands is $2,319,000. This represents 1.5% of the $154,189,000 annual value of cash receipts from livestock and livestock products for the entire five-county socioeconomic study area.

Ranching on public lands also represents an important aspect of the local culture. A decrease in the number of acres available for grazing has the potential to adversely impact the lifestyle of ranchers in the community. Losses in grazing opportunities could result in lost income and consequently a decline in social well being for affected ranchers and their families. The inability for ranchers to continue with traditional practices could potentially impact the overall character and way of life for residents of the planning area. Reductions in ranching-based income could make it difficult for families to earn a living on ranching alone. Family members may have to get second jobs or work off the ranch to bring in additional income. If ranchers are unable to continue operations, impacts to local communities could include loss of business activity and/or the businesses themselves, and a decline in population if individuals have to relocate to earn a living.

Impacts from Recreation

Recreational activity has important socioeconomic value both in terms of satisfaction provided to local residents and visitors and the economic activity generated for the local economy. Recreation-related expenditures in the socioeconomic study area by visitors from other regions infuse new money into the local economy. These expenditures and re-spending of this money between sectors within the local economy generate income and support jobs

Data on recreational use for various activities on public lands managed by the RFO is available from RMIS (Recreation Management Information System), a database maintained by the BLM. Table 3-21 provides RMIS data for fiscal years (FYs) 2001-2004. Unfortunately, neither RMIS nor any other source provides data on the proportion of visitor days accounted for by individuals living outside the socioeconomic study area. According to a state-commissioned study by D.K. Shifflet & Associates (2006), non-resident travel within Utah has consistently been about double that of resident tourism, measured in terms of visitor-days. In 2005, for example, the study found that non-resident visitor-days accounted for 66.2 % of state-wide visitor days. Not all visitors, of course, are recreation visitors (e.g., business, visiting family), nor are all recreation visitors using BLM lands. Given the lack of other data sources, this figure seems reasonable for the purpose of estimating visitor spending in that non-resident

visitors typically spend more per day than resident visitors. It is likely that this figure (66.2%) is too high for some activities and too low for others[2].

Data on expenditures per local (defined as Utah resident) and non-local visitor day was obtained from the above source. That study estimated non-resident visitor spending state-wide at $103 per day, with resident spending state-wide averaging $61 per day. A large part of the difference was due to spending on lodging, implying that many resident visitors are not on overnight trips, which may be representative of the planning area.

Due to insufficient data, economic differences between the alternatives could not be quantified. Differences are discussed qualitatively.

The economic contributions of recreation to the local economy were quantified for Alternative N based on current levels of recreation. Recreational visitor days on BLM land were based on a four-year average of RMIS data for fiscal years 2001 to 2004. Total visitor days were 374,594. Non-local visitor days were assumed to be 66.2% of that figure. Total expenditures in the socioeconomic study area by non-local recreationists using public lands were estimated to be $25,542,000 in 2005 dollars. Spending by Utah residents (not all whom would reside in the planning area) added another $7,723,000, based on the assumptions outlined above.

Factors outside the planning area are expected to increase demand for recreational activities within the RFO. While there have been reductions in visitation numbers over recent years, these contradict regional and national recreation trends and are expected to reverse and grow over time (BLM 2003b). For instance, increasing populations along the Wasatch Front and the western slope of Colorado are expected to result in increasing demand for recreational activities throughout Utah, and likely for the RFO. No projections for increased visitation to RFO lands over the planning period are available, but expenditures, income, and jobs related to recreation on public lands are likely to increase over the planning period.

Recreation management decisions could impact the lifestyle or quality-of-life of individuals utilizing or living near public lands. In particular, decisions that alter the classification of certain areas within the RFO relative to different types of recreation experiences (e.g., primitive, motorized, developed sites, etc.) would affect the availability and quality of different recreational experiences. This could impact individuals with expectations or desires that differ from those provided by the management decisions. Under Alternative N, existing conflicts caused by differing visitor expectations and desires for certain types of recreational experiences could continue and intensify with time. This alternative does not address these types of conflicts.

Impacts from Travel Management

Demand for OHV recreation use is likely to increase over time in the RFO, although these increases are not quantifiable with existing data. The employment and income impacts of current levels of OHV recreation use are captured in the recreation analysis.

Under this alternative, most of the RFO (1,636,400 acres – 77%) would be open to OHV recreation use without limitation. This would provide for high quantity and quality of experience for users seeking an unconfined OHV recreation use experience, but would impact the quality of experience for other recreationists interested in non-motorized recreational environments. There could also be adverse impacts to that segment of OHV users for whom a key part of their recreation experience is interaction

[2] A comprehensive visitation use study conducted for the Moab, Utah BLM Field office found that 18 % of recreation visitors were locals, defined as living within 50 miles of the interview site (USFS 2007).

with and enjoyment of scenic values. Unrestricted OHV use has the potential to detract from such values, and thus the desired experience of this subset of users.

Impacts from Lands and Realty

Land tenure adjustments potentially impact local government finances. Disposal of public lands to private ownership could reduce Payments In Lieu of Taxes (PILT) by the Federal government to local government, but would also result in payments of property taxes to local government by the new private property owner(s). Land exchange to other governments could also impact PILT payments. Acquisition of private land by the BLM would reduce property taxes paid to local government but would increase PILT payments. The net impact on local government finances cannot be determined without detailed information on the specific property or properties in question and the tax rates and other financial figures for the particular local government(s).

Disposal of public lands to local governments or private parties could further the economic development of communities within the RFO or serve other important social purposes such as provision of special recreational areas. Neither the increased economic activity nor other social benefits or costs can be predicted within the framework of the DRMP/DEIS process because these impacts depend on the location and timing of the specific land tenure adjustments. Analysis of these impacts would properly be conducted at the implementation level.

Rights-of-way, leases, and permits produce revenue for the BLM and play important roles in the economy within, and in some cases beyond, the RFO. Management direction established in the DRMP/DEIS might support or deny rights-of-way, leases, and permits, but actual impacts would depend on the specific location and proposal. The socioeconomic impacts cannot be estimated at the RMP level.

Under Alternative N only a few parcels (280 acres) identified in current land use plans that have not sold to date would be available for FLPMA Section 203 sales. Thus, impacts from sales under this program would be low, resulting in foregone opportunities to bolster local economic development. However, other land tenure adjustments (exchanges, R&PP patents, etc.) could still be approved. These other land tenure adjustments are considered on a case-by-case basis and are hard to predict.

Under Alternative N, certain areas are managed as avoidance or exclusion areas for ROWs, including utility corridors and communication sites:

- WSAs
- ACECs
- Eligible wild and scenic river corridors
- Areas closed to oil and gas leasing
- Areas open to oil and gas leasing with no surface occupancy stipulations

To the extent that areas are excluded for ROWs, there could be an adverse impact on certain types of economic development which require such use of the public lands. To the extent that such areas are avoidance areas, additional costs could be imposed on those entities who desire ROWs. Without knowing the quantity of ROWs foregone by this alternative, the economic impacts cannot be quantified.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

The economic impact of oil and gas operations was analyzed in two phases:

- Phase I: Exploration and Development

- Phase II: Production

Phase I considered how many exploratory and development wells would be drilled in the RFO under each alternative, and how many would be completed as producing wells. The average number of wells expected to be drilled under each alternative for four sub-areas of the RFO was taken from the Reasonably Foreseeable Development Scenario (Appendix 12) prepared by the BLM for this DRMP/DEIS. A number of additional assumptions were necessary for this analysis, which are summarized in Table 4-76.

Table 4-76. Assumptions for Oil and Gas Economic Impact Analysis

Item		RFD Area			Source
		1 and 2	3	4	
Number of wells drilled per year on BLM		3	0	11	RFD Table 1 figures as adjusted for land ownership. divided by 15 year period
Type of Well	Oil	50%	0	100%	RFD, and Utah BLM state office minerals staff professional judgment
	Conventional Gas	50%	0	0	
	Coal Bed Methane	0	100%	0	
Average success rates, all well types		12.50%	12.50%	50%	Utah BLM state office mineral staff professional judgment—12.5% is the national average for exploration; a higher rate is expected in Area 4 due to known field development.
Average cost of drilling and completion to producing well	Oil	$2.25 million			Utah BLM state office mineral staff, based on costs in recent "Paying Well Determination" submittals for wells similar to those expected in the RFO
	Conventional Gas	$2.25 million			
	Coal Bed Methane	$1 million			
Average cost of drilling and completion to dry hole	Oil	$1.35 million			Utah BLM state office mineral staff professional judgment
	Conventional Gas	$1.35 million			
	Coal Bed Methane	$0.6 million			
Average annual operating costs	Oil	$60,000			Utah BLM state office mineral staff, based on costs in recent "Paying Well Determination" submittals for wells similar to those expected in the

Item		RFD Area			Source
		1 and 2	3	4	
Average annual operating costs	Conventional Gas			$60,000	RFO
	Coal Bed Methane			$30,000	

With regard to Phase I, exploration and development, the assumptions in Table 4-76 result in figures of $22 million for annual oil and gas well drilling and completion costs. (RFD Area 3 includes 49 projected wells located in a play on the eastern side of Sanpete and Sevier counties. Since RFD Area 3 has the least amount of BLM or other public land, any fluid mineral development precluded on public lands would likely be made up on other lands. This is why zero wells are projected on BLM lands in RFD Area 3). Not all of these expenditures benefit the socioeconomic study area because the oil and gas industry within the socioeconomic study area is quite small due to the low level of development in this area. It was therefore assumed for this analysis that all of the drilling operators would originate from areas outside the study area. Investment in oil and gas drilling would have less of an economic impact on the area because most of the direct expenditures (labor costs in particular) would not be recirculated back into the local economy. However, some businesses that would support drilling activities indirectly are located in the study area; for instance, hotels and restaurants used by the drilling crews. A study of impacts of gas drilling in Carbon and Emery counties concluded that only 40% of the direct expenditures for new wells would be local. This result was used for oil and gas exploration and development activities in the RFO.

Historically, the RFO has seen limited oil and gas exploration and very little development. Interest has recently increased with the advent of a producing well field. The RFD predicts that approximately 207 wells (including coal bed methane wells) would be drilled on BLM lands in the planning area over the 15-year planning period. This is an average rate of about 14 wells per year.

Under Alternative N, 459,700 acres would be closed to oil and gas leasing and 22,600 acres would be open to leasing subject to no surface occupancy. Remaining lands would be open to leasing under standard terms (1,236,500 acres) or controlled surface use or timing stipulations (409,200 acres). The closures and stipulations on leasing under this alternative are not expected to significantly affect oil and gas development. Nearly 80% of the wells projected in the RFD are located in a play along the west side of the planning area where public lands are either open to leasing under standard terms or open to leasing with controlled surface use or timing stipulations.

Leasable Minerals - Coal

Coal mining has historically been an important activity within the RFO and it is expected that this importance would continue in the future. Currently only one mine is operating within the planning area. This is the Southern Utah Fuel Company (SUFCO) mine in eastern Sevier County, which is Utah's single most productive coal mine. This operation includes both Forest Service and BLM land. While its current activity focuses on Forest Service land, BLM land is also part of the "logical mining unit" and therefore the production of this mine is included in its entirety for this socioeconomic impact analysis. As described in Chapter 2, the coal region of which the SUFCO mine is a part, includes 73,952 acres of Federal mineral estate.

Economic contributions associated with coal mining within the RFO were analyzed by first considering coal resources and annual production for Sevier County, which is the location of the SUFCO mine. This information was obtained from the Utah Geological Survey (2004). A five-year production average, as summarized in Table 4-77, was used as basis for future potential coal production during the study period. Coal resources in the vicinity of the SUFCO mine are adequate to support this level of production (Tabet 2003, pages 1 and 41).

Table 4-77. Total Annual Coal Production for Sevier County Utah

Year	Production (Thousand Short Tons)
2000	5,906
2001	7,001
2002	7,600
2003	7,126
2004[a]	7,400
5-yr Average	7,007

[a] Forecast
Source: UGS 2004.

The value of coal production within the RFO was then estimated by applying an annual price forecast per short ton to the 5-year average annual production rate listed in Table 4-77. The average forecasted price was obtained from the U.S. Energy Information Administration (2004) and represents the average forecasted nine month price for the U.S. over the period 2004-2018.

Coal mining under current conditions has a notable impact on the local economy, supporting nearly 700 full- and part-time jobs and nearly $22 million in labor income within the socioeconomic study area. Based on management actions under Alternative N, current trends in coal production are expected to continue and therefore the economic role of coal mining in the socioeconomic study area would be much the same as today. Adequate accessible coal resources exist to allow continuation of current production trends (Tabet 2003). No policies are in place that would substantially affect those trends. Rather, significant decreases or increases in coal production depend on energy prices and the relative economics of coal production in the RFO versus other regions. New coal development also depends strongly on site-specific environmental review.

In addition to the SUFCO mining area on the Wasatch Plateau, The Richfield RFD identifies an additional area in the Henry Mountains with potential for subsurface coal leasing, totaling 107,414 acres of Federal mineral estate. Although no current production exists, development of this resource has the potential to generate beneficial socioeconomic impacts under Alternative N. Under this Alternative, the entire acreage would be available for lease, with the exception of WSA acreage.

Locatable and Salable Minerals

Insufficient information was available to quantify the generation of employment and income from mining of locatable minerals (e.g., gypsum and metals such as gold) or salable minerals such as sand and gravel, stone, humate, and clay. Differences between the alternatives with regard to these mining activities are discussed qualitatively. According to the assumptions of this study, significant development of oil shale, tar sands, or geothermal resources is considered unlikely within the planning horizon.

Under Alternative N, present locatable mineral and mineral material exploration and development would be able to continue, with levels of activity depending on market conditions. Opportunities for individuals and companies to prospect for and develop mineral deposits would be maintained, thus preserving a culture of historic and social significance in the region.

Impacts from Special Designations

For the RFO, areas of special designation include Areas of Critical Environmental Concern (ACEC) and wild and scenic rivers. As is the case with VRM and non-WSA lands with wilderness characteristics, ACECs and WSRs are not resource management tools in themselves, but rely on prescriptions for other resource programs to achieve management goals. Alternative N continues to designate four existing ACECs totaling 14,780 acres, and manages in a protective manner twelve eligible WSR segments totaling 135 miles.

Wild and Scenic Rivers

Alternative N requires BLM to manage all eligible streams to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the corridor) and within the parameters of decisions made in the previous planning documents until such time as suitability determinations are made. Under Alternative N, no suitability determinations would be made for any of the eligible wild and scenic river segments. However, the twelve eligible river segments would continue to be managed in a manner that would not impair their wild and scenic river suitability. Social and economic impacts resulting from this management action would be similar to current conditions.

Areas of Critical Environmental Concern

The management prescriptions for the four existing ACECs are described in detail in Table 2-22 in Chapter 2. The prescriptions include restrictions on oil and gas leasing (either closed or NSO), restrictions on grazing in three of the ACECs, managed as closed to OHV use, closed to surface coal leasing, and recommended for mineral withdrawal. For those people in the planning area who could use these restricted resources for their economic or social benefit, this alternative is potentially harmful. No additional impact to these interests would occur, however, since these areas are currently managed to protect the relevant and important values that led to their creation. For those who derive social well-being from protection of these relevant and important values, this alternative provides such benefits. For all groups, however, socioeconomic impacts likely would be minor, given the small amount of acreage currently managed as ACECs.

Alternative A

Impacts from Vegetation

Additional vegetation treatments and weed control efforts, relative to Alternative N, would likely result in additional inflows of dollars to the RFO, increasing the opportunities for contracts, income, and employment. These additional treatments could also improve forage, economically benefiting ranchers who graze cattle on public lands. This alternative would provide the greatest economic stimulus, in the form of contracts, income and employment related to vegetation treatments, weed control and pest control. This stimulus would be very small relative to the total socioeconomic study area economy.

Impacts from Visual Resources

Alternative A designates 446,900 acres as VRM Class I. This acreage is within WSAs and is managed in Alternative N to protect scenic quality under IMP. The impacts to socioeconomics would be similar to the impacts from Alternative A decisions for those resources that directly impact scenic quality.

Impacts from Fire and Fuels Management

Assuming the 73,600 acres for treatment annually in this alternative are funded and implemented, economic activity resulting from hazardous fuel reduction treatments could be the same as Alternative A and greater than Alternatives N, C, or D. This alternative could provide the greatest economic stimulus, in the form of contracts, income, and employment related to hazardous fuel reduction treatments. If, for example, the full acreage were mechanically treated and past contract patterns continued, over $5,000,000 could be contributed to the local economy. Such a scenario, however, is unlikely in that funding on such a scale is improbable. The acreage maximum may be achieved through a variety of means, including naturally-caused wildfires, or selective thinning (often done by out-of-area contractors). It is also unclear whether local contractors would have the capacity to operate on such a scale, even for the type of work now being done. A more realistic scenario would be continued treatment at the 10,000 acre annual level, resulting in economic impacts similar to Alternative N. Any increase up to the prescribed maximum could generate more economic benefits to the local economy.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional impacts on socioeconomics.

Impacts from Forestry and Woodland Products

Opening additional areas to commercial harvesting in this alternative potentially could result in additional income and jobs relative to Alternative N; however, the value of timber available for harvest in this alternative is unknown. No impacts are anticipated to commercial seed and live plant harvesting and non-commercial harvesting of woodland products relative to Alternative N. This alternative could provide the greatest economic stimulus, in the form of contracts, income, and employment related to forestry and woodland products. The level of economic stimulus would be very small relative to the total socioeconomic study area economy.

Impacts from Livestock Grazing

Impacts would be the same as described for Alternative N, except that an additional 1,079 AUMs of forage on 36,950 acres would be available for livestock grazing. These additional AUMs would show little overall change from the above listed figures, representing an increase of only one per cent over Alternative N. Construction of necessary range improvements to facilitate the use of the additional forage could inject a small amount of permittee provided investment into the economy. The limited scope of those improvements and the extended timeframes required for initial investments to be recouped from the small amount of added production would delay real derived economic benefit to the ranchers for possibly decades. The small reduction in available AUMs for wildlife would possibly reduce the allotted hunting permits or opportunity in each respective locale for the species concerned (e.g. deer, elk, bison, or combination thereof). This reduction in permit numbers or hunting opportunity would reduce proportionally the income in local service industries, guide businesses, and Utah Division of Wildlife Resource (UDWR) coffers. The impact would be greatest on bison related activities with 249 AUMs becoming unavailable in Dry Lakes and Sawmill Basin allotments for bison, reducing their yearlong herd number by 20 animals. This alternative would also forfeit the investment the UDWR or their agents have made in purchasing these AUMs from livestock permit holders for the purpose of increasing available forage for wildlife.

Impacts from Recreation

The emphasis of Alternative A on motorized access, commodity production, and resource extraction impacts recreation. Management actions under this alternative could reduce the quality of the recreational experience for certain recreationists, particularly those seeking primitive and semi-primitive experiences. However, these impacts would be relatively localized, as the commercial potential for operations with

substantial impacts on recreation (e.g., mining or timber harvesting) is relatively limited in the planning area and resource development would likely be focused in small areas.

Recreation management impacts to lifestyle and quality-of-life under Alternative A could be locally significant, for particular sites, or significant in aggregate, depending on the degree to which the decisions match individual and societal preferences for the wide array of recreational uses provided by public lands. Under Alternative A, a number of special recreation management areas (SRMAs) would be established. Plans for these areas include both recreational facility development and primitive area preservation (the latter most notably for the Dirty Devil/Robbers Roost area), and emphasizes motorized and non-motorized uses to greater or lesser degrees. Recreationists seeking a wide variety of experiences would be able to find areas where their preferences are emphasized. This could improve the quality of experiences and resulting quality-of-life of many recreationists and reduce conflicts relative to Alternative N.

Establishment and management of the Dirty Devil/Robbers Roost SRMA to provide for recreational experiences complementary with the remote and scenic nature and other resource values of this area would help protect the quality of those experiences and could draw additional visitors to the area from outside the socioeconomic study area. (The Dirty Devil canyon area provides the type of primitive and semi-primitive recreation experiences and opportunities for challenge and solitude that are in substantial demand across the West.) This could result in increased economic activity in communities near the Dirty Devil area. To the extent that visitors rely on local permittees as guides and/or outfitters, these activities would directly benefit businesses and individuals engaged in such activities.

Impacts from Travel Management

Management actions under this alternative would provide some areas open to OHV recreation use without limitation (449,000 acres), but would place limitations on OHV recreation use in a very large portion of the RFO (1,679,000 acres). This would reduce the quantity and quality of experience for OHV recreation users seeking unconfined experiences. However, the lessened impacts on the scenery which could result from these restrictions could enhance the recreational experience of those OHV users whose primary interest is in enjoying the scenic qualities of the area. All areas closed to OHV recreation use in Alternative N (214,000 acres) would be limited under Alternative A, providing new areas for OHV recreation use. Designation of a large number of open play areas could draw additional riders from outside the RFO, resulting in economic stimulus to the socioeconomic study area. However, increased concentration of OHV recreation users in certain locations could cause increased conflicts among OHV recreation users or decreased quality of experience. The quality of experience for other recreationists seeking non-motorized recreational environments would be enhanced in those areas being placed in a limited category under this alternative.

Under Alternative A, 252 fewer miles of routes are open for motorized travel than under Alternative N; use on 249 additional miles is restricted; and 3 additional miles are closed. The effects on the local economy from these differences should be minor to negligible, given that 4,312 miles of routes would remain open to motorized travel.

Impacts from Lands and Realty

Under Alternative A approximately 13,400 acres of BLM-administered public lands would be considered for FLPMA Section 203 sales, much more than would be considered under Alternative N. Benefits to community development and taxes, assuming more land disposals, would likely be greater than under Alternative N. An offset to this economic gain to local counties would be a loss of PILT payments for any lands so disposed. A potential adverse social impact to disposals under this alternative would be the probable loss of public access to these parcels, although many of them are small, isolated parcels surrounded by non-Federal land where access is already restricted. Opportunities for other land tenure adjustments would be the same as for Alternative N.

Under Alternative A, certain areas are managed as avoidance or exclusion areas for ROWs, including utility corridors:

- WSAs
- Areas closed to oil and gas leasing

The acreage avoided or excluded is less than for all other alternatives. To the extent that areas are excluded for ROWs, there could be an adverse impact on certain types of economic development which require such access. To the extent that such areas are avoidance areas, additional costs could be imposed on those entities who desire ROW access. Without knowing the quantity of ROWs foregone by this alternative, the economic impacts cannot be quantified, but they would likely be less than under any other alternative.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Impacts from management actions under this alternative are similar to Alternative N. Under Alternative A, 446,900 acres would be closed to oil and gas leasing. Remaining lands would be open to leasing under standard lease terms (860,600 acres) or with controlled surface use or timing stipulations (820,500 acres). The closures and stipulations on leasing under this alternative are not expected to significantly alter oil and gas development, for the same reasons noted for Alternative N.

Leasable Minerals - Coal

Under Alternative A, the coal unsuitability reports prepared for this DRMP/DEIS would be used to determine lands acceptable for further consideration for leasing (Appendix 8). The acreage of lands available for leasing is considerably less in this alternative (and Alternatives B, C and D) than in Alternative N. However, the unsuitability analysis indicates 41,842 acres in the Henry Mountains Coal Field are suitable for underground mining (82% of the total underground minable coal resource acreage) and 14,719 acres are suitable for surface mining (40% of the corresponding acreage). In the Emery and Wasatch Fields, 31,838 acres are suitable for underground mining (100%) and no acres are suitable for surface mining (0% of the 683 total acres of surface-minable coal resource). In short, the unsuitability analyses indicate ample acreages are available for continued and perhaps expanded coal mining operations. This alternative includes policies and decisions that are designed to support extractive industries such as coal mining. However, as in Alternative N, whether additional coal development takes place depends upon energy prices, the relative economics of coal production in the RFO versus other regions, and site-specific environmental review.

Locatable and Salable Minerals

Impacts would be similar to those described for Alternative N, except that this alternative would have less restrictions on disposal of mineral materials. The lessened restrictions could provide additional opportunities for those wishing to obtain salable minerals.

Impacts from Special Designations

Wild and Scenic Rivers

Alternative A would not recommend rivers within the RFO for wild and scenic river designation. This would create some opportunities for businesses and individuals currently impacted by managing the eligible river segments to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under Alternative N. Individuals whose social well-being is enhanced by these values currently protected could be adversely impacted by this alternative, relative to Alternative N.

Areas of Critical Environmental Concern

Alternative A would designate no ACECs. This would create some opportunities for businesses and individuals currently impacted by restrictions on the existing ACECs under Alternative N. Individuals whose social well-being is enhanced by the relevant and important values currently protected could be adversely impacted by this alternative, relative to Alternative N. For all groups, however, socioeconomic impacts likely would be minor, given the small amount of acreage currently designated as ACECs.

Alternative B: Preferred Alternative

Impacts from Vegetation

Impacts from management actions under this alternative are the same as for Alternative A. In addition, management actions under Alternative B would apply an economic threshold to application of pest control programs. This would probably result in fewer pest control programs and attendant contract, income, and employment opportunities than under Alternative A.

Impacts from Visual Resources

The socioeconomic impacts from visual resource management under Alternative B would be similar to Alternative A. Alternative B designates the same acreage as VRM Class I, but adds 209,000 acres as VRM Class II. The socioeconomic impacts of resource decisions to protect scenic qualities of VRM Class II areas are described in those specific resource discussions. Resource decisions most affected by Alternative B include recreation, minerals, and travel management.

Impacts from Fire and Fuels Management

Impacts would be the same as described for Alternative A.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional impacts on socioeconomics.

Impacts from Forestry and Woodland Products

Impacts would be similar to those described for Alternative A, except that commercial live plant and seed collection would only be allowed in areas outside WSAs and suitable wild and scenic river corridors.

Impacts from Livestock Grazing

Impacts would be the same as described for Alternative N.

Impacts from Recreation

Management actions under Alternative B attempt to balance needs to provide for production of food, fiber, and minerals with needs to protect, restore, and enhance natural values and provide quality recreational experiences. There could be less impact on recreation due to resource development and extraction than under Alternative A, and therefore less impact on the lifestyle and quality-of-life of recreational users of the lands managed by the RFO.

Management of the SRMAs would emphasize primitive and semi-primitive experiences to a greater extent than under Alternative A (most notably for the Capitol Reef Gateway and Henry Mountains). This could draw additional visitors to the area from outside the planning area who seek such experiences, potentially resulting in increased economic activity in communities near these SRMAs.

Impacts from Travel Management

This alternative has 8,400 acres open to OHV use, and fewer designated open play areas than Alternative A. This could result in a diminished recreational experience for some OHV users, and may impact the area's ability to draw new OHV users, and their associated expenditures, to the socioeconomic study area. OHV use on the majority of the RFO (1,909,200 acres) would be limited to designated routes, which is similar to the combined total of open and limited areas for Alternative N (1,914,000 acres). The total acreage closed to OHV use in Alternative B (210,400 acres) is also similar to that for Alternative N (214,000 acres). While OHV users seeking unconfined experiences would be impacted, overall OHV recreation use would likely be similar to Alternative N. Thus the economic impact of OHV recreation use under this alternative would likely be similar to the impact under Alternative N.

Under Alternative B, designated routes total 4,176 miles, 483 miles of which have timing or vehicle size restrictions. The reduced miles available for motorized travel could adversely impact some local users, to the degree that their perceived needs for access are affected. For those desiring a more backcountry recreation experience, the reduced miles of available motorized routes could be perceived as beneficial. The overall differences from Alternatives N and A might not be substantial enough to produce other than minor socioeconomic impacts.

Impacts from Lands and Realty

The types of impacts from lands and realty under this alternative are similar to those for Alternative A. In addition, Alternative B considers withdrawing a relatively small amount of land from mineral entry; however, this would have minor impacts on mineral development relative to Alternative N given current rates of such development and directional drilling technologies. Significant acreages would also not be available for rights-of-way for wind and solar energy exploration and development, but this would likely have minimal impacts as the potential for such uses is small.

Under Alternative B, certain areas would be avoidance or exclusion areas for rights-of-way (ROWs), including utility corridors and communication sites:

- WSAs
- ACECs
- Suitable wild and scenic river corridors
- Areas closed to oil and gas leasing
- Areas open to oil and gas leasing with no surface occupancy stipulations

Although the *categories* of these ROW avoidance/exclusion areas are similar to Alternative N, the acreages differ due to differences between the alternatives within these land categories. Alternative B places greater restrictions on ROWs than does Alternative N because an additional 79,100 acres fall into the closed or NSO oil and gas leasing categories. This is somewhat offset by the management of 12,250 fewer acres as ACECs under Alternative B. In addition, although Alternative B recommends two eligible river segments (59 miles) as suitable (while no suitability determination is made in Alternative N), all eligible river segments are managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under Alternative N. To the extent that areas are excluded for ROWs, there could be an adverse impact on certain types of economic development which require such development. To the extent that such areas are avoidance areas, additional costs could be imposed on those entities who desire ROWs. Without knowing the quantity of ROWs foregone by this alternative, the economic impacts cannot be quantified.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Impacts from management actions under this alternative are similar to Alternative A. Although the total number of acres closed to oil and gas leasing (450,500 acres) or open to leasing subject to no surface occupancy (110,900 acres) is greater than under Alternatives N or A, this would not likely have substantial effects on oil and gas activity for the reasons noted for Alternative N.

Leasable Minerals - Coal

Impacts from management actions under this alternative on coal production and its impact on the local economy likely would be similar to Alternative A. The Wasatch and Emery coal fields would remain largely available. This alternative includes policies and decisions that are designed to balance extractive industries such as coal mining with needs to protect, restore, and enhance natural values. As in Alternative A, whether additional coal development takes place largely depends upon energy prices, the relative economics of coal production in the RFO versus other regions, and site-specific environmental review.

Locatable and Salable Minerals

Alternative B proposes withdrawing an additional 21,500 acres from mineral entry relative to Alternative A. This could have minor to negligible effects on the local economy. Additionally, this alternative closes an additional 3,600 acres to disposal of salable minerals. These are small, largely devoid of potential, or at uneconomic distances from users (e.g., sand and gravel deposits located at a distance from significant construction activity), rendering socioeconomic impacts similar to Alternative A.

Impacts from Special Designations

Wild and Scenic Rivers

Alternative B recommends two river segments (59 miles) as suitable for inclusion into the wild and scenic rivers system. Restrictions under this alternative include closing the area to OHV use, closing or NSO to oil and gas leasing, and recommending for withdrawal from mineral entry. These restrictions could potentially adversely impact individuals or businesses in the planning area that rely on these resources. The acreage affected, however, is small and these effects would likely be minor. The OHV restrictions in particular would have negligible to minor impacts as the segments in question receive little if any motorized use due to topography or current OHV management. The designation of wild and scenic rivers under Alternative B could potentially lead to an increase in tourism revenue to local communities, thus having long-term beneficial impact on the local economies. The designation of rivers and/or river segments could attract more people to the area who enjoy the type of recreation that often accompanies these designations (including high scenic qualities and opportunities for solitude).

Areas of Critical Environmental Concern

Alternative B would designate two ACECs totaling 2,530 acres (which is less than under Alternative N but more than under Alternative A). This would create additional opportunities for businesses and individuals currently impacted by restrictions within ACECs under Alternative N, but less opportunities than under Alternative A. Individuals whose social well-being is enhanced by the relevant and important values currently protected could be adversely impacted by this Alternative, relative to Alternative N. For all groups, however, socioeconomic impacts likely would be minor, given the small amount of acreage currently designated as ACECs.

Alternative C

Impacts from Vegetation

This alternative would rely on using treatment methods that mimic natural processes, including prescribed fire, for vegetation treatments and weed control. A maximum of 26,000 acres per year would be so treated, less than the 73,600 acres per year allowed under Alternatives A and B. Fewer opportunities for contracts, income, and employment would be available than under Alternatives A or B. No pest control measures would be implemented; thus, opportunities for contracts, income, and employment available under Alternatives A and B for pest control would not be available under this alternative. Impacts on forage, and thereby on grazing economics, cannot be predicted.

Impacts from Visual Resources

VRM designations for Alternative C are very similar to Alternative B; therefore, socioeconomic impacts would be similar.

Impacts from Fire and Fuels Management

Hazardous fuel reduction treatments could generate economic activity from contracts and result in income and employment gained by those providing the treatments, plus indirect and induced effects. This activity would be less than under Alternatives A or B because the annual treatment acres are limited to 26,000 acres per year. As noted in the discussion for Alternative A, however, a more likely scenario is continued treatment of about 10,000 acres annually, with an economic impact similar to Alternatives N, A and B.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional impacts on socioeconomics.

Impacts from Forestry and Woodland Products

Relative to Alternative N, there could be some loss of income and jobs due to this alternative's prohibitions on commercial timber harvesting and commercial collection of seeds and live plants. Such losses are likely to be very small relative to the total socioeconomic study area economy. However, these prohibitions might have important local impacts and could reduce opportunities to maintain aspects of local culture based on harvesting natural resources. Prohibiting commercial seed harvesting would shift this activity to other areas outside of the RFO. Non-commercial harvesting of woodland products would not change relative to Alternative N.

Impacts from Livestock Grazing

Impacts would be the same as described for Alternative N.

Impacts from Recreation

Management actions under this alternative place the emphasis on protection of natural systems. This alternative could produce less of an impact on recreation arising from resource development and extraction than Alternatives N, A or B.

Management of SRMAs would have a stronger emphasis on primitive, semi-primitive, and non-motorized uses than under Alternatives N, A, or B. Fewer recreational facilities would be developed. Expenditures by individuals who desire developed facilities might decline relative to those alternatives. These expenditure reductions could cause a loss of income and jobs in the socioeconomic study area. Whether these expenditures would be offset by spending by recreationists desiring more primitive recreation experiences cannot be quantified without knowing how numbers would shift (if at all) under this alternative.

Impacts from Travel Management

Under Alternative C, areas closed to OHV use (683,000 acres) and areas where OHV use is limited to designated routes (1,445,000 acres) would be greater than Alternatives N, A and B and less than Alternative D. Under this alternative, no acres would be designated as open. The mileage of closed routes in this alternative would be greater than Alternatives N, A and B and less than Alternative D. Thus the quality of experience for some OHV recreation users, particularly those desiring an unrestricted OHV environment, could be reduced. Restrictions on OHV recreation use could reduce the draw of OHV recreation users from beyond the RFO, resulting in some reduction of expenditures relative to the other alternatives. For some OHV users, however, the lowered impacts on scenery which could result from these restrictions could enhance the recreational experience of those OHV users whose primary interest is in enjoying the scenic qualities of the area. Limitations and closures to OHV recreation use would enhance the recreational experiences of individuals seeking non-motorized recreational environments.

Alternative C provides 2,601 miles of designated routes, 591 miles of designated routes with seasonal closures and/or size width restrictions, and closes 1,188 miles of routes to motorized travel. This represents an additional closure of 984 miles relative to Alternative B. Although not quantifiable, this alternative has greater potential to adversely impact the local economy, but only to the extent that local residents use these routes in their economic pursuits. Similarly, to the extent that these routes are used for recreational use or access, the additional closures could adversely affect the experiences and potential expenditures of these users. Conversely, those who desire a more primitive recreation experience would likely find their recreational experiences enhanced under this alternative.

Impacts from Lands and Realty

The type of impacts from lands and realty under this alternative are similar to those described for Alternative B, except that no public lands would be considered for FLPMA Section 203 disposals. Thus, any fiscal or economic development benefits achieved in the other alternatives from disposal of public lands would be foregone.

Under Alternative C, certain areas would be avoidance or exclusion areas for ROWs, including utility corridors and communication sites:

- WSAs
- ACECs
- Suitable wild and scenic river corridors
- Areas closed to oil and gas leasing
- Areas open to oil and gas leasing with no surface occupancy

Although the *categories* of lands are similar to Alternatives N and B, the acreages differ due to differences between the alternatives within these land categories. Alternative C places greater restrictions on ROWs than Alternatives N and B because an additional 173,700 acres fall into the closed or NSO mineral leasing categories. Additionally, Alternative C manages an additional (as compared to Alternative B) 884,280 acres as ACECs. Alternative C also manages an additional 10 segments of wild and scenic rivers, totaling an additional 76 miles. To the extent that areas are excluded for ROWs, there could be an adverse impact on certain types of economic development which require such development. To the extent that such areas are avoidance areas, additional costs could be imposed on those entities who desire ROWs. Without knowing the quantity of ROWs foregone by this alternative, the economic impacts cannot be quantified.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Impacts from management actions under this alternative are similar to Alternative B. Although the total number of acres closed to fluid mineral leasing (586,300 acres) or open to leasing subject to no surface occupancy (148,800 acres) is greater than Alternatives N, A and B, this would not likely have substantial effects on oil and gas activity for the reasons noted for Alternative N.

Leasable Minerals - Coal

This alternative includes objectives and management actions that are designed to protect, restore, and enhance natural values. Surface and subsurface coal leases would be prohibited in those areas designated as VRM Class I or Class II; thus this alternative could be more restrictive on coal leasing than Alternative B, which restricts such leasing only in areas designated as VRM Class I. However, as in Alternative B, whether additional coal development takes place largely depends upon energy prices, the relative economics of coal production in the RFO versus other regions, and site-specific environmental review.

Locatable and Salable Minerals

The area proposed for withdrawal from mineral entry is larger, by 154,900 acres, than Alternative B. This has some potential to preclude development of some economically viable deposits, and could reduce opportunities for individuals interested in maintaining a mining economy and culture. However, the potential for locatable mineral development in the RFO is at this time assumed to be low. Thus, economic and cultural impacts could also be low.

The area closed to disposal of salable minerals is also larger than in Alternative B, totaling 586,300 acres. These are small, largely devoid of potential, or at uneconomic distances from users (e.g., sand and gravel deposits located at a distance from significant construction activity), rendering socioeconomic impacts similar to Alternative B.

Impacts from Special Designations

Wild and Scenic Rivers

Alternative C recommends 12 river segments (135 miles) as suitable for inclusion into the wild and scenic rivers system. Restrictions under this alternative include closing to OHV use, closing or NSO to oil and gas leasing, and recommending for withdrawal from mineral entry. These restrictions could potentially adversely impact individuals or businesses that rely on these resources. The acreage affected, however, is small and these impacts would likely be minor. Furthermore, nearly three-quarters of the suitable river miles under this alternative are within WSAs, encompassing most of the Dirty Devil River and its side drainages. Thus, the restrictions proposed are already in place under IMP for these particular segments, leading to socioeconomic impacts identical to the current situation. The OHV restrictions in particular would have negligible to minor impacts as the segments in question receive little if any motorized use due to topography or current OHV management. The designation of wild and scenic rivers under Alternative C could potentially lead to an increase in tourism revenue to local communities, thus having long-term beneficial impact on the local economies. The designation of rivers and/or river segments could attract more people to the area who enjoy the type of recreation that often accompanies these designations (including high scenic qualities and opportunities for solitude).

Areas of Critical Environmental Concern

Alternative C would designate 16 ACECs totaling 886,810 acres. Table 4-78 summarizes the major management prescriptions for the 16 ACECs under Alternative C which have the potential to impact socioeconomics.

Table 4-78. Management Prescriptions in ACECs Potentially Affecting Socioeconomics - Alternative C

ACEC Name	Acres	Acres within WSAs	OHV Closed acres	Closed Routes (miles)	Oil &Gas Closed acres	VRM Class I acres
Badlands	88,900	40,400	83,000	12	88,900	40,400
Bull Creek	4,800	0	0	1	0	0
Dirty Devil/North Wash	205,300	130,700	204,700	78	165,500	130,700
Fremont Gorge/Cockscomb	34,300	2,800	11,100	9	4,500	2,800
Henry Mountains	288,200	130,000	207,200	164	164,800	130,000
Horseshoe Canyon	40,900	37,800	40,800	5	37,800	37,800
Kingston Canyon	22,100	0	0	10	0	0
Little Rockies	49,200	37,400	38,400	3	38,500	37,400
Lower Muddy Creek	16,200	0	14,600	17	16,200	0
Old Woman Front	330	0	330	0	0	0
Parker Mountain	107,900	0	0	46	0	0
Quitchupah	180	0	90	0	90	0
Rainbow Hills	4,000	0	4,000	26	0	0
Sevier Canyon	8,900	0	0	3	0	0
Special Status Species	15,100	0	0	0	0	0
Thousand Lake Bench	500	0	500	0	0	0
Total	**886,810**	**379,100**	**604,720**	**374**	**516,290**	**379,100**

As Table 4-78 indicates, approximately 379,100 acres (42.7%) of the 16 ACECs are partially within WSAs, which are managed under IMP. For this acreage, impacts to socioeconomics would be identical to current conditions. For example, the acreage designated as VRM Class I under Alternative C is identical to the WSA acreage, with no additional VRM Class I acreage attributable to ACEC designations. OHV management and oil and gas leasing restrictions, however, encompass additional non-WSA acreage. For the 16 ACECs, 200,100 additional acres (compared to Alternative B) are in the closed OHV category. For oil and gas leasing, an additional 137,400 acres are in the closed category. These additional restrictions would likely have adverse impacts for OHV enthusiasts, and could adversely impact individuals and businesses that rely on mineral resources for all or part of their livelihoods. Individuals whose social well-being is enhanced by the specific relevant and important values protected within these ACECs would be beneficially affected by this alternative, relative to Alternatives N, A and B.

Alternative D

Impacts from Vegetation

Impacts would be the same as described for Alternative C.

Impacts from Visual Resources

Alternative D places the greatest restrictions on development to protect visual resources. As discussed earlier, the restrictions to protect visual resources are decisions within other resource programs which can impact visual quality. Restrictions under this alternative to protect scenic qualities include restrictions on

vegetative treatments and fuels management, travel management, minerals and energy, lands and realty, and recreation. The restrictions on development within VRM Class I and II areas under this alternative have the greatest potential to restrict economic opportunities for those whose livelihood depends all, or in part, on the restricted activities. This would be particularly true in the case of minerals development and motorized recreation. Conversely, the scenic qualities of the RFO which attract visitation would receive the greatest degree of protection under Alternative D. This could benefit those businesses which rely on that type of recreation visitation, including lodging, restaurants and outfitting.

Impacts from Fire and Fuels Management

Impacts would be the same as described for Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Alternative D manages 682,600 acres of non-WSA lands with wilderness characteristics in such a manner as to provide protection for the qualities of naturalness, outstanding opportunities for primitive and unconfined recreation or solitude, and supplemental values where present. As with visual resources, this resource itself is not a management tool, but relies on restrictions of other resource programs to achieve its management goals. The tools used include restrictions on vegetative and fuels treatments, travel management, minerals and energy, lands and realty, and recreation. These restrictions are identical to the restrictions discussed in Chapter 4 for each of these resources under Alternative D, and the socio-economic impacts are similar for each of these resources so restricted.

As with visual resources, the restrictions on development under this alternative have the greatest potential to restrict economic opportunities for those whose livelihood depends all, or in part, on the restricted activities. This would be particularly true in the case of minerals development and motorized recreation. Conversely, those whose livelihood or sense of well-being depends on values associated with wilderness characteristics and primitive recreation would perceive the greatest benefit under Alternative D. This alternative could benefit those businesses which rely on those recreation visitors who value wilderness qualities.

It is not possible to predict whether the potential socioeconomic gains described above would outweigh the socioeconomic losses which could result from this alternative. Managing lands for wilderness characteristics may have some benefits to the local economy, above and beyond benefits to individual users of these areas. There is extensive literature which argues that protecting lands as wilderness provides local, regional and even national economic benefits. Other research suggests that areas with protected lands are more likely to attract higher income individuals, as well a businesses, who value the types of recreation activities provided by protected areas. Still other research argues that certain types of high-dollar recreation, such as hunting, are enhanced by wilderness protection. While most of these studies have focused on the benefits accruing to *designated* wilderness, it is possible that the same arguments may be applicable to non-WSA lands with wilderness characteristics[3].

Impacts from Forestry and Woodland Products

Impacts would be similar to those described for Alternative C, with the addition that neither commercial nor non-commercial wood collecting would be allowed in non-WSA lands with wilderness characteristics or in WSR corridors. No live plant or seed collecting would be allowed in these areas. However, these prohibitions could have local social and economic impacts, and could reduce opportunities to maintain aspects of local culture based on harvesting natural resources.

[3] A good source with an extensive literature review is: "The net economic value of wilderness", Bowker, J.M.; Harvard, J.E.,III; Bergstrom, John C.; Cordell, H. Ken; English, Donald B.K.; Loomis, John B., in The Multiple Values of Wilderness, pp. 161-181, USFS, Southern Research Station, 2005.

Impacts from Livestock Grazing

Impacts would be the same as described for Alternative N.

Impacts from Recreation

Impacts would be similar to those described for Alternative C except that this alternative would include management prescriptions to protect wilderness characteristics on 682,600 acres of non-WSA lands with wilderness characteristics. The overall management prescriptions associated with this alternative would have a stronger emphasis on primitive, semi-primitive, and non-motorized uses than any of the other alternatives. Fewer recreational facilities would be developed. Expenditures by individuals who desire developed facilities might decline relative to the other alternatives. These expenditure reductions could cause a loss of income and jobs in the socioeconomic study area. For individuals seeking more primitive and non-motorized recreational experiences, use and resulting expenditures and related economic activity, as well as experiential satisfaction, would likely be greatest under this alternative.

Impacts from Travel Management

Closure of areas to OHV recreation use (1,155,200 acres) and limiting OHV use to designated routes in other areas (972,800 acres) would be greatest under this alternative. Thus, the quality of experience for some OHV recreation users would be reduced as OHV riding takes place in more limited areas, increasing crowding in some. Restrictions on OHV recreation use could reduce the draw of OHV recreation users from beyond the planning area, resulting in some reduction of expenditures relative to the other alternatives. Limitations and closures to OHV recreation use would enhance the recreational experiences of individuals seeking non-motorized recreational environments.

The miles of routes designated, designated with restrictions, and closed would be similar to Alternative C. The miles of closed routes would be higher by 54 miles, an increase of approximately 5% over Alternative C. The socioeconomic impacts of route designations under Alternative D would thus be similar to Alternative C.

Impacts from Lands and Realty

Socioeconomic impacts from land tenure adjustments would be the same as for Alternative C. Under Alternative D, certain areas would be managed as avoidance or exclusion areas for ROWs, including utility corridors and communication sites:

- WSAs
- ACECs
- Eligible wild and scenic river corridors
- Non-WSA lands with wilderness characteristics
- Areas closed to oil and gas leasing
- Areas open to oil and gas leasing with no surface occupancy

Although the *categories* of lands are similar to Alternative N, B, and C, the acreages differ due to differences between the alternatives within these land categories. Alternative D includes more areas as ROW exclusion/avoidance areas than does Alternative C because an additional 468,800 acres fall into the closed or NSO mineral lease categories. To the extent that areas are excluded for ROWs, there could be an adverse impact on certain types of economic development which require such development. To the extent that such areas are avoidance areas, additional costs could be imposed on those entities who desire ROWs. Without knowing the quantity of ROWs foregone by this Alternative, the economic impacts cannot be quantified.

Impacts from Minerals and Energy

Leasable Minerals - Oil and Gas

Alternative D closes 1,160,500 acres to oil and gas leasing and restricts 43,300 acres to no surface occupancy. As described in detail in Section 4.3.12 (Non-WSA Lands with Wilderness Characteristics), this alternative projects one less well drilled per year in RFD areas 1 and 2, and .13 wells per year fewer in RFD area 3 (2 wells over 15 years). This would result in a reduced spending on Phase 1 exploration and development of $2.87 million (1.13 wells x $2.25 million to drill and complete one successful well, less if unsuccessful), computed on an average annual basis. As discussed under Alternative N, not all of these expenditures would likely be local.

Leasable Minerals - Coal

This alternative includes policies and decisions that are designed to protect, restore, and enhance natural values and protect non-WSA lands with wilderness characteristics. Protecting the non-WSA lands with wilderness characteristics would remove 44,300 acres of identified coal resource land from further consideration for leasing, primarily in the Henry Mountains. But this study assumes this coal field would not be developed within the planning period. Whether additional coal development takes place largely depends upon energy prices, the relative economics of coal production in the RFO versus other regions, and site-specific environmental review.

Locatable and Salable Minerals

Alternative D proposes withdrawing 903,900 acres from development of locatable minerals and closing 1,160,500 acres to salable minerals. This has some potential to preclude development of some economic deposits, and could reduce opportunities for individuals interested in maintaining a mining economy and culture. However, the potential for both locatable mineral development and disposal of salable minerals in the RFO is at this time assumed to be low. Thus, economic and social impacts could also be low.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts are the same as those described for Alternative C.

Areas of Critical Environmental Concern

Alternative D designates acreage identical to Alternative C, but offers a higher degree of protection of the relevant and important values. Table 4-79 summarizes those restrictions that could impact socioeconomics.

Table 4-79. Management Prescriptions in ACECs Potentially Affecting Socioeconomics - Alternative D

ACEC Name	Acres	Acreage within WSA	OHV Closed acres	Closed Routes (miles)	Oil & Gas Closed acres	VRM Class I acres
Badlands	88,900	40400	84,900	10	88,900	75,800
Bull Creek	4,800	0	300	1	0	300
Dirty Devil/North Wash	205,300	130,700	20,4800	89	204,300	203,900
Fremont Gorge/Cockscomb	34,300	2,800	20,400	20	18,900	18,700
Henry Mountains	288,200	130,000	230,400	162	239,500	222,500

ACEC Name	Acres	Acreage within WSA	OHV Closed acres	Closed Routes (miles)	Oil & Gas Closed acres	VRM Class I acres
Horseshoe Canyon	40,900	37,800	40,800	5	37,800	40,800
Kingston Canyon	22,100	0	16,500	20	0	16,500
Little Rockies	49,200	37,400	46,900	4	46,900	46,300
Lower Muddy Creek	16,200	0	1,5900	17	16,200	15,800
Old Woman Front	330	0	330	0	0	0
Parker Mountain	107,900	0	0	46	0	0
Quitchupah	180	0	110	0	0	30
Rainbow Hills	4,000	0	4,000	26	0	0
Sevier Canyon	8,900	0	0	3	0	0
Special Status Species	15,100	0	0	0	0	0
Thousand Lake Bench	500	0	500	1	0	40
Total	**886,810**	**379,100**	**665,840**	**404**	**652,500**	**640,670**

As Table 4-79 indicates, and identical to Alternative C, approximately 379,100 acres (42.7 %) of the 16 ACECs are in WSAs currently managed under IMP. For this acreage, impacts to socioeconomics would be identical to current conditions. For example, the acreage designated as VRM Class I under Alternative C is identical to WSA acreage, with no additional acreage attributable to ACEC designations. Additional restrictions on some resources, however, are present in this alternative, above and beyond WSA acreage and the acreage described in Alternative C. These additional acreages in VRM Class I, restrictive oil and gas lease categories, and closed OHV areas are due almost exclusively to the overlap between the ACECs and non-WSA lands with wilderness characteristics. The increased restrictions on these resources in Alternative D are the result of prescriptions for managing non-WSA lands for wilderness characteristics, rather than prescriptions for protecting the relevant and important values of the ACECs.

These additional restrictions would likely adversely impact OHV enthusiasts, and could adversely impact individuals and businesses that rely on mineral resources for all or part of their livelihoods. Individuals whose social well-being is enhanced by the specific relevant and important values protected within these ACECs would be beneficially affected by this alternative relative to Alternatives N, A B, and C.

Other Impacts on Socioeconomics

The following section projects impacts on facets of socioeconomics not fully described in the resource decisions discussed above. Specifically, this section discusses the impacts of BLM resource decisions on population, community services, environmental justice, and public health and safety.

4.6.2 Impacts to Population

Any population change that could be associated with implementation of alternatives under consideration in the DRMP/DEIS would likely be linked to employment changes. Activities on public lands in the RFO would continue to support a notable number of jobs in the socioeconomic study area under all alternatives. It is not anticipated that continuing current management actions under Alternative N would significantly affect population trends. Changes in employment in all action alternatives, whether quantified in this DRMP/DEIS or not, are not expected to be substantial relative to Alternative N or each other. Therefore, population impacts of any of the alternatives would be negligible. Under Alternative A, localized impacts are possible within portions of the socioeconomic study area that are more closely tied to the employment opportunities generated by coal mining and oil and gas development. Under

Alternatives C and D, employment could change somewhat in specific locations due to policies that favor resource preservation and passive use over resource development, but any resulting localized impacts to population trends would be minor.

4.6.3 Impacts to Community Services

Activities affected by DRMP/DEIS decisions could cause impacts to local government services in various ways. For instance, changes in demand for local government services could vary with changes in population tied to management actions. Significant changes in population could cause undue strain on infrastructure (e.g., roads, utilities, schools, etc). As discussed above, notable population changes are not expected under any alternative. Therefore, identifiable changes in demand for government services are not expected due to changes in population.

Decisions under the alternatives could also cause impacts to services through changes in tax receipts. All alternatives are expected to continue to generate notable local tax revenues throughout the planning period, with some minor variations. For instance, management actions under Alternatives A and B would provide the greatest potential for community development and increased local tax revenues from land disposals, while management actions under Alternative C would preclude these potential benefits.

Management actions could also affect local government services directly. For instance, increased recreational use of RFO lands, likely under all alternatives due to regional and national trends, would increase the demand for local government services associated with safety, emergency services, and police protection. While local search and rescue operations utilize volunteers, there would be a growing need for training, equipment, and resources. In addition, these operations must be supported by the Sheriff's Office in each county.

Increased government services might also be needed to support other activities such as somewhat greater oil and gas development under Alternative A. This could include emergency, social and safety services as well as road maintenance and traffic control. However, oil and gas development in this and all alternatives is likely to be fairly limited compared to major oil and gas producing areas in other parts of the West.

4.6.4 Environmental Justice

Executive Order 12898, Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations, requires Federal agencies to identify and address disproportionately high and adverse human health and environmental impacts of Federal programs, policies and activities on minority or low-income populations. As noted in the Baseline Socioeconomic Profile (BLM 2003b) and Chapter 3, no socioeconomic study area counties—

- Have minority or low-income populations exceeding 50%; or
- Have minority or low-income populations that are 10 percentage points greater than figures for the State of Utah.

Therefore, for the purposes of this analysis and all management alternatives examined in this DEIS, there are no environmental justice populations in the socioeconomic study area, and actions required to identify and mitigate impacts to such populations are not required.

4.6.5 Public Health and Safety

An inventory of abandoned mines throughout the RFO has not been completed. Some abandoned mines within the RFO may be considered public safety hazards and/or suspected to have environmental concerns due to potentially occurring hazardous materials. Through coordination with Utah Department of Oil, Gas and Mining and subject to funding, abandoned mines will continue to be identified and access to these mines controlled with warning signs and barriers, with some being reclaimed or closed. None of the management actions would increase public exposure to the risks associated with these abandoned mines. As a result, impacts would be negligible.

Remediation of contaminated and hazardous sites is necessary for compliance with applicable Federal and state rules and regulations. No hazardous or solid waste sites are known to occur on public lands within the planning area. Incidental dumping of hazardous materials occurs, but is rare and concentrated mostly in close proximity to towns and highways primarily within the RFO. Public health and safety management actions have been proposed under all alternatives for all three planning areas that address prevention and cleanup of such sites, as well as other health and safety concerns. None of the management actions proposed by the alternatives would require the handling, storage, or release of hazardous, toxic, or unapproved solid wastes that would cause health and safety concerns. Small amounts of fuels, chemicals, or other vegetation treatment products would be used throughout the RFO, but amounts would be relatively small and mostly applied away from populated areas. As a result, health and safety impacts would be negligible and are not analyzed further.

4.7 CUMULATIVE IMPACTS

Cumulative impacts occur when there are multiple impacts on the same resources. These are incremental impacts of proposed activities and projects when combined with other past, present, or future actions. As stated in 40 CFR 1508.7 (1997), a "cumulative impact is the impact on the environment that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Resource decisions from this RMP could combine with other past, present, and reasonably foreseeable future actions to produce cumulative impacts to resources in the planning area or adjacent lands that would be within the influence of the RMP. In other words, the scope of implementation of the alternatives of this RMP would include any activities and conditions, either within the RMP boundaries or outside, which would directly or indirectly influence the same resources as analyzed in the RMP. Planning projects in the region that could contribute to cumulative impacts include any area that would be affected by the decisions of the plan because of their geographic, administrative, or political ties to the RMP lands, such as adjacent BLM Field Office lands, Forest Service lands, and State-owned lands. Private lands, surrounding communities, and city and county jurisdictions could also produce cumulative impacts where land is developed or projects are constructed adjacent to BLM public lands.

4.7.1 Methodology

The cumulative impacts discussion that follows considers the alternatives in the context of the broader human environment and specifically actions that occur outside the scope and geographic area covered by the RMP. Because of the programmatic, broad-scale nature of this RMP, this assessment is broad and generalized to address potential effects that could occur from a hypothetical management scenario when combined with other activities or projects. This assessment is primarily qualitative for many resources

because of the lack of detailed information that would result from project-level decisions and other activities or projects.

Cumulative impact analysis is limited to important issues of national, regional, or local significance. Therefore, not all issues identified for direct or indirect impact assessment in this EIS are analyzed for cumulative effects. Because of the wide geographic scope of a cumulative impact assessment and the variety of activities assessed, cumulative impacts are commonly examined at a more qualitative and less detailed level than are the direct and indirect impacts presented previously in this chapter. This analysis includes discussion of factors that comprise the current environment. Factors that could be expected to influence that environment in the future are also considered. Reasonably foreseeable future action scenarios are projections made only for the prediction of future impacts; they are not actual planning decisions or resource commitments.

Projections, which have been developed for analytical purposes only, are based on current conditions and trends and represent a best professional estimate. Unforeseen changes in such factors as economics, demand, and Federal, State, and local laws and policies could result in different outcomes than those projected for this analysis.

The following factors were considered in this cumulative impact assessment:

- Federal, non-Federal, and private actions;
- The potential for effects to cross political and administrative boundaries;
- The characteristics of each affected resource; and
- The comparative scale of cumulative impacts across alternatives.

4.7.2 Past and Present Actions

4.7.2.1 Population and Settlement

Overall, the RFO is sparsely populated due to its elevation, aridity, and/or ruggedness. Total population in the five-county, 5.4 million acre planning area barely exceeds 50,000 residents, and most of this is concentrated in Sevier and Sanpete counties. Piute, Wayne, and Garfield counties are still sparsely populated. All five counties experienced early pioneer settlement dating back to the 1840s. Farms and communities were established along the arable valleys bordering the Sevier and Fremont Rivers and their tributaries. Many of these areas are still used for agriculture-related uses, some have been intensively developed. During the mining heyday, some of the less hospitable areas in the mountains and desert were used for mining ventures, resulting in some residential occupation that still exists. Many of the towns were abandoned when lodes played out or economic conditions changed.

Private land totals 15% of the area. The most evident changes to the natural environment are concentrated in and around the settled areas where native vegetation and wildlife have been displaced by homes, farms and other developments.

4.7.2.2 Land Ownership and Management

Most of the RFO remains in public ownership and is managed by the Federal government or State of Utah. Three Federal agencies manage 77% of the land: BLM, 39%; Forest Service, 27%; and National Park Service, 11%. Proposed actions on these lands potentially affecting the environment are analyzed under the National Environmental Policy Act which ensures, among other things, that cumulative impacts are addressed. The State of Utah manages an additional 7% of the land base. Many State land parcels are

isolated within large tracts of public land. Impacts from activities on State lands can affect the surrounding Federal lands; likewise, impacts from activities on Federal land can affect State lands. The National Park Service units, Canyonlands and Capitol Reef National Parks and Glen Canyon National Recreation Area (NRA), attract large numbers of visitors which can impact surrounding public lands. Conversely, BLM management decisions for resource uses such as off-highway vehicles, oil and gas leasing, and coal leasing can impact National Park resources.

4.7.2.3 Water Development

Agriculture in this arid land depends on irrigating crops with water diverted from streams, rivers, and springs. Concentrated along the Sevier and Fremont rivers and their tributaries is an extensive system of irrigation diversions, canals, pipelines, and ditches. There are 21,000 surface water, groundwater, and point-to-point agricultural water diversions within the RFO. Major water storage facilities include the Gunnison, Rocky Ford, Johnson Valley, Otter Creek, Yuba, Koosharem, and Piute Reservoirs. The water diversions and reservoirs alter the timing of flows, temperature, turbidity, and ecological composition of the rivers and streams, which in turn affects water quality and quantity. Most of the streams within the RFO have been affected by water development. Those few remaining segments that remain relatively unaffected were identified and considered in the wild and scenic river analysis.

4.7.2.4 Livestock Grazing

Closely associated with pioneer settlement was livestock grazing on the surrounding public domain, in both the mountains and deserts. The environmental consequences of this early, unregulated grazing led to the establishment of the forest reserves (national forests) and the Forest Service and later, passage of the Taylor Grazing Act and establishment of the Grazing Service, which later became the BLM. Grazing continues today on the public lands and the national forests. Livestock numbers have generally been considerably reduced from what they were in the past, but evidence of past abuses remain evident upon the land.

4.7.2.5 Mineral Development

Locatable mineral exploration and development dominated portions of the RFO in the past, most notably in the Tushar and Henry Mountains and near the towns of Marysvale and Ticaboo. Evidence of past mining activity, such as adits, shafts, roads, old buildings, and machinery remain on the land. Current mineral activity includes the SUFCO coal mine (located north of I-70 in Salina Canyon), gypsum mining (at Sigurd), salt mining (at Redmond), renewed interest in Uranium mining (near Ticaboo and Hanksville), sales of various mineral materials (mostly sand and gravel) throughout the RFO, and oil and gas exploration and production in the Sevier and Sanpete Valleys, as discussed under the Reasonably Foreseeable Actions (Section 4.7.3).

4.7.2.6 Industrial Development

The RFO is not heavily industrialized. There are two gypsum plants operating in Sigurd and a gypsum mill in Richfield that utilize gypsum mined in the San Rafael Swell. There is also a salt mine and plant located in Redmond which produces and markets salt products, and a clay plant in Aurora that also gets clay from the San Rafael Swell.

4.7.2.7 Transportation System

Populated areas within the RFO are served by Federal and state highways including Interstate 70, US 89 and 50, and State Highways 12, 24, 28, 62, 72 and 95. The Forest Service and National Park Service

maintain networks of road systems within their respective ownerships; the counties maintain roads around communities and on the public lands. Currently there is no rail service within the RFO, but there is a proposal to construct a rail line in Sanpete and Sevier Counties in the near future.

4.7.2.8 Off-Highway Vehicles

Off-highway vehicles, particularly all-terrain vehicles (ATVs), are popular within the planning area for agricultural and recreational use. The Paiute Trail System, a joint effort of Federal, State, and local agencies and communities, is an extensive trail system on the west side of the planning area that links Federal- and state-managed public lands with communities. It is a model of OHV management and interagency cooperation and has become an attraction for visitors from outside the area. There are areas of intensive ATV use throughout the area, particularly around some of the communities, where soils, vegetation, and scenic values are being affected.

Overall recreation use within the RFO has grown slightly. Vehicle-based recreation (OHV) use has become popular for a variety of recreational outings including camping, hunting and exploring, and OHV-specific activities such as hill climbing and trials riding (rock climbing). As vehicle-based recreation has grown and OHVs adapted for use on rough terrain, areas previously inaccessible for full sized vehicles have become accessible for ATVs. OHV use has increased on public lands. The trend continues to grow as ATVs become more affordable and popular.

4.7.3 Reasonably Foreseeable Future Actions

4.7.3.1 Population Growth

Over the next 50 years, the population within the planning area is expected to grow by 64% (see Table 4-80 and Table 4-81), somewhat less than the population growth in Utah (see Table 4-81), which is expected to increase by 140% during the same period.

Table 4-80. Predicted Population Growth in Counties within the Planning Area

	Year	Garfield*	Piute	Sanpete	Sevier	Wayne
Population Projections	2000	4,800	1,400	22,800	18,900	2,500
	2010	5,000	1,500	27,900	21,000	2,800
	2020	6,000	1,800	32,900	24,900	3,500
	2030	6,700	1,800	35,200	26,900	3,900
	2040	7,400	1,900	36,900	28,300	4,300
	2050	8,000	2,000	38,500	29,700	4,600
% increase	2000-2050	67%	43%	69%	57%	84%

Source: Governor's Office of Planning and Budget 2005
*Includes all of Garfield County.

Table 4-81. Growth in the Planning Area and Utah

	Year	Planning Area*	Utah
Population Projections	2000	50,400	2,246,600

	Year	Planning Area*	Utah
Population Projections	2010	58,200	2,833,300
	2020	69,100	3,486,200
	2030	74,500	4,086,300
	2040	78,800	4,701,400
	2050	82,800	5,368,600
% increase	2000-2050	64%	140%

Source: Governor's Office of Planning and Budget 2005
*Includes all of Garfield County.

4.7.3.2 Community Growth

Associated with population growth would be the conversion of farmland to residential housing and second homes. Potential impacts from community expansion include wildland-urban interface fire issues, infrastructure demands, water quantity and quality, habitat fragmentation, economic benefits, and social issues. Since most new homes are built on farmland, the loss of farmland is also an issue. Recent trends in the five-county area are shown in Table 4-82. Overall, the number of farms and farmland acreage is decreasing and would likely continue to decrease as farmlands are converted to homes.

Table 4-82. Number and Acreage of Farms in the Planning Area

		Garfield*	Piute	Sanpete	Sevier	Wayne
Number of Farms	1997	312	108	847	530	206
	2002	225	108	759	568	173
Land in Farms	1997	122,536 acres	41,991 acres	361,116 acres	149,774 acres	59,246 acres
	2002	79,879 acres	(Information missing)	357,184 acres	164,817 acres	42,374 acres

Source: USDA 2004b.
*Includes all of Garfield County.

4.7.3.3 Oil and Gas Leasing and Development

Significant portions of public and private lands in the Sevier-Sanpete Valley are currently leased for oil and gas and interest in leasing remains high. Future impacts from oil and gas development would be determined by the outcome of current exploration in the valley. Several producing wells have been drilled and proposals for others are being considered. A Reasonably Foreseeable Development Scenario for Oil and Gas within the planning area was developed and is included in Appendix 12. Over the next 15 years, geophysical exploration for oil and gas would directly impact no more than 5,100 acres, and 454 oil and gas wells would be drilled directly impacting no more than 3,080 acres. Indirect impacts could include impacts to scenic quality, increased traffic on roads and highways, conflicts with wildlife and wildlife habitat, removal of vegetation, and social issues in communities. These numbers reflect expected impacts on private, state, national forest, and public lands.

4.7.3.4 Industrial Development

NEVCO Energy Company is proposing to build a 270 megawatt circulating fluidized bed coal-fired steam electric generating plant near Sigurd. If constructed, the plant would emit nitrogen oxides and sulfur

oxides. It would increase demand on water quantity and impact water quality. The project also would increase employment during the plant construction phase and provide a few long-term jobs in the region.

4.7.3.5 Water Development

The Wayne County Water Conservancy District has expressed interest in utilizing remaining unappropriated water in the Fremont River. Proposed at various times in the past have been dams at sites upstream and downstream from Capitol Reef National Park, and pipelines and land exchanges to bring under cultivation new land along the Fremont River and surrounding areas. No specific proposals or approved plans have been disclosed and implementation of the project continues to remain uncertain. The coal-fired plant discussed above would require an extraordinary amount of water which would affect present uses. Further withdrawals of water could adversely impact outstandingly remarkable values in segments of the Fremont and Dirty Devil Rivers identified as eligible wild and scenic rivers.

4.7.4 Cumulative Impacts of the Alternatives

4.7.4.1 Cumulative Impacts by Resource Category

Cumulative impacts are discussed only for resources or uses that may experience impacts. The potential for cumulative impacts to the resource and resources uses is discussed below. Cumulative impacts to hazardous materials and public safety are not anticipated, therefore, these topics are not discussed.

4.7.4.1.1 Air Quality

Cumulative impacts on air quality could result when actions in the RFO cause direct or indirect effects to air quality from different activities. For instance, if a mineral recovery project were undertaken near an area with OHV recreation use on unpaved roads, the separate activities would contribute to cumulative impacts in a certain locale. A heavily-traveled unpaved road would have direct impacts on air quality that would combine with those from other activities. These cumulative impacts would generally be from increased inhalable particulate matter such as PM-10 concentrations, which could potentially result in nonattainment status for air quality in portions of the RFO. Activities contributing to cumulative impacts to air quality include prescribed burning, wildfires, construction, equipment operation, surface-disturbing activities related to oil and gas development, and OHV use.

Direct and indirect short-term and long-term cumulative impacts from any proposed activities on air quality are projected to be minimal to negligible under all alternatives. These impacts may include increases in airborne particulate and gaseous emissions from prescribed burning, wildfires, oil and gas development activities, construction site operations, and OHV use. Assuming appropriate application of control measures and strict adherence to existing regulatory and permitting processes, no appreciable cumulative, short-term, adverse air quality effects are projected.

4.7.4.1.2 Soil and Water Resources

Potential cumulative impacts to soils and water resources would most likely come from OHV use, mineral exploration and development, livestock grazing, vegetative treatments (including prescribed burning), and wildfires. Historically, these actions have all had cumulatively adverse impacts on soil resources by causing surface disturbance contributing to reduced soil productivity, soil compaction, and erosion and subsequent sedimentation. They have also resulted in the widespread introduction of invasive weeds, which can affect water resources through increased evapotranspiration rates, and soil resources through alterations to soil chemistry and productivity.

Reasonably foreseeable future actions in the RFO and on Federal, state, private, and other lands within and adjacent to the planning area that could have an adverse affect on soils and water resources include an expansion of recreational use (including increased OHV use), and ongoing mineral exploration, development, and production.

Under all alternatives, soils and water resources would benefit from management in accordance with the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration. Adherence with these standards would reduce many of the adverse impacts from future actions. In general, Alternatives N, A and B would be the least protective of soil and water resources, result in the least beneficial impacts to soils and water resources, and have the least mitigating effect on past impacts to soils and water resources in the RFO. Alternative D would be the most protective and would provide the greatest reductions of cumulative impacts by excluding the most areas from OHV use and other forms of surface disturbance. Alternative C would provide an intermediate level of protection and mitigation of cumulative impacts.

4.7.4.1.3 Vegetation

The combined amount of surface disturbing actions associated with consumptive uses such as oil, gas and other minerals development, forage use by livestock and wildlife species, prescribed burning, wildfires, vegetative treatments, and increased OHV use would result in cumulative effects throughout the RFO. Each disturbed area increases the opportunity for weed invasions and disrupts the spatial continuity of vegetation communities, and hence, habitat for plant and animal species. As human access increases, potential cumulative impacts to vegetation and wildlife habitat expand.

Direct impacts would be due to loss of vegetation and/or habitat from livestock forage use, fires, oil, and gas and other mineral-related development, and vegetative treatments Indirect impacts would also occur with habitat fragmentation due to development, changes in OHV use due to increased routes and the use of those routes, and revegetation efforts from rehabilitation actions. Changes in land use and ownership could result in the loss of some vegetation used for wildlife habitat. Integrated weed management would reduce the spread and potential for noxious weeds and invasive species establishment.

The overall cumulative impact of activities proposed for all resource decisions on vegetation is projected to be moderate to detrimental in some instances within the short-term, with long-term improvements expected for vegetation and wildlife habitat through vegetative fire and fuels treatments. Major contributors to adverse impacts include OHV activities and mineral development related activities. Therefore, the potential for adverse cumulative impacts would be greatest under Alternatives N and A which allow for the most acres open to cross-country OHV use and minerals development. Long-term beneficial impacts to vegetation may not be realized under Alternatives C and D where vegetation acres and treatment types are limited. Alternative B would provide an intermediate level of protection and mitigation of cumulative impacts.

4.7.4.1.4 Cultural Resources

Impacts associated with resource decisions from this RMP, combined with other past, present, and reasonably foreseeable actions, could produce cumulative impacts on cultural resources and resources of religious or traditional importance to American Indian tribes. The potential for cumulative impacts includes neighboring lands with connected cultural resources including adjoining BLM Field Offices, Forest Service Offices, and state and private lands within the RFO. The same general management direction and resource uses occur on all BLM- and Forest Service-managed lands. Surface disturbing activities such as mineral development taking place across the region can contribute to cumulative impacts of cultural resources. However, these activities would require adherence to cultural resource laws

and regulations, resulting in the inventory and identification of cultural sites, avoidance, and in some cases data recovery.

Oil and gas development and mineral exploration and development has become a factor in parts of the RFO and would continue into the future, both on BLM lands under the RMP and on state and private lands. Minerals development will continue to increase the human presence in the general area, thereby increasing the risk to cultural resources from looting, vandalism, and inadvertent impacts. However, the cumulative impacts of these activities on cultural resources in the general vicinity of the RFO would likely be less than the potential impacts from the increasing recreational visitation that cultural sites in the region are receiving. Recreational activity in and around the RFO would continue to increase regardless of which alternative the BLM selects for its RMP.

Many decisions related to visual resource management, special designations, decisions to protect non-WSA lands with wilderness characteristics, and restrictions on surface disturbance have the potential to provide a net beneficial benefit to cultural resources within the RFO by limiting surface disturbing activities. These decisions would reduce or control the frequency and extent of ground-disturbing activities that present the greatest threat to maintaining the use values of cultural resources. Unregulated uses that could impact cultural resources include wildfires, dispersed recreation, and cross-country OHV use. In general, all minerals and recreation decisions under all alternatives have the potential to increase or at least maintain current levels of adverse impacts to cultural resources. Decisions for minerals and recreation generally increase or maintain current levels of surface and subsurface disturbance and include the indirect effect of increased human activity within those areas of minerals development and recreational use. Increased human activity tends to equate with increased adverse impacts to cultural resources, even if these impacts are inadvertent.

In general, implementation of Alternative N would present the greatest potential for cumulative impacts followed by Alternative A. Alternative D would offer the least potential for cumulative impacts to cultural resources because of limitations on surface disturbing activities. Under all alternatives, specific undertakings that could result in surface and subsurface disturbance and have the potential to impact cultural resources are subject to the Section 106 process of the NHPA. This process calls for the identification of historic properties (e.g., National Register listed sites or sites determined eligible for listing on the National Register) within the area of potential effect and the consideration of alternatives to the planned undertaking that could avoid impacts to said properties. In the event that avoidance is not possible, mitigation of the impacts is to be considered.

4.7.4.1.5 Paleontological Resources

The cumulative impact analysis area for paleontological resources includes the RFO and neighboring lands with connected paleontological resources. The cumulative effects of surface disturbing activities within areas with scientifically significant paleontological resources, especially mineral development in the region, have the potential to damage this fragile, nonrenewable resource. However, existing laws, regulations, and policies provide for mitigation of effects through avoidance or data recovery efforts. Although it is expected that some fossils would be destroyed in the course of legitimate uses of public lands, as well as by natural weathering and erosion, mitigation measures would likely bring paleontologists to areas where fossils had not been previously studied. Thus, fossils that would otherwise have been destroyed or disintegrated over time would be collected, placed in repositories, and protected in perpetuity. Beyond mineral development, cumulative impacts on paleontological resources could occur through incremental degradation of the resource base from a variety of sources, including wildfires, dispersed recreation, and cross-country OHV use, reducing the information and interpretive potential of the paleontological resource values.

Unauthorized activities such as cross-country OHV use, dispersed recreation, and vandalism would continue to have adverse impacts to paleontological resources under all alternatives. These impacts would be reduced under Alternative D and to a lesser extent under Alternative C because they provide more constraints on surface disturbing activities, OHV use and dispersed recreation activities. There would also be impacts as a result of permitted surface disturbing activities such as mineral development in areas containing significant paleontological resources. The potential for inadvertent adverse impacts to paleontological resources from surface disturbing activities would be greater under Alternatives N, A and B.

4.7.4.1.6 Visual Resources

Past and present actions causing cumulative impacts to visual resources include various construction projects and activities on public lands (or visible from public lands due to proximity and topography), including fire suppression, vegetative treatments, prescribed burns, residential development, farming, and mineral exploration, development, and extraction. All of these activities produce surface disturbances and are examples of the types of activities that have created visual contrasts in the past and have resulted in contrasts of texture, form, line, and color that are often visible to the casual observer at varying distances. Reasonably foreseeable future actions in the RFO include these same types of actions which would continue to create visual contrasts within the landscape.

Recreational opportunities and use are also expected to increase, including OHV use, backcountry camping, mountain biking, rock climbing, and on-road sightseeing, with expected increased visitation to the adjacent national parks and national forests. Other foreseeable future increases include the demand for recreational facilities, and mineral exploration, development and extraction, including oil and natural gas well drilling.

The potential cumulative impacts of Alternative N combined with past, present, and reasonably foreseeable future actions on visual resources could adversely affect visual resources and scenic quality from increasing minerals and recreation-related surface disturbances, and from wildfires. However, mitigation would likely limit the impacts in viewsheds with high scenic quality in the RFO and in the adjacent national parks and national forests.

Past and present management, and reasonably foreseeable future actions, combined with the proposed action alternatives (Alternative A, B, C, and D), would reduce the potential for cumulative impacts on visual resources and preserve scenic quality. The risks of wildland fire would be reduced within the RFO and on adjacent national forests through increased vegetation treatments to reduce fuel loads; recreation activities and off-road travel would be managed to limit surface disturbances by greatly reducing areas open to OHV use so that areas inventoried as having high scenic quality would be preserved. Mineral exploration, development and extraction, including oil and natural gas well drilling, are expected to increase over the next 15 years to 20 years, but visual resource management and associated mitigation would likely limit the impacts in viewsheds with high scenic quality and in the adjacent national parks and national forests. Visual resource management would include conformance of minerals exploration and development activities with VRM Class objectives, which would preserve scenic quality in the long-term in areas that the plan has designated for scenic quality protection.

4.7.4.1.7 Special Status Species

The cumulative impacts for special status plants and wildlife vary by species. These cumulative impacts would result from surface disturbance and disruptive activities in and near the RFO, such as land development, road construction, and increased recreational activities. The quantity and quality of habitat available for special status species would be expected to decline over time, especially under Alternatives

N and A which have the least restrictions on recreational and OHV uses and allow the most development of mineral resources.

Surface disturbances associated with uses such as oil, gas and other minerals development, and forage use by livestock and wildlife species would result in cumulative effects over a larger scale and would continue into the future. The combined amount of surface disturbance of these past, present, and future actions would be detrimental to special status plants and animals. Other surface disturbing activities such as road building and increased OHV use would increase human access to sensitive areas where the special status species occur.

The overall cumulative impact of activities proposed for all resource decisions on these resources is projected to be moderate to detrimental at localized areas within the short-term, with long-term improvements for (non-special status) vegetation and wildlife habitat. Major contributors include OHV activities throughout most of the area, habitat destruction from mineral related development activities, and some vegetation treatments such as sagebrush removal. Direct impacts would be due to loss of individual special status plants or animals. Indirect impacts would also occur due to habitat fragmentation associated with various development activities and changes in OHV use due to increased roads. Change in land use or ownership could also result in the loss of habitat for some wildlife species.

Land acquisitions by the BLM for the purposes of maintaining vegetation and wildlife habitat, including habitat for special status species, could increase the potential to mitigate degradation of habitat, especially where such acquisitions by the BLM would result in large contiguous blocks of public land.

The cumulative impacts of all these uses could lead to lower populations of special status (and non-special status) plants and animals in the future with the greatest potential for impact under Alternative N and lessening under each alternative. In the long-term, some special status species may be pushed closer to listing or extinction as a result of the cumulative degradation of BLM lands. Beneficial impacts would be obtained through designation of potential ACECs and management for wilderness characteristics because numerous plant populations and wildlife habitats would be given special management protection within the boundaries of those designated areas. These benefits would be the greatest under Alternative D.

4.7.4.1.8 Fish and Wildlife

The cumulative impact boundaries for fish and wildlife and their habitats vary by species. Cumulative impacts on fish and wildlife habitat would result from surface disturbance and disruptive activities in and near the RFO, such as land development, road construction, and increased recreational activities associated with an increasing population. Cumulative impacts from surface disturbing activities could include habitat fragmentation, including important movement corridors, as well as overall habitat degradation. The quantity and quality of habitat available for fish and wildlife would be expected to decline over time, especially under Alternatives N and A which have the least restrictions for recreational and OHV uses and allow for the most mineral development. Land acquisitions by the BLM for the purposes of maintaining vegetation and fish and wildlife habitat could increase the potential to mitigate degradation of these habitats, especially where such acquisitions by the BLM would result in large contiguous blocks of public land.

4.7.4.1.9 Wild Horses and Burros

Cumulative impacts on wild horses and burros would result from vegetation removal, surface disturbing activities and general human disturbance from increased recreation use. The conversion or sale of State Trust lands that would include development within or adjacent to the Canyonlands HMA could result in

reduced vegetation for wild horses and burros and additional disturbances from human activities. Land acquisitions by the BLM for the purposes of maintaining vegetation and wild horse and burro habitat could increase the potential to mitigate degradation of habitat, especially where such acquisitions by the BLM would result in large contiguous blocks of public land.

4.7.4.1.10 Fire and Fuels Management

Effects on fire frequency, intensity, and suppression activities resulting from actions taken by the BLM within the RFO would combine with similar effects caused by activities sponsored by other groups and private interests to create cumulative impacts to fire management. As development, recreational activities, and general use of the area increases, so would the number of potential ignition sources and consequently the probability of wildland fire occurrence, which would increase the need for Federal, State, and local agencies to suppress wildland fires to protect life, property, and sensitive resources. Furthermore, development of the area would also increase the amount of WUI areas, which would put additional pressure on fire suppression efforts, as these areas are high priority areas for fire suppression. Suppression activities within WUI areas could be more dangerous, time-consuming, and expensive than suppression in undeveloped areas. Additionally, activities associated with fire suppression, recreation, development, and general land use would cumulatively contribute to the modification of the composition and structure of vegetation communities and increase the spread of noxious and invasive weeds. Such effects would, in turn, alter the fire regime of the area, potentially increasing the frequency, size, and intensity of wildland fires. Developed areas and associated roads and right-of-way corridors could also provide increased accessibility to remote areas for fire suppression equipment and provide fuel breaks in the case of wildland fire events.

4.7.4.1.11 Non-WSA Lands with Wilderness Characteristics

Wilderness characteristics could be impacted by various activities that occur on public lands, including mining and mineral exploration and development, utility and right-of-way actions, road construction, etc., if they occur within or adjacent to non-WSA lands with wilderness characteristics. Despite the potential for degradation of non-WSA lands within the RFO, the WSAs would remain protected by the IMP until such time as Congress acts to designate them as wilderness or releases them from further consideration as wilderness, thus preserving such values.

Twenty of the 29 non-WSA lands with wilderness characteristic areas are contiguous to lands administratively endorsed for wilderness in Capitol Reef National Park, Canyonlands National Park, and Glen Canyon National Recreation Area, contiguous to WSAs or adjacent to non-WSA lands with wilderness characteristics identified by the Price Field Office. Therefore, though some degradation to wilderness characteristics could occur in the RFO, these areas would generally complement each other and the regional cumulative impacts on wilderness characteristics would be limited overall.

The analysis of cumulative impacts for areas with wilderness characteristics (designated wilderness, WSAs, and areas identified with wilderness characteristics) includes all Federal lands with wilderness characteristics in Utah that are currently being managed for protection of wilderness characteristics values. In general, implementation of Alternatives N and A would present the greatest potential for potential cumulative impacts. Alternative D would offer the greatest cumulatively beneficial impacts and the least potential for adverse impacts to non-WSA lands with wilderness characteristics because the lands would not be open to oil and gas leasing, OHV use, and they would be recommended for withdrawal from mineral entry.

4.7.4.1.12 Forestry and Woodland Products

The cumulative impacts of past, present, and reasonably foreseeable future actions would have long-term, beneficial and adverse impacts on woodland resources. Fire Management Plans for the BLM and USDA Forest Service Districts, fuel load reductions, vegetation treatments, and woodland salvaging would reduce the risks of wildland fire and long-term loss of woodland resources and productivity within the RFO. These activities (including stand thinning and salvage of dead, diseased, and infested trees) would also improve woodland resource productivity by indirectly improving woodland ecological conditions. These beneficial impacts would be greatest under Alternatives A and B which would potentially treat the most acres annually. Woodland productivity would be lost as woodlands were converted into rangeland for increased livestock forage. Cumulative travel management impacts would be beneficial to woodland resources because surface disturbance and associated soil loss would be reduced under all of the action alternatives. Other resource use management actions could have adverse impacts on woodland resources by restricting resource harvesting (WSAs, ACECs, SRMAs, and wilderness characteristics areas) into the future. However, the area of harvesting restrictions would be relatively small compared to the area managed as open to opportunities for resource harvesting.

4.7.4.1.13 Livestock Grazing

Cumulative impacts to livestock and grazing would be the same under all of the alternatives. Cumulative impacts could result from activities on adjacent private lands, activities scheduled for Utah School and Institutional Trust Land Administration (SITLA) lands, and actions on adjacent National Forest System lands. Since livestock grazing occurs throughout the area and adjacent lands, it is reasonable to assume that impacts similar to those identified earlier in this chapter would occur elsewhere in the area.

Removal of vegetation as a result of surface-disturbing activities, the presence and abundance of grazing wildlife, and general human disturbance would result in diminished potential for livestock grazing in the planning area. Increased recreation use, urban development, and the conversion of private or Utah State Institutional Trust Lands to other uses could reduce livestock numbers and forage available for livestock by increasing soil disturbance, vegetation removal, and noxious and invasive weed proliferation. Impacts on livestock grazing could be greater near areas with high recreation use or areas developed for residential, commercial or industrial uses. These factors could increase the demand for grazable land, which in turn could create scarcity within the RFO. However, since the amount of acres available for livestock consumption is not expected to substantially change over the life of this RMP, this increased demand would not result in a decrease in rangeland quality in the years following the implementation of the Richfield RMP.

4.7.4.1.14 Recreation

Various past, present, and reasonably foreseeable future actions have affected and will continue to affect recreational opportunities within the planning area, including mineral development, wildland fire suppression and fuels treatments, OHV travel, utility corridor development, grazing and recreational activities in riparian areas, and management within existing SRMAs and the ERMA. The increase in vehicle-based recreation and urban development and associated population growth all contribute to increased demand for recreational opportunities in the region. As a result, the planning area could experience increased recreational visitors over the life of the plan, which could degrade certain recreational settings, resulting in diminished recreational opportunities and experiences, or increase user conflicts associated with dispersed unconfined recreational opportunities. Similarly, increasing development or utilities within or near the RFO could degrade certain recreational settings.

The greatest opportunities for motorized recreation uses and the greatest adverse impacts to non-motorized uses would be provided by Alternative N. Alternative D would provide the greatest opportunities for non-motorized recreation uses and the fewest opportunities for motorized uses.

4.7.4.1.15 Travel Management

Past, present, and reasonably foreseeable future actions have affected, and will continue to affect, travel management within the planning area. These actions, which include urban development patterns, the continuing growth of vehicle-based recreation, planned road and highway projects, and population growth are expected to increase demand and construction of transportation routes near the RFO. Areas protected from development have guided in the past, and will continue to guide, the location and development of many highways and roads near and within the RFO. In contrast, in Alternatives A-D, travel within the RFO would be restricted to designated routes in many areas, and very few, if any, additional routes would be developed. As a result, there could be increased concentrations of vehicles within certain areas of the RFO, that is, restricting the miles of roads open for motorized travel would be expected to increase vehicle concentrations more in the RFO than in surrounding areas that do not impose travel restrictions.

Other actions which could affect travel management would include the construction of routes for fire and fuels management to reduce the risks of wildland fire, vegetation treatments to control invasive species, new minerals exploration and development routes, managing for increasing recreational demand and visitation, and other changes in travel management. However, these actions would likely be minor.

Cumulative impacts to transportation and access would occur primarily from actions that facilitate, restrict or preclude motorized access. Management actions that restrict OHV use would limit the degree of travel opportunities and the ability to access certain portions of the planning area. The continued maintenance of Federal and state highways would provide arterial connections to the BLM routes. County maintained routes that connect Federal and state highways to the BLM-system routes would maintain and improve access to the RFO resources.

4.7.4.1.16 Lands and Realty

The number of land use authorizations, particularly rights-of-way and permits, is a function of demand for these uses. Additional future development of adjacent Federal, state, and private lands would likely result in additional requests for and approval of land use authorizations for facilities such as roads, utilities, and communication sites. City and county use plans generally encourage land development adjacent to the BLM lands.

Restrictions on rights-of-way and utilities near the RFO could result from areas protected as open space, such as Canyonlands National Park, Glen Canyon National Recreation Area, and state parks. This could result in increased concentration of rights-of-way for utilities on public lands within the RFO. Sales or exchanges of State lands could result in extensive changes to surface management within the RFO. If the BLM acquired non-Federal lands, the demand for both major utilities and smaller-scale distribution utilities could decrease over time because the potential for development of those lands (and the associated need for utilities) would decrease. In contrast, the BLM likely would need to issue increased rights-of-way to new areas if State lands were sold to private parties for future development.

The designation of right-of-way avoidance and exclusion areas on BLM lands, along with similar restrictions on right-of-way development on adjacent lands, particularly National Forest lands, would have a cumulative impact of reducing routing options for right-of-way facilities such as utilities and roads. Alternatives C and D have the most avoidance and exclusion areas, with the least being in Alternatives A and B.

4.7.4.1.17 Minerals and Energy

The cumulative impact analysis boundary for minerals and energy resources varies by the type of minerals resource. The analysis boundary for oil and gas is the RFO and contiguous geological structures and oil and gas fields that intersect the RFO. The analysis boundary for coal is the RFO and the boundaries of adjacent coal fields. The analysis boundary for locatable minerals is the RFO. The analysis boundary for salable minerals is the RFO and adjacent mineral material sources. The development of oil and gas in the RFO could increase over the next several years. Stipulations on oil and gas leasing in the plan would have a minor cumulative effect on the ability to develop oil and gas resources.

Continued development along U.S. Highway 89, State Highways 12 and 24, and in local communities could increase the demand for mineral materials. Mineral material closures in the RFO would have a minor cumulative effect on the ability to develop mineral materials in Alternatives N, A, B and would increase in Alternatives C and D due to additional protected acres.

4.7.4.1.18 Special Designations

Wilderness Study Areas

Cumulative impacts to WSAs can result from decisions on BLM and State lands within the WSAs. Use and/or development of non-Federal inholdings within the Mount Ellen/Blue Hills, Dirty Devil, Horseshoe Canyon (South), French Spring/Happy Canyon, Fiddler Butte, Mount Pennell, Mount Hillers, and Little Rockies WSAs could result in the loss of wilderness characteristics in portions of these areas. Based on the "Cotter Decision" (State of Utah v Andrus, 1979), "BLM is obligated to provide reasonable access to State sections." While there has been no current demand for use or development of these sections, such actions could occur within the planning window. Providing access could eliminate wilderness characteristics in the areas adjacent to the access routes. The magnitude and duration of the impact would depend on the location of the route, the type of access, and the type of development being supported by the access. The level of impacts would be in relation to the type of access needed; however, because WSAs would be managed under the IMP, impacts would be mitigated and would likely result in only localized and short-term disturbance.

There would be limited potential for cumulative impacts from other activities within the WSAs, such as recreational uses, motorized use of designated routes, and livestock grazing. All authorized activities within the WSAs would be managed under the IMP and would likely result in only localized and short-term disturbance. Similar activities outside WSAs could result in a greater potential for cumulative impacts adjacent to the WSAs. The potential for cumulative impacts would be less in Alternatives B and C where beneficial cumulative effects could result from complementary management of proposed SRMAs, ACECs and WSRs. The greatest beneficial cumulative impacts would occur under Alternative D which also includes complementary management of adjacent non-WSA lands with wilderness characteristics.

Wild and Scenic Rivers

Any cumulative impact that would be associated with wild and scenic rivers would occur from Congress designating a suitable river segment into the National Wild and Scenic River System. All eligible rivers under Alternative N, and the recommended suitable rivers under Alternatives B, C and D would be managed to maintain their classification, free-flowing nature and outstandingly remarkable values. However, because the BLM has no control over potential modification to a river's shoreline or any other form of development on non-public lands, impacts could occur in these areas. Management actions to pursue land acquisitions of non-BLM lands to accomplish resource management goals would provide opportunities to manage surface disturbing activities and to mitigate any effects that could impact the river's tentative classification or free-flowing nature.

With congressional designation of a Wild and Scenic River, the BLM would continue to manage for the outstandingly remarkable values, classification, and free-flowing nature of the river. Congressional designation would provide the manager with mechanisms to maintain free-flowing values, protect or enhance water quality, protect outstandingly remarkable values, manage consistently with the wild, scenic, or recreational classifications, and where it is a management plan objective, to promote economic development, tourism, or recreational use, and to purchase property.

Designated wild rivers would be closed to mineral location. The Federal Energy Regulatory Commission (FERC) would be prohibited from licensing the new construction of hydroelectric facilities "on or directly affecting" a designated WSR. The Act prohibits any department or agency of the United States from assisting in the construction of any water resources project that would have a "direct and adverse" effect on the values for which the river was designated. It also precludes Federal assistance to projects below/above a designated river that are determined by the administrative agency to invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present as of the date of designation. Please see the WSR suitability appendix for an evaluation of suitability for each river segment (Appendix 3). A suitability finding will be made in the Record of Decision (ROD).

Areas of Critical Environmental Concern

The cumulative impact analysis area for ACECs is the RFO. Cumulative impacts from the implementation of other resource decisions within and outside of the RFO on currently designated and potential ACECs would be minimal, with the exception of mineral and travel management decisions. The nature of the relevant and important values associated with the potential ACECs tends to result in impacts that occur quickly but recover slowly, if at all in the case of some visual impacts and impacts on cultural sites. As such, any impact would result in a cumulative increase in the potential for irreparable damage to relevant and important values. The potential for such damage to potential ACECs would be greatest under Alternative A, which designates no ACECs. Alternative D would result in the lowest potential for cumulative impacts resulting in irreparable damage to relevant and important values. Under Alternative D, all potential ACECs would be designated and would have special management to protect their relevant and important values, along with additional special management to protect non-WSA lands with wilderness characteristics which overlap with many of the potential ACECs.

4.7.4.1.19 Socioeconomic Environment

The boundary for cumulative impacts for social and economic conditions is the socioeconomic study area, which includes the entirety of the five-county area. Such impacts would include economic and social impacts related to short-term economic stimuli and possible short-term local community service impacts related to major construction projects and resource extraction activities in the socioeconomic study area. In addition to the SUFCO coal mine on RFO lands, such major projects would also include the possibility of additional oil and gas development and its ancillary facilities, the Westwide corridor project and development of tar sands in and adjacent to Glen Canyon. These projects would also cumulatively affect the demand for salable minerals (sand and gravel) from the BLM lands. Conversion of private agricultural lands to residential and other uses as the area grows would cumulatively add to the importance of public lands for the maintenance of the economy and culture of livestock grazing. The importance of public lands to maintenance of other local livelihoods, customs, and culture would also depend on cumulative decisions regarding management of other lands in the area, including NPS, USFS, BLM, State, and private lands.

Mineral development, including the potential increase in uranium mining on the BLM and non-BLM lands, could have short- and long-term beneficial impacts on local economic conditions with regard to employment and tax revenue. Increased mining activity could adversely impact visitor experience and recreation-related revenues, depending on the scale and location of those activities. However, uranium

development is not projected to be extensive, and therefore should not adversely impact visitor experience and recreation-related revenues.

Resource decisions from the plan would combine with other past, present, and reasonably foreseeable actions to produce cumulative impacts to the social and economic conditions of each of the affected counties. Resource decisions could also potentially result in socioeconomic impacts to local communities. Changes in management actions that increase or decrease visitation to these areas could have beneficial or adverse impacts on the local economy, with regard to tourism-based revenue. Mineral development outside the RFO's jurisdiction, but within or near the RFO could also impact social and economic conditions.

4.8 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Section 102(2)(C) of NEPA requires a discussion of any irreversible or irretrievable commitments of resources which are involved in the proposal should it be implemented. An irretrievable commitment of a resource is one in which the resource or its use is lost for a period of time (e.g., extraction of any locatable mineral ore or oil and gas). An irreversible commitment of a resource is one that cannot be reversed (e.g., the extinction of a species or disturbance to protected cultural resources).

The preferred alternative of the RMP would result in surface disturbing activities, including dispersed recreation, recreational OHV use, fire and fuels management, mineral and energy development, livestock grazing, and infrastructure development that could result in loss of irreversible or irretrievable resources. These surface disturbing activities may temporarily or permanently alter soil, water, and vegetation, visual resources, relevant and important values, ACECs, OHV use, tentative classifications of wild and scenic river segments, and potentially damage cultural and paleontological resources. Construction of roads, well pads, transportation infrastructure, and other improvements creates an irretrievable loss of important visual elements, particularly near communities. Stand-replacing fires could cause an irreversible loss to some key ecosystem components.

Habitats in nonfunctional condition may sustain sufficient degradation that they may no longer be capable of being restored to original site potential. If this change results in significant soil loss through channel down-cutting or incisement, or if riparian/wetland obligate plant species are replaced by facultative or upland species, these could represent irretrievable and irreversible impacts that cannot be corrected even through costly rehabilitation efforts.

Fire suppression in low to mid elevation forest and woodlands has led to the accumulation of fuels, and makes these forests more susceptible to stand-replacing fires. The loss of forest products from stand-replacing fires is considered an irreversible, and in some instances, irretrievable commitment of resources if an extremely hot fire burned over a long time. If aspen continue to decline in the lands managed by the RFO they could become rare to non-existent in some watersheds, and might not be able to be restored.

Lands and realty policies may lead to irretrievable commitments of resources. This includes disposals of land and subsequent development, and acquisition of land that results in removal of that land from the private property tax base.

Development of up to 454 oil and gas wells and leasable minerals over the next 15 years would represent an irretrievable commitment of nonrenewable fossil fuels. The extraction of locatable mineral resources also constitutes an irretrievable commitment of resources.

4.9 UNAVOIDABLE ADVERSE IMPACTS

Section 102(C) of NEPA requires disclosure of any adverse environmental effects that cannot be avoided should the proposal be implemented. Unavoidable adverse impacts are those that remain following the implementation of mitigation measures or impacts for which there are no mitigation measures. Implementing the RMP would cause some unavoidable adverse impacts.

Surface disturbing activities could cause unavoidable adverse impacts. Although these impacts are mitigated to the extent possible, unavoidable damage is inevitable. Permanent conversion of vegetation resources to other uses such as transportation and mineral and energy development reduces the quantity of vegetation resources. Energy and mineral resource extraction on public lands potentially creates air quality, water quality, visual intrusions, soil erosion, and soil compaction problems. Portions of the resource area with more intense recreational use experiences scarring, increased soil erosion, and loss of vegetation. Although these impacts are unavoidable, they are usually concentrated in previously disturbed areas, which reduces the spread of impacts to more remote or less frequented areas.

Because some specific wildlife habitats coincide with the known areas of oil and gas potential, impacts to these habitats are unavoidable under current BLM policy to foster oil and gas development. However, permanent oil and gas well sites and their associated infrastructure are mitigated to the extent possible to minimize impacts and avoid wildlife habitat values when possible. Competition is anticipated for habitat resources between wildlife, livestock, and wild horses and burros. The extent of the impacts varies by season as well as drought cycle. Although there could be short-term periods of significant impacts, long-term management would endeavor to make these uses compatible to the extent possible.

Travel on- or off-roads could cause soil compaction and loss of protective vegetation cover, thereby increasing soil erosion and fugitive dust emissions. Increased soil erosion can adversely impact riparian-wetland areas through increased soil sedimentation. Weeds introduced by these and other management activities could cause a reduction in canopy coverage and leave soils subject to increased erosion as well. Any facility developments, including but not limited to recreation sites, livestock water and other range improvements, and utility and road facilities, that are not properly restored even after mitigation measures are applied, could result in increased soil erosion.

Inadvertent damage to, or loss of, cultural and paleontological resources from increased recreational use, OHV use, surface disturbing activities, or natural deterioration is unavoidable. Although mitigation measures could be implemented for scientific data recovery (leaving portions of cultural resource sites undisturbed for future exploration), the area of excavation would be destroyed and future research would not be possible. The number of cultural sites or paleontological localities anticipated to be inadvertently damaged is unknown, but is anticipated to be very low.

Conflicts between user types, such as motorized recreationists and recreationists who seek more primitive types of recreation and motorized users who share recreation areas, are unavoidable adverse impacts. As recreation demand increases, recreational use disperses to other areas of the lands managed by the RFO, which could create conflicts with existing uses of those areas. Increasing recreation use can cause conflicts with other resource uses such as livestock grazing or forest and woodland harvest. Recreation use and experiences could conflict with the results of livestock grazing and timber harvest. Under alternatives in which mineral development is expected to be higher, recreational use is transferred from those areas, which would increase the extent and frequency of conflict between these incompatible user groups.

Numerous land use restrictions imposed throughout the RFO to protect sensitive resources and other important values, by their nature, impact the ability of operators, individuals, and groups who use the

public lands to do so freely without limitations. Although attempts are made to minimize these impacts by limiting the level of protection necessary to accomplish management objectives and by providing alternative use areas for impacted activities, some adverse impacts to such users are simply unavoidable.

4.10 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Section 102(C) of NEPA requires discussion of the relationship between local, short-term uses of man's environment and the maintenance and enhancement of long-term productivity of resources. As described in the introduction to this chapter, short-term is defined as anticipated to occur within one to five years of implementation of the activity. Long-term is defined as following the first five years of implementation but within the life of the RMP.

Management actions result in various short-term effects, such as increased localized soil erosion, fugitive dust emissions, vegetation damage, and decreased visual resource quality. Surface disturbing activities, including concentrated recreation, recreational OHV use, mineral and energy development, range improvements and developments, and infrastructure development result in the greatest potential for impacts to long-term productivity. Management actions and best management practices are intended to minimize the effects of short-term uses and reverse change over the long-term. However, the BLM lands are managed to foster multiple uses and some long-term productivity impacts could result regardless of management approach.

The short-term effects of mineral development decrease the area and productivity of potential crucial deer, elk, and special status species habitats. Development of roads associated with oil and gas development is possibly the greatest contributor to habitat fragmentation. However, permanent mineral development sites and their associated infrastructure are mitigated to the extent possible to minimize fragmentation and avoid the most significant wildlife habitat values. In addition, management actions to improve soil, water, riparian, vegetation, and habitat resources improves the productivity of wildlife and special status species habitats throughout the lands managed by the RFO.

Management actions that disturb soil surfaces can cause short-term impacts to riparian-wetland areas and vegetation resources by increasing soil erosion and converting areas to early seral stages. Over the long-term, these management actions are likely to improve riparian-wetland areas to proper functioning condition and increase vegetation productivity.

Management actions to implement the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration, and the Healthy Forests Restoration Act of 2003, could affect the areas available for livestock grazing and commercial forest and woodland harvest. In the long-term these actions are anticipated to improve vegetation and forest productivity.

Concentrated recreation use could cause some long-term impacts to soil structure and vegetation. However, concentrating recreational use in certain areas prevents these adverse impacts from extending to other areas of the lands managed by the RFO. Maximizing short-term use of forest resources without an increase in woodland harvest or vegetation treatments results in a long-term continued build-up of large fuels, which results in uncharacteristically intense wildland fires and longer fire return intervals. However, increases in short-term woodland product harvest (such as pole/post, dead and down fuel collection), as well as forest harvests, reduces the long-term buildup of large fuels.

CHAPTER 5 PUBLIC INVOLVEMENT, CONSULTATION AND COORDINATION

5.1 INTRODUCTION

This Draft Resource Mangement Plan/Draft Environmental Impact Statement (DRMP/DEIS) represents the efforts and involvement of a broad range of participants, including public agencies, tribal councils, and private organizations and individuals. The Bureau of Land Management (BLM) met and consulted with various Federal, State, tribal, and local agencies throughout the planning process. The BLM conducted and attended many meetings throughout the planning process to keep all interested parties informed, and to solicit opinions and input germane to management of public land resources within the Richfield Field Office (RFO). The general public was also included in the planning process. All interested parties were invited into the planning process by means of various formal and informal methods, including meetings (with public agencies, tribal councils, interest groups, and individuals), scoping meetings, workshops, e-mail correspondence, and distribution of planning posts. This section summarizes these activities.

5.2 PUBLIC INVOLVEMENT

The land use planning process for the Richfield Field Office formally began on November 1, 2001, when a notice announcing the "Intent to Prepare a Resource Management Plan for Public Lands and Resources in Garfield, Piute, Sanpete, Sevier, and Wayne Counties, UT" was published in the *Federal Register*. Key points regarding public involvement stated in the Notice of Intent (NOI) were as follows:

- The BLM will work closely with interested parties to identify potential management decisions that are best suited to the public's needs.
- This collaborative process will take into account local, regional, and national needs and concerns….
- This notice initiates the public scoping process to identify planning issues….
- To ensure local community participation and input, public meetings will be held….
- Early participation by all interested parties is encouraged and will help determine the future management of the RFO public lands….
- Written comments will be accepted throughout the planning process….

The NOI invited the public to nominate Areas of Critical Environmental Concern (ACECs) and wild and scenic rivers, and also to comment on the "Preliminary Planning Criteria" (criteria are included in Chapter 1 of this document).

Public involvement will continue through the completion of the Richfield RMP. Publication of the DRMP/DEIS will be followed by a 90-day public comment period and public meetings.

5.2.1 Scoping

The BLM conducted a formal scoping period which ran for 151 days, from November 1, 2001, to April 1, 2002. (The minimum requirement is for a 60-day scoping period.) Comments received during that time were summarized in the *Richfield RMP Scoping Report, July 2002* (available for review on the RMP planning web page at www.blm.gov/ut/st/en/fo/richfield/planning.html). Comments received since the scoping period closed were not summarized in the scoping report; nonetheless, they were considered in

developing the DRMP/DEIS and are included in the administrative record. Comments submitted during scoping for the Henry Mountain RMP in the early 1990s (which was never completed) were also referenced and considered in this planning process.

5.2.1.1 Public Meetings

The BLM held public scoping meetings in five Utah communities in March 2002 (Table 5-1). Registered attendance at the meetings totaled 182. The meetings were structured so that was all attendees were given an opportunity to comment if they chose to do so. Five-hundred and sixty individual comments were recorded.

Table 5-1. Public Scoping Meetings

Date	Location	Attendance	Main Issues
March 12, 2002	Richfield, Utah	48	Access, recreation, off-highway vehicle (OHV)
March 13, 2002	Junction, Utah	28	Access, transportation, special designations
March 14, 2002	Manti, Utah	24	Range, access, special designations
March 19, 2002	Loa, Utah	52	Special designations, recreation, OHV
March 21, 2002	Salt Lake City, Utah	30	Recreation, OHV, special designations

5.2.1.2 Written Comments

Written comments submitted during scoping totaled 1,061, including letters and cards, e-mails, faxes, and two petitions with 619 signatures. Comments were submitted from across the nation, but almost half came from Utah. Among the written comments—excluding the petitions—the top issues were wilderness and special designations. These issues were followed closely by recreation and off-highway vehicle use, then range management and livestock grazing, oil and gas leasing and development and mining, and access/transportation. Access/transportation and recreation/OHVs were the big issues identified in the petitions.

Written and oral comments were compiled and analyzed in the *Richfield RMP Scoping Report, July 2002*, available online at http://www.blm.gov/ut/st/en/fo/richfield/planning.html. Selected scoping comments are included in *What You Said: Selected Comments From the Richfield RMP Scoping, August 2002*, also available online at the URL above.

5.2.2 Mailing List

An initial mailing list for land use planning was developed from existing RFO mailing lists. This mailing list has been revised and updated regularly throughout the planning process. Those on the mailing list received *Planning Posts* and other notices reporting on the progress of the DRMP/DEIS.

5.2.3 Planning Posts

At key points in the planning process, *Planning Posts* were issued.

- **Planning Post 1, February 2002:** Described the Richfield DRMP/DEIS process and the reason it was needed, listed preliminary planning issues, and provided a notice of public meetings, preliminary schedule, and comment form.
- **Planning Post 2, August 2002:** Summarized the results of scoping.
- **Planning Post 3, March 2004:** Announced the extended schedule for completing the RMP, summarized the draft alternatives, described the wild and scenic river evaluation process, listed river segments found eligible in the preliminary evaluation, and invited comments on the evaluation.

Additional Planning Posts will be issued when the DRMP/DEIS is released, when the final environmental impact statement (FEIS) and proposed RMP are released, and when the RMP is approved and the Record of Decision (ROD) signed.

5.2.4 Web Site

A web site to provide Internet access to planning information was established early in the process at http://www.blm.gov/ut/st/en/fo/richfield/planning.html. The site serves as a repository for documents related to the RMP development that are maintained in portable document format (PDF) to ensure that they are available to the widest range of users. The web site also provides the public with the means to submit comments or add their names to the mailing list.

5.2.5 Informal Communication

In the spirit of the Secretary of Interior's "4 Cs"—communication, consultation, cooperation, all in the service of conservation—the field manager, land use planner, and other staff communicated with various individuals and groups interested in the RMP, including the following:

- Blue Ribbon Coalition
- Friends of Grover
- Southern Utah Wilderness Alliance (SUWA)
- Sportsmen for Fish and Wildlife
- The Nature Conservancy
- Utah Farm Bureau
- Utah Rivers Council
- Utah Shared Access Alliance (USA-ALL)

5.3 COORDINATION AND COOPERATION

Coordination, as required by FLPMA 43 USC § 1712(c)(a), involves ongoing communication between BLM managers and state, local, and tribal governments to ensure that the BLM considers pertinent provisions of non-BLM plans in managing public lands; seeks to resolve inconsistencies between such plans; and provides ample opportunities for state, local, and tribal government representatives to comment in the development of BLM's RMPs (43 Code of Federal Regulations [CFR] 1610.3-1). Council on Environmental Quality (CEQ) regulations further require timely coordination by Federal agencies in addressing interagency issues (40 CFR 1501.6) and in avoiding duplication with tribal, state, county, and local procedures (40 CFR 1506.2).

Cooperation goes beyond the coordination requirement of FLPMA, entailing collaboration between the BLM and other governmental entities (Federal, state, local, or tribal) to develop a land use plan and

National Environmental Policy Act (NEPA) analysis, as defined by the lead and cooperating agency provisions of the CEQ's NEPA regulations (40 CFR 1501.5 and 1501.6). Cooperating agency and related roles may be formalized through an agreement.

5.3.1 Coordination with other Federal Agencies

In developing this DRMP/DEIS, BLM coordinated with numerous other Federal agencies. (Additional agencies are listed below under consultation.)

- **National Park Service:** Contacts were made early in the planning process with Capitol Reef National Park, Canyonlands National Park, and Glen Canyon National Recreation Area (NRA), the three national park units that share boundaries with the RFO. BLM staff from the Price and Richfield Field Offices met with the Capitol Reef Park Superintendent and his staff during scoping and discussed issues of mutual concern. The land use planner and field manager communicated regularly with the superintendent throughout the process through e-mails, phone calls, and field trips. The superintendent and his staff provided invaluable advice and counsel, as well as special expertise on critical issues, including ACECs and wild and scenic rivers. Staff at Canyonlands National Park was contacted regarding Horseshoe Canyon, a detached unit of Canyonlands surrounded by public lands administered by the RFO. Glen Canyon NRA submitted formal scoping comments addressing several issues and more recently assigned a liaison to work with the BLM on the Richfield RMP.
- **U.S. Forest Service:** The RFO shares common boundaries with the Dixie, Fishlake, and Manti-LaSal National Forests. The USFS is engaged in revising land use plans for those national forests concurrent with the BLM revising its plans. Along with sharing boundaries, the two agencies share many common issues. Communication with the USFS regarding planning has been frequent and largely informal. USFS and BLM personnel reviewed a potential wild and scenic river segment that crossed national forest and public lands, and planning personnel from both agencies meet informally to better coordinate planning efforts. USFS personnel occasionally participate in the BLM's planning-related interdisciplinary team meetings.
- **U.S. Geological Survey**: USGS assigned a staff specialist from its Moab office to serve as a liaison with the BLM on the Richfield DRMP/DEIS. To date, USGS has submitted formal comments on the DRMP/DEIS and provided a scientific review of a preliminary study on Mancos Shale erosion.
- **U.S. Fish and Wildlife Service:** Early in the planning process, BLM developed a Regional Consultation Agreement with the USFWS that provided for the participation of USFWS personnel on BLM interdisciplinary teams. Through this agreement, they were given an opportunity to provide input on planning issues, data collection and review, and development of alternatives. USFWS staff also provided written input on resource concerns. (Endangered Species Act [ESA] consultation is discussed in Section 5.4.3 below.)

5.3.2 Cooperating Agencies

As discussed in Section 1.7.2, the BLM is required by law to prepare NEPA analysis and documentation in cooperation with State and local governments, and other agencies with jurisdiction by law or special expertise (42 USC 4331(a), 4332(2)). Qualified agencies, tribes, or other governments that enter into formal cooperation under this provision are called cooperating agencies. In support of the cooperating agency mandate, BLM invited local, county, state, and tribal agencies to become cooperating agencies in the development of the Richfield RMP. Seven agencies accepted the invitation to become formal cooperating agencies in developing the RMP and signed cooperating agency agreements: the State of Utah; Garfield, Piute, Sanpete, Sevier, and Wayne counties; and the U.S. Fish and Wildlife Service.

Emery County, outside but adjacent to the planning area, was likewise afforded cooperating agency status based on its MOU with the Price Field Office.

The cooperating agency agreements define the relationship between the BLM and the agencies in developing the Richfield RMP. As stated in the MOUs,

> …BLM is required to assure the RMP complies with the Federal Land Policy and Management Act of 1976 (FLPMA), particularly Title II, Section 202, Land Use Planning, including Section 202(c)(9) that, among other things, directs the BLM to coordinate its land use planning activities with local governments, to consider local plans in developing BLM land use plans, to assist in resolving, to the extent possible, inconsistencies between Federal and non-Federal government plans, and to be consistent with state and local plans to the maximum extent, consistent with Federal law and the purposes of the Act.

Cooperating agency representatives participated regularly in the DRMP/DEIS planning process, including serving on interdisciplinary teams and sub-teams, and were given full access to and opportunities to comment on working documents and other pre-decisional information. In particular, the counties have been engaged in the travel management issues including OHV route inventory and designation process and, to date, have cooperated in over 60 information sharing meetings.

The Utah Governor's Office will receive copies of this DRMP/DEIS for its use in determining consistency with state plans.

5.4 CONSULTATION

Consultation is the formal effort to obtain the advice or opinion of another agency regarding an aspect of land use management for which that agency has particular expertise or responsibility, as required by statute or regulation. Federal laws require BLM to consult with American Indian Tribes, the State Historic Preservation Office, the USFWS, and the Environmental Protection Agency (EPA) during the planning/NEPA decision-making process. This section documents the specific consultation and coordination efforts undertaken by the BLM throughout the entire process of developing the DRMP/DEIS.

5.4.1 Consultation with American Indian Tribes

Regardless of whether a Federally-recognized tribe enters into a cooperating agency relationship, its fundamental connection to the BLM is based on tribal sovereignty, manifested through the government-to-government relationship.

BLM provides government officials of Federally-recognized tribes with opportunities to comment on and to participate in the development of land use plans. The BLM considers comments, notifies consulted tribes of final decisions, and informs them of how their comments were addressed in those decisions. At a minimum, officials of Federally-recognized tribal governments must be offered the same level of involvement as state and county officials. Land use plans and coordination activities must address the following:

1. Consistency with Tribal Plans. Section 202(c)(9) of FLPMA requires the BLM to coordinate plan preparation for public lands with plans for lands controlled by Indian tribes so that the BLM's plans are consistent with tribes' plans for managing tribal resources to the extent possible, consistent with Federal law. This coordination allows the BLM and tribes to develop management prescriptions for a larger land base than either agency can address by itself.

2. Protection of Treaty Rights. Land use plans must address the protection of treaty rights assured to Indian tribes concerning tribal uses of public lands and resources (such treaty rights in the West are generally limited to Northwestern tribes that were subject to the Stevens Treaties of the 1850s).

3. Observance of Specific Planning Coordination Authorities. In addition to the FLPMA consistency provisions discussed above, land use plans must comply with the following statutes and executive orders:

- **Section 101(d) (6) of the National Historic Preservation Act (NHPA).** This act requires the BLM to consult with Indian tribes when historic properties of traditional religious or cultural importance to a tribe would be affected by BLM decision making.
- **American Indian Religious Freedom Act.** This act requires the BLM to protect and preserve the freedom of American Indians and Alaska Natives in exercising their traditional religions, including access to sites and the freedom to worship through ceremonials and traditional rites.
- **Executive Order 13007 (Indian Sacred Sites).** This Executive Order requires the BLM to accommodate access to and use of sacred sites and to avoid adversely affecting the physical integrity of sacred sites to the extent practicable, permitted by law, and not inconsistent with essential agency functions. The BLM must ensure reasonable notice is provided to tribes, through government-to-government relations, of proposed actions or land management policies that may restrict future access to or ceremonial uses of, or adversely affect the physical integrity of, sacred sites, including proposed land disposals.
- **Executive Order (EO) 12898 (Environmental Justice).** This EO requires the BLM to take into account the relevant CEQ guidelines and Department of the Interior (DOI) policies and goals.
- **Consultation Under the Endangered Species Act with Indian Tribes.** DOI's Secretarial Order 3206: American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, dated June 5, 1997, and the Endangered Species Act of 1973, requires DOI agencies to consult with Indian tribes when agency actions to protect a listed species, as a result of compliance with the Endangered Species Act, affect or may affect Indian lands, tribal trust resources, or the exercise of American Indian tribal rights. Consultation under this Secretarial Order should be closely coordinated with regional or field offices of the USFWS and/or the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service for game and non-game species.

Land use plans and their accompanying EISs must identify potential effects on Indian trust resources, trust assets, or tribal health and safety. Any effect must be explicitly identified and documented in the land use plan.

BLM representatives have met with several tribes to inform them of the planning process and solicit information on potential issues and concerns. The Utah Division of Indian Affairs has provided invaluable assistance to the BLM in consultation with the tribes. Tribal consultation on the RMP revision began in May of 2002 and is still ongoing. Meetings and consultation with American Indian Tribes and organizations are listed below.

May 2002	Hopi Tribe (Kykotsmovi, Arizona)
April 2003	Ute Tribe (Ft. Duchesne, Utah)
Feb. 13 – 17, 2006	Southern Ute Indian Tribe (Ignacio, Colorado) Ute Mountain Ute Tribe (Towaoc, Colorado) Navajo Nation (Window Rock, Arizona) Kaibab Band of Paiute Indians (Pipe Springs, Arizona)

	Paiute Indian Tribe of Utah (Cedar City, Utah)
April 19, 2006	Utah Division of Indian Affairs (Salt Lake City, Utah)
June 14, 2006	Navajo Utah Commission (Montezuma Creek, Utah)
June 15, 2006	Hopi Tribe (Kykotsmovi, Arizona)
July 26, 2006	Moapa Paiute Tribe (Moapa, Nevada)
July 18, 2006	Navajo Nation (Window Rock, Arizona)
July 19, 2006	Hopi Tribe (Kykotsmovi, Arizona)
August 30, 2006	Ute Tribe (Ft. Duchesne, Utah)
Oct. 30 – Nov. 3, 2006	Ute Mountain Ute Tribe (Towaoc, Colorado) Southern Ute Tribe (Ignacio, Colorado) Navajo Nation (Window Rock, Arizona) Hopi Tribe (Kykotsmovi, Arizona) Kaibab Band of Paiutes (Pipe Springs, Arizona) Paiute Indian Tribe of Utah (Cedar City, Utah)
April 2 – 6, 2007	Paiute Indian Tribe of Utah (Cedar City, Utah) Navajo Nation (Window Rock, Arizona) Southern Ute Indian Tribe (Ignacio, Colorado)

All of these tribes and organizations expressed interest in the land use planning process and a desire to participate in the process. This participation ranges from the identification of areas important to the tribes within the RFO to being kept informed of the planning progress. Multiple visits have been made to each tribe in an effort to keep them updated on the RMP's progress and obtain their input. Interests of the Paiute Indian Tribe of Utah revolve around sacred and traditional use concerns in Quitchupah Canyon in eastern Sevier County. The Navajo Nation is interested in establishing a Traditional Cultural Property in the Henry Mountains. This TCP is related to historical events significant in Navajo history concerning Kit Carson and the attempted removal and relocation of the Navajo from Arizona to New Mexico. The BLM has contacted the Navajo Utah Commission in an attempt to involve the Utah Navajo Chapters and obtain input from them.

5.4.2 State Historic Preservation Office

The BLM has worked with the Utah State Historic Preservation Office during the planning process. Although formal consultation under Section 106 of the National Historic Preservation Act usually takes place during implementation, the BLM will consult with the State Historic Preservation Officer (SHPO) regarding DRMP/DEIS cultural resource evaluation recommendations, before the Proposed RMP/Final Environmental Impact Statement (EIS) is issued.

5.4.3 U.S. Fish and Wildlife Service

The Utah BLM entered into a memorandum of agreement (MOA) with the USFWS to improve the efficiency and effectiveness of Section 7 consultation processes under the Endangered Species Act for

RMP development. Through this MOA, the BLM agreed to promote the conservation of candidate, proposed, and listed species and to informally and formally consult and confer on listed and proposed species and designated and proposed critical habitat during planning to: 1) assure that activities implemented under these RMPs minimize or avoid adverse impacts to such species and any critical habitat; 2) assure that such activities implemented under these RMPs do not preclude future conservation opportunities; 3) use, where possible, formal conference procedures specified in 50 CFR 402 to avoid conflicts between elements contained in the RMPs and the requirements for conservation of the proposed species and proposed critical habitat; and 4) analyze the effects of the RMPs on candidate species pursuant to agency planning requirements.

The BLM has initiated informal consultation with the USFWS on development of the preferred alternative during preparation of this DRMP/DEIS. This consultation is being accomplished by meeting with the USFWS and preparing a draft biological assessment (BA) of the DRMP/DEIS preferred alternative and the potential for beneficial or adverse impacts on threatened and endangered species. USFWS representatives participated regularly in the development of the DRMP/DEIS. Formal Section 7 consultation will commence with the BLM's submission of a final biological assessment prepared for the Proposed RMP/Final EIS. The USFWS will respond with a biological opinion that will be included in the administrative record. Any terms and conditions identified in the biological opinion would be incorporated into the Record of Decision for the Approved RMP.

5.4.4 Environmental Protection Agency

The Denver office of the EPA assigned a liaison to consult with the BLM on the Richfield DRMP/DEIS. To date, communication with EPA has been informal through phone calls and e-mails. EPA staff have also participated as members of the Air Quality Protocol Group, which includes the BLM, USFS, the State of Utah, and the National Park Service (NPS). The Richfield DRMP/DEIS will be submitted to EPA for review as required by CEQ regulations.

Table 5-2 lists the agencies that assisted with the Richfield DRMP/DEIS. The table also gives a short discussion of the role of each agency.

Table 5-2. Coordination, Cooperation, and Consultation Actions

Agency	Coordination, Cooperation, or Consultation Role
FEDERAL AGENCIES	
U.S. Department of the Interior	
Fish and Wildlife Service	Consultation: Reviews proposals affecting threatened or endangered fish, wildlife, or plant species under Section 7 of the Endangered Species Act. Participates on ID Team; provides Biological opinion on Proposed RMP/Final EIS.
Geological Survey	Coordination: Assigns a liaison and provides planning input.
National Park Service	Coordination: Provides planning input on issues of mutual concern. Participates on ID Team.
U.S. Department of Agriculture	
U.S. Forest Service	Coordination: BLM and USFS coordinate on matters of mutual interest, particularly potential resource conflicts along mutual borders. Participates on ID Team.
Animal and Plant Health Inspection Service–Wildlife Services	Coordination: Coordinates annual management plan for animal damage control activities on public lands.

Agency	Coordination, Cooperation, or Consultation Role
Environmental Protection Agency	Consultation: Reviews BLM plans for NEPA compliance. Files *Federal Register* notices.
STATE AGENCIES	
State of Utah	Cooperation: Provides information concerning environmental issues for which the State of Utah has jurisdiction by law or special expertise. Provides information from state records, including Richfield DRMP/DEIS project impacts on air quality and Class 1 airsheds, fish and wildlife, domestic livestock grazing, socioeconomic impacts, minerals, and State of Utah permitting requirements.
Governor's Office of Planning and Budget	Provides leadership for the initiatives of the Governor, budgeting, planning, and issue coordination by providing accurate and timely data, impartial analyses, and objective recommendations.
Utah Department of Environmental Quality (UDEQ), Division of Water Quality (UDWQ)	Coordinates and cooperates on water quality, development of monitoring for visibility standards and guidelines, and collection of air quality data.
Utah Department of Natural Resources, Division of Oil, Gas and Mining (UDOGM)	UDOGM issues permits for mineral operations on Federal, state, and private land. Permits are issued only after review of each mine plan. The BLM coordinates with UDOGM on mining authorization.
School and Institutional Trust Land Administration (SITLA)	Manages state school and institutional trust lands.
Utah State Forestry, Emergency Management Agency, State Fire Marshal's Office	Coordinates forest management and fire activities on state lands adjacent to public lands.
Utah Department of Natural Resources, Division of Wildlife Resources	Coordinates and cooperates on vegetation treatment projects, wildlife habitat management, big game herd objectives, and special status species.
Utah Department of Natural Resources, Division of Parks and Recreation	Administers and manages state parks.
Utah Department of Transportation	Coordinates and cooperates on transportation planning and highway access.
Utah Geological Survey	Data sharing.
State Historic Preservation Office	Consultation: The BLM consults with the Utah SHPO under Section 106 of the National Historic Preservation Act in accordance with the National Programmatic Agreement (NPA) as implemented in the Utah protocol to the NPA.
COUNTY GOVERNMENTS	
Sanpete County Sevier County Piute County Wayne County Garfield County Emery County	The BLM consults and coordinates with counties throughout the Land Use planning process; counties participate in ID team meetings and provide input on issues for which each county has special expertise or jurisdiction by law.

5.5 ADMINISTRATION OF GRAZING ALLOTMENTS IN NATIONAL PARK SERVICE UNITS

The RFO has responsibility for administering grazing allotments within portions of Capitol Reef National Park and Glen Canyon National Recreation Area. A description of grazing within the park and recreation area and BLM's responsibilities follows.

5.5.1 Glen Canyon National Recreation Area

Glen Canyon NRA was established on October 27, 1972, under Public Law (P.L.) 92–593. In establishing Glen Canyon NRA, Congress directed that, "The administration of…grazing leases within the recreation area shall be by the BLM. The same policies followed by the BLM in issuing and administering…grazing leases on other lands under its jurisdiction shall be followed in regard to lands within the boundaries of the recreation area, subject to provisions of Section 3(a) and 4 of this Act." The RFO administers livestock grazing on eight allotments that occur on public land and within Glen Canyon NRA: Rockies, Sewing Machine, Waterpocket, Bullfrog, Robbers Roost, Horseshoe Canyon South, Flint Trail, and Slickrock. Horseshoe Canyon South, Flint Trail, and Slickrock allotments currently have no animal unit months (AUMs) allocated for livestock grazing, and the Robbers Roost Allotment has no AUMs allocated for livestock grazing in the Glen Canyon NRA portion of the allotment. Specific management direction for livestock grazing in Glen Canyon NRA is provided for under the Glen Canyon National Recreation Area Grazing Management Plan (NPS 1999).

5.5.2 Capitol Reef National Park

On December 18, 1971, Congress abolished the presidentially proclaimed Capitol Reef National Monument and established Capitol Reef National Park, with its final boundary encompassing 241,904 acres (85 Stat. 639, 16 U.S.C. §273 et seq.). This act made provisions for management of grazing, trailing, and stock watering but eliminated grazing after one 10-year renewal of existing permits. P.L. 100–446 in 1988 extended grazing privileges within the park and allowed permittees who legally used park lands for livestock grazing before December 18, 1971 to continue the practice during their lifetime. The law further provided that grazing privileges would be extended for the lifetime of permittees' children who were born before the park was established.

At this time, grazing occurs on only two allotments within the park: Sandy 3 and Hartnet. The portion of the Sandy 3 allotment within the park is fenced and administered by the National Park Service (NPS). The Hartnet allotment overlaps both BLM and NPS lands.

The BLM and the National Park Service consult, cooperate, and coordinate their efforts in the administration of grazing on the Hartnet Allotment within the park. The goal of this cooperation is to ensure that respective grazing authorizations, range improvements, allotment management plans, resource monitoring, and other grazing actions do not conflict, and to allocate resources appropriately in joint allotments. In 1995, an MOU was signed by managers from the National Park Service and the BLM to provide for a transfer of grazing management responsibilities to the park when sufficient resources, funding, and staffing were present to carry out those responsibilities. At that time, the park took over the issuance of permits for seasonal livestock trailing across its lands. In 1999, Capitol Reef assumed all administration of the Sandy 3 Allotment. The Allotment Management Plan for the Hartnet Allotment, which is currently being revised, will define each agency's roles and responsibilities. Once the plan is completed, the park will fully administer its portion of the allotment.

5.6 DISTRIBUTION LIST

Copies of the Richfield DRMP/DEIS were made available to the following:

Tribal Governments

- Navajo Nation
- Paiute Indian Tribe of Utah

- Uintah and Ouray Ute Indian Tribe
- Hopi Tribe

Local Governments (Counties)

- Emery County
- Garfield County
- Piute County
- Sanpete County
- Sevier County
- Wayne County

Utah State Agencies

- Governor's Office of Planning and Budget
- School and Institutional Trust Land Administration
- Utah Department of Environmental Quality
- Utah Department of Agriculture
- Utah Department of Transportation
- Utah Department of Natural Resources
- Utah State Engineer's Office
- Utah State Historic Preservation Office
- Utah State Legislature, Government Affairs Committee

Members of Congress

- Senator Orrin Hatch
- Senator Robert Bennett
- Representative Jim Matheson
- Representative Rob Bishop
- Representative Chris Cannon

Department of the Interior Agencies

- National Park Service
  - Capitol Reef National Park
  - Glen Canyon National Recreation Area
  - Canyonlands National Park
- Office of Environmental Policy and Compliance
- U.S. Fish and Wildlife Service
- U.S. Geological Survey

Department of Agriculture Agencies

- USDA Forest Service
  - Intermountain Regional Office
  - Dixie National Forest

  - Fishlake National Forest
  - Manti-LaSal National Forest
- Natural Resources Conservation Service

Other Non-DOI Federal Agencies

- Environmental Protection Agency
- Federal Highway Administration
- U.S. Army Corps of Engineers
- Department of Energy

5.7 LIST OF PREPARERS

As required by NEPA regulations (40 CFR § 1502.17), Table 5-3 lists the people responsible for preparing this DRMP/DEIS.

Table 5-3. List of Preparers

Name	Education/Experience	Resource Specialty
Bureau of Land Management		
Stan Adams	BS, Range Science	Recreation, OHV, Hazardous Materials
Jason Anderson	BS, Geography	GIS Analysis
Lori Armstrong	BS, Botany	Former Associate Field Manager
Doug Bauer	BS, Geology	Minerals
Ron Bolander	BS, MS, Botany	Special Status Species
Laurie Bryant	BLM experience, 30 years	Paleontology
Lisa Bryant	BS, Agriculture and Soils MS, Soil Science	Air, Soils, Watershed, Invasive Species
Douglas Cook	BA, History and Journalism BS, Petroleum Geology and Mathematics	Fluid Minerals
Linda Chappell	BS, Range Management BS, Forest Management	Wildland Fire Management
Cornell Christensen	BS, Range Management	Field Manager
Lorraine Christian	BS, Wildlife and Fisheries Biology	WO Planner; Project Oversight
Vearl Christiansen	BS, Range Science	Vegetation, Livestock Grazing
Chris Colton	BS, Range Management	Wildland Fire Management, Livestock Grazing, Vegetation
Michael Dekeyrel	BS, Wildlife and Range Management	Lands and Realty
Nancy DeMille	BLM experience, 17 years	Lands and Realty
Frank Erickson	BS, Journalism	Project Management, Wild and Scenic Rivers, ACECs, Wilderness Characteristics
Robin Fehlau	BS, Physical Geography MS, Outdoor Recreation	Recreation, OHV
Timothy Finger	BS, Zoology BS, Wildlife Management	Recreation, Wilderness Study Areas, Wild and Scenic Rivers, ACECs, Wilderness Characteristics
Sue Fivecoat	BLM experience, 16 years	VRM, Forestry and Woodland Products, Recreation, Wild and Scenic Rivers, Travel Management

Name	Education/Experience	Resource Specialty
Suzanne Grayson	BS, Environmental Science	Fish and Wildlife
Larry Greenwood	BS, Wildlife MS, Botany/Range	Soil, Water and Riparian, Fish and Wildlife, Special Status Species
Gary Hall	BS, Range Management	ACEC Sub-team Leader, VRM, Recreation, OHV, Lands and Realty, Minerals, Wilderness Study Areas
Brant Hallows	BS, Range Management Masters Natural Resources	Soil, Water and Riparian
Craig Harmon	BA, Anthropology and Archaeology MA, Anthropology and Archaeology	Cultural Resources
Bert Hart	BS, Range Management	Assistant Planner, Travel Management
Gregg Hudson	BS, Geology	Minerals
Michael Jackson	BS, Geology MS, Geology.	Minerals, Paleontology
Chris Keefe	BS, Wildlife Biology and Fisheries Management	Special Status Species, Biological Assessment, Technical Review
Margaret Kelsey	BS, Natural Resource Management	Wilderness, ACECs, Wild and Scenic Rivers
Steve Knox	BS, Watershed Management, Forestry option	State Planner; Document Reviewer
Larry Lichthardt	BS, Range Management	Livestock Grazing
Steve Madsen	BS, Wildlife and Fisheries Sciences	Wildlife, Raptors and Migratory Birds
Jeanette Matovich	MA, Anthropology	Document Reviewer
Tom Mendenhall	BS, Fisheries Science	Fish
Dave Mermejo	BS, Recreation	Wilderness, Wilderness Characteristics
Lauren Mermejo	BS, Zoology Graduate Certificate, Environmental Impact Studies	Wilderness Characteristics
Doug Page	MS, Forestry	Forestry and Woodland Products
Jolie Pollet	BA, Geography MS, Forestry and Fire Science	Wildland Fire Management
Garth Portillo	BS, Anthropology	Cultural Resources
Buzz Rakow	BS, Earth Science	Minerals
Dona Rees	BLM experience, 15 years	Wild Horses and Burros
John Russell	MS, Social Sciences BS, Outdoor Recreation AS, Natural Resources	Assistant Planner
Justin Seastrand	BS, Geography	GIS Analysis
Leroy Smalley	BS, Zoology and Chemistry	Vegetation, Livestock Grazing
Gus Warr	BS, Range Science	Wild Horses and Burros
Wayne Wetzel	BS, Earth Science MS, PhD, Geography	Associate Field Manager
Burke Williams	BS, Wildlife Science	Vegetation, Livestock Grazing, OHV
Phil Zieg	BS, Range and Forest Management	Air Quality, Soil, Water and Riparian
Booz Allen and Hamilton		
Erik Anderson	BS, Civil and Environmental Engineering	Soil, Water and Riparian, Minerals
Gary Armstrong	BA, Political Science MA, Public Policy Analysis	Project Management, Wild and Scenic Rivers, ACECs
Quincy Bahr	BS, Natural Resources Management and Planning MS, (In progress) Natural Resources Management and Planning	Cultural Resources, Paleontology, Wild Horses and Burros, Wildland Fire Management, Livestock grazing, Wilderness Study Areas

Name	Education/Experience	Resource Specialty
Sean Dougherty	BS, Geography	GIS Analysis
John Fomous	LLM, Environmental Law	Public Lands Advisor
Michael Ghazizadeh	BS, Geology MS, Geology MS, Natural Science PhD, Geology	Minerals
Jim May	A.B, Zoology MS, Water Resources Management	Technical Reviewer
Lisa McDonald	BS, Earth Science MS, Mineral Economics PhD, Mineral Economics	Socioeconomics
Dan Morse	BS, Natural Resource Recreation MS, Forestry	VRM, Wildland Fire Management, Forestry and Woodland Products, Recreation, Wilderness Study Areas
Al Pierson	BS, Wildlife Science	Public Lands Advisor
Richard Pinkham	BA, Geography MS, Natural Resource Policy and Management	Socioeconomics
Amanda Pryor	BA, Biology MS, Environmental Biology	NEPA Support, Technical Reviewer
Dana Purrone	BA, Environmental Policy BA, Spanish Pursuing MS, Environmental Policy and Natural Resource Management	Fish and Wildlife
Mike Sumner	BS, Recreation Resource Management	Document Coordination, VRM, Transportation and Access, Glossary, Acronym List, Preparer's List, Appendices
Lloyd Tabing	BS, Natural Resource Management BS, Urban Planning MS, Natural Resource Management	Air Quality, Wild and Scenic Rivers, Cumulative Impacts Analysis
Jeff Ward	BS, Natural Resource Planning and Management	VRM, Recreation, OHV, ACECs
Leslie Watson	BS, Zoology	Vegetation, Special Status Species, Livestock Grazing
Dave Wegner	BS, Aquatic Science MS, Environmental Engineering	Vegetation, Special Status Species, Fish and Wildlife
Amy Wiedeman	BS, Environmental Studies MURP, Urban and Regional Planning	Lands and Realty, ACECs, Quality Assurance/Quality Control
Rocky Mountain Environmental Consultants		
Megan Robinson	BS, Biology, Chemistry and Zoology	Biological Assessment and Threatened, Endangered and Special Status Species
SAGE Environmental, LLC		
Joelle Dickson	BS, Recreation Management	Document Editing and Formatting
Laurie Goldner	BS, Zoology PhD, Zoology	Document Editing
John Rezac	BS, Earth Science Professional Geologist	Document Editing
Steve Torpey	BS, Geology	Document Editing

GLOSSARY

ACQUISITION. The Bureau of Land Management (BLM) acquires land, easements, and other real property rights when it is in the public interest and consistent with approved land use plans. The BLM's land acquisition program is designed to (1) improve management of natural resources through consolidation of Federal, state, and private lands; (2) increase recreational opportunities, preserve open space, and/or ensure accessibility of public land; (3) secure key property necessary to protect endangered species and promote biological diversity; (4) preserve archaeological and historical resources; and (5) implement specific acquisitions authorized by Acts of Congress.

ACTIVE USE. Livestock grazing term meaning the current authorized use, including livestock grazing and conservation use. Active use may constitute a portion, or all, of permitted use. Active use does not include temporary nonuse or suspended use of forage within all or a portion of an allotment. (43 Code of Federal Regulations [CFR] 4100.0-5)

ACTIVITY PLAN. A type of implementation plan (see *Implementation Plan*); an activity plan usually describes multiple projects and applies best management practices to meet land use plan objectives. Examples of activity plans include interdisciplinary management plans, habitat management plans (HMPs), recreation area management plans, and allotment management plans. (H-1601-1, BLM Land Use Planning Handbook)

ACTUAL USE. Livestock grazing term meaning where, how many, what kind or class of livestock, and how long livestock graze on an allotment, or on a portion or pasture of an allotment. (43 CFR 4100.0-5)

ADMINISTRATIVE USE. Official use related to management and resources of the public lands by Federal, State or local governments or non-official use sanctioned by an appropriate authorization instrument, such as right-of-way, permit, lease, or maintenance agreement.

ADMINISTRATIVE PURPOSES. Administrative use functions involving regular maintenance or operation of facilities or programs.

AIR QUALITY. A measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances. Refers to standards for various classes of land as designated by the Air Pollution Control Act of 1955, the Clean Air Act of 1963, as amended, and the Air Quality Act of 1967.

ALLOTMENT. An area of land designated and managed for livestock grazing. (43 CFR § 4100.0-5) (H-4180-1, BLM Rangeland Health Standards Manual)

ALLOTMENT MANAGEMENT PLAN (AMP). A document prepared in consultation with the grazing lessees or permittees involved, which applies to livestock operations on the public lands and which: (1) prescribes the manner in, and extent to, which livestock operations will be conducted in order to meet the multiple-use, sustained-yield, economic and other needs and objectives as determined for the lands by the Secretary concerned; and (2) describes the type, location, ownership, and general specifications for the range improvements to be installed and maintained on the lands to meet the livestock grazing and other objectives of land management; and (3) contains such other provisions relating to livestock grazing and other objectives found by the Secretary concerned to be consistent with the provisions of this Act and other applicable law (from FLPMA, Title 43 Chapter 35 Subchapter I 1702[k]).

AMENDMENT. The process for considering or making changes in the terms, conditions, and decisions of approved RMPs or MFPs. Usually only one or two issues are considered that involve only a portion of the planning area. (H-1601-1, BLM Land Use Planning Handbook)

ANIMAL UNIT MONTH (AUM). The amount of forage necessary for the sustenance of one cow or its equivalent for a 1-month period. (43 CFR 4100.0-5)

APPROPRIATE MANAGEMENT RESPONSE (AMR). Any specific action suitable to meet Fire Management Unit (FMU) objectives. Typically, the AMR ranges across a spectrum of tactical options (from monitoring to intensive management actions). The AMR is developed by using Fire Management Unit strategies and objectives identified in the Fire Management Plan.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACEC). Areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. (FLPMA Section 103 (a))

ASSESSMENT. The act of evaluating and interpreting data and information for a defined purpose (H-1601-1, BLM Land Use Planning Handbook).

ATTAINMENT AREA. A geographic area in which levels of a criteria air pollutant meet the health-based primary standard (national ambient air quality standard, or NAAQS) for the pollutant. An area may have on acceptable level for one criteria air pollutant, but may have unacceptable levels for others. Thus, an area could be both attainment and nonattainment at the same time. Attainment areas are defined using Federal pollutant limits set by EPA.

AUTHORIZED OFFICER. The Federal employee who has the delegated authority to make a specific decision.

AVOIDANCE AREA. Areas with sensitive resource values where rights-of-way and Section 302 permits, leases, and easements would be strongly discouraged. Authorizations made in avoidance areas would have to be compatible with the purpose for which the area was designated and not be otherwise feasible on lands outside the avoidance area.

BACK COUNTRY BYWAYS. Vehicle routes that traverse scenic corridors using secondary or back-country road systems. National back-country byways are designated by the type of road and vehicle needed to travel the byway.

BEST MANAGEMENT PRACTICES (BMP). A suite of techniques that guide, or may be applied to, management actions to aid in achieving desired outcomes. Best management practices are often developed in conjunction with land use plans, but they are not considered a land use plan decision unless the land use plan specifies that they are mandatory. They may be updated or modified without a plan amendment if they are not mandatory. (H-1601-1, BLM Land Use Planning Handbook).

BIG GAME. Indigenous ungulate wildlife species that are hunted, such as elk, deer, bison, bighorn sheep, and pronghorn antelope.

BIOLOGICAL ASSESSMENT (BA). The document prepared by or under the direction of BLM concerning listed and proposed species and designated and proposed critical habitat that may be present in the action area and contains the BLM's determination of potential effects of the action on such

species and habitat. Biological assessments are required for formal consultations and conferences on "major construction projects." They are recommended for all formal consultations and formal conferences and many informal consultations where a written evaluation of the effects of an action on listed or proposed species and on designated or proposed critical habitat is needed. (from M-6840, Special Status Species Manual).

BIOLOGICAL OPINION (BO). The document which includes: (1) the opinion of the FWS and/or NMFS as to whether or not a Federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat; (2) a summary of the information on which the opinion is based; and (3) a detailed discussion of the effects of the action on listed species or designated critical habitat. Depending upon the determination of jeopardy or non-jeopardy, the biological opinion may contain reasonable and prudent alternatives, a statement of anticipated take of listed animals and conservation recommendations for listed plants. (from M-6840, Special Status Species Manual).

CANDIDATE SPECIES. Taxa for which the United States Fish and Wildlife Service (USFWS) has sufficient information on its status and threats to support proposing the species for listing as endangered or threatened under the Endangered Species Act of 1973 (ESA) but for which issuance of a proposed rule is currently precluded by higher priority listing actions. (M6840, Special Status Species Manual) (M6840, Special Status Species Manual).

CASUAL USE. Means activities that involve practices that do not ordinarily cause any appreciable disturbance or damage to the public lands, resources, or improvements and, therefore, do not require a right-of-way grant or temporary use permit (43 CFR 2800). Also means any short-term noncommercial activity that does not cause appreciable damage or disturbance to the public lands, their resources, or improvements and that is not prohibited by closure of the lands to such activities. (43 CFR 2920)

CLOSED. Generally denotes that an area is not available for a particular use or uses. For example, 43 CFR 8340.0-5 sets forth the specific meaning of "closed" as it relates to off-highway vehicle (OHV) use, and 43 CFR 8364 defines "closed" as it relates to closure and restriction orders. (H-1601-1, BLM Land Use Planning Handbook)

CODE OF FEDERAL REGULATIONS (CFR). The official, legal tabulation or regulations directing Federal government activities. (BLM National Management Strategy for OHV Use on Public Lands)

COLLABORATION. A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support for managing public and other lands. (H-1601-1, BLM Land Use Planning Handbook)

CONDITION CLASS (Fire Regimes). Fire Regime Condition Classes are a measure describing the degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, canopy closure, and fuel loadings. One or more of the following activities may have caused this departure: fire suppression, timber harvesting, livestock grazing, introduction and establishment of exotic plant species, introduced insects or disease, or other management activities.

CONDITION CLASS 1. Fire regimes are within a historical range, and the risk of losing key ecosystem components from fire is low. Vegetation attributes (species composition and structure) are intact and functioning within an historical range.

CONDITION CLASS 2. Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components from fire is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, frequency, intensity, severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range.

CONDITION CLASS 3. Fire regimes have been significantly altered from their historical ranges. The risk of losing key ecosystem components from fire is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, frequency, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range.

CONFORMANCE. Means that a proposed action shall be specifically provided for in the land use plan or, if not specifically mentioned, shall be clearly consistent with the goals, objectives, or standards of the approved land use plan. (H-1601-1, BLM Land Use Planning Handbook)

CONSERVATION AGREEMENT. A formal written document agreed to by USFWS and/or NMFS and another Federal agency, state agency, local government, or the private sector to achieve the conservation of candidate species or other special status species through voluntary cooperation. It documents the specific actions and responsibilities for which each party agrees to be accountable. The objective of a conservation agreement is to reduce threats to a special status species or its habitat. An effective conservation agreement may lower species' listing priority or eliminate the need for listing. (M6840, Special Status Species Manual)

COOPERATING AGENCY. The Council on Environmental Quality (CEQ) regulations implementing National Environmental Policy Act (NEPA) define a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6). Any Federal, state, local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency (from H-1601-1, BLM Land Use Planning Handbook).

CRITICAL HABITAT. (1) The specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features (i) essential to the conservation of the species and (ii) that may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by a species at the time it is listed on determination by the USFWS and/or NMFS that such areas are essential for the conservation of the species. Critical habitats are designated in 50 CFR Parts 17 and 226. The constituent elements of critical habitat are those physical and biological features of designated or proposed critical habitat essential to the conservation of the species, including, but not limited to: (1) space for individual and population growth, and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and (5) habitats that are protected from disturbance or are representative of the historic geographic and ecological distributions of a species. (M6840, Special Status Species Manual)

CRUCIAL VALUE HABITAT. Any particular range or habitat component that directly limits a community, population, or subpopulation to reproduce and maintain itself at a certain level over the long-term. Those sensitive use areas that, because of limited abundance and/or unique qualities, constitute irreplaceable critical requirements for high interest wildlife. This may also include highly sensitive habitats, including fragile soils that have little or no reclamation potential. Restoration or replacement of these habitats may not be possible. Examples include the most crucial (critical) summer and/or winter range or concentration areas; critical movement corridors; breeding and rearing

complexes; spawning areas; developed wetlands; Class 1 and 2 streams, lake, ponds or reservoirs; and riparian habitats critical to high interest wildlife. (Utah Division of Wildlife Resources)

CRYPTOBIOTIC CRUSTS. A biological community that forms a surface layer or crust on some soils. Generally includes algae, microfungi, mosses, lichens, and bacteria. Important in soil protection and nutrient supply. (Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah)

CULTURAL RESOURCES OR CULTURAL PROPERTY. A definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups. (Cf. "traditional lifeway value"; see "definite location.") Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identifying, protecting, and utilizing for public benefit described in this Manual series. (M-8100-1, BLM Cultural Resources Management)

CULTURAL RESOURCE INVENTORY CLASSES. Class I—existing data inventory. A study of published and unpublished documents, records, files, registers, and other sources, resulting in analysis and synthesis of all reasonably available data. Class I inventories encompass prehistoric, historic, and ethnological/sociological elements and are in large part chronicles of past land uses. They may have major relevance to current land use decisions. 2. Class II—sampling field inventory. A statistically based sample survey designed to help characterize the probable density, diversity, and distribution of archaeological properties in a large area by interpreting the results of surveying limited and discontinuous portions of the target area. 3. Class III—intensive field inventory. A continuous, intensive survey of an entire target area, aimed at locating and recording all archaeological properties that have surface indications, by walking close-interval parallel transects until the area has been thoroughly examined. Class III methods vary geographically, conforming to the prevailing standards for the region involved. (M-8100-1, BLM Cultural Resources Management)

CUMULATIVE IMPACT. The impact on the environment resulting from the impact of one action added to other past, present, and reasonable foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time. (H-1790-1, BLM NEPA Handbook)

DENDROGLYPH. Refers to a tree with historic or prehistoric designs, often geometric, cut into the bark.

DESIGNATED ROADS AND TRAILS. Specific roads and trails identified by the BLM where some type of motorized vehicle use is appropriate and allowed either seasonally or year long. (H-1601-1, BLM Land Use Planning Handbook)

DESIRED CONDITION. Description of those factors that should exist within ecosystems to maintain their survival and to meet social and economic needs.

DISPERSED RECREATION. Recreation activities of an unstructured type that are not confined to specific locations or dependent on recreation sites. Example of these activities may be hunting, fishing, off-road vehicle use, hiking, and sightseeing.

DISPOSAL. Transfer of public land out of Federal ownership to another party through sale, exchange, Recreation and Public Purposes Act, Desert Land Entry, or other land law statutes.

EASEMENT. An interest in land entitling the owner or holder, as a matter or right, to enter upon land owned by another party for a particular purpose.

ECOLOGICAL SITE. A kind of land with a specific potential natural community and specific physical site characteristics, differing from other kinds of land in their ability to produce distinctive kinds and amounts of vegetation and to respond to management. Ecological sites are defined and described with information about soil, species composition, and annual production. (BLM 2001a)

ECOLOGICAL SITE DESCRIPTION. Description of the soils, uses, and potential of a kind of land with specific physical characteristics to produce distinctive kinds and amounts of vegetation. (Interpreting Indicators of Rangeland Health)

ECOSYSTEM. Organisms together with their abiotic environment, forming an interacting system, inhabiting an identifiable space. (Society for Range Management)

ELIGIBLE RIVER. A river or river segment found eligible for inclusion into the National Wild and Scenic Rivers System through the determination that it is free-flowing and, with its adjacent land area, possesses one or more river-related outstandingly remarkable values. (Wild and Scenic Rivers Act)

ENDANGERED SPECIES. Any species that is in danger of extinction throughout all or a significant portion of its range. (Endangered Species Act of 1973)

ENVIRONMENTAL ASSESSMENT (EA). A concise public document for which a Federal agency is responsible that serves to (1) briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact, (2) aid an agency's compliance with the NEPA when no environmental impact statement is necessary, and (3) facilitate preparation of an environmental impact statement when one is necessary. (40 CFR 1508.9)

ENVIRONMENTAL IMPACT STATEMENT (EIS). A detailed written statement as required by Section 102 (2) of the NEPA, which states that all agencies of the Federal Government shall include in every…major Federal action significantly affecting the quality of the environment, a detailed statement prepared by the responsible official on (1) the environmental impacts of the proposed action, (2) any adverse environmental effects which cannot be avoided should the proposal be implemented, (3) alternatives to the proposed action, (4) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and (5) any irreversible and irretrievable commitments of resources which would be involved in the proposed action, should it be implemented. (40 CFR 1508.11 and the National Environmental Policy Act of 1969)

EPHEMERAL STREAM. A stream that flows only in direct response to precipitation, and whose channel is at all times above the water table. Ephemeral streams generally do not flow continuously for more than 30 days and generally have more robust upland vegetation than found outside of the ephemeral riparian wetland area.

EXECUTIVE ORDER. A presidential directive with the force of law. It does not need congressional approval. The Supreme Court has upheld executive orders as valid either under the general constitutional grant of executive powers to the President or if authority for it was expressly granted to the President by the Congress. Congress can repeal or modify an executive order by passing a new law; however, it must be signed by the President or his veto overridden.

EXTENSIVE RECREATION MANAGEMENT AREA (ERMA). A public lands unit identified in land use plans containing all acreage not identified as a SRMA. Recreation management actions within an ERMA are limited to only those of a custodial nature.

FEDERAL LANDS. As used in this document, lands owned by the United States, without reference to how the lands were acquired or what Federal agency administers the lands. The term includes mineral estates and coal estates underlying private surface but excludes lands held by the United States in trust for Indians, Aleuts, or Eskimos. (See also Public Land.)

FEDERAL LANDS POLICY AND MANAGEMENT ACT (FLPMA) (OF 1976). Public law 94-579. An Act to establish public land policy; to establish guidelines for its administration; to provide for the management, protection, development, and enhancement of the public lands; and for other purposes.

FEDERAL REGISTER. A daily publication that reports Presidential and Federal agency documents. (BLM National Management Strategy for OHV Use on Public Lands)

FIRE MANAGEMENT PLAN. Strategic implementation-level plans that define a program to manage wildland fires, fuel reduction, and fire rehabilitation based on an area's approved resource management plan. Fire management plans must address a full range of fire management activities that support ecosystem sustainability, values to be protected, protection of firefighter and public safety, and public health and environmental issues and must be consistent with resource management objectives and activities of the area.

FLUID MINERALS. Oil, gas, coal bed natural gas, and geothermal resources.

FORAGE. Vegetation of all forms available and of a type used for animal consumption.

FREE-FLOWING. "Free-flowing," as applied to any river or section of a river, means existing or flowing in a natural condition without impoundment, diversion, straightening, rip-rapping, or other modifications of the waterway. (Wild and Scenic Rivers Act)

FUNCTIONING AT RISK. (1) A condition in which vegetation and soil are susceptible to losing their ability to sustain naturally functioning biotic communities. Human activities, past or present, may increase the risks. (Rangeland Reform Final Environmental Impact Statement [FEIS] at 26.) (2) Uplands or riparian-wetland areas that are properly functioning, but a soil, water, or vegetation attribute makes them susceptible to degradation and lessens their ability to sustain natural biotic communities. Uplands are particularly at risk if their soils are susceptible to degradation. Human activities, past or present, may increase the risks. (Rangeland Reform Draft Environmental Impact Statement [DEIS] Glossary). See also Properly Functioning Condition and Nonfunctioning Condition (H-4180-1, BLM Rangeland Health Standards Manual)

GEOGRAPHIC INFORMATION SYSTEM (GIS). A system of computer hardware, software, data, people and applications that capture, store, edit, analyze, and graphically display a potentially wide array of geospatial information. (H-1601-1, BLM Land Use Planning Handbook)

GOAL. A broad statement of a desired outcome; usually not quantifiable and may not have established time frames for achievement. (H-1601-1, BLM Land Use Planning Handbook)

GRAZING PREFERENCE. A superior or priority position against others for the purpose of receiving a grazing permit or lease. This priority is attached to base property owned or controlled by the permittee or lessee. (43 CFR 4100.0-5)

GUIDELINE. A practice, method or technique determined to be appropriate to ensure that standards can be met or that significant progress can be made toward meeting the standard. Guidelines are tools such as grazing systems, vegetative treatments, or improvement projects that help managers and permittees achieve standards. Guidelines may be adapted or modified when monitoring or other information indicates the guideline is not effective, or a better means of achieving the applicable standard becomes appropriate. (H-4180-1, BLM Rangeland Health Standards Manual)

HABITAT. An environment that meets a specific set of physical, biological, temporal, or spatial characteristics that satisfy the requirements of a plant or animal species or group of species for part or all of their life cycle. There are four major divisions of habitat, namely, terrestrial, freshwater, estuarine, and marine (from M6840, Special Status Species Manual).

HABITAT MANAGEMENT PLAN (HMP). An officially approved activity plan for a specific geographic area of public land. An HMP identifies wildlife habitat and related objectives, defines the sequence of actions to be implemented to achieve the objectives, and outlines procedures for evaluating accomplishments.

HERD MANAGEMENT AREA (HMA). Public land under the jurisdiction of the BLM where a decision has been made that wild horses and/or burros can be managed for the long-term within that habitat. (H-4710-1)

HERD MANAGEMENT AREA PLAN (HMAP). An action plan that prescribes measures for the protection, management, and control of wild horses and burros and their habitat on one or more herd management areas, in conformance with decisions made in approved management framework or resource management plans.

HIGH VALUE HABITAT. Any particular habitat that sustains a community, population, or subpopulation. Intensive use areas that because of relative wide distribution do not constitute crucial values but are highly important to high interest wildlife. (UDWR)

HISTORIC RESOURCES OR HISTORIC PROPERTY. Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register. The term includes, for purposes of these regulations, artifacts, records, and remains that are related to and located within such properties. The term 'eligible for inclusion in the National Register' includes both properties formally determined as such by the Secretary of the Interior and all other properties that meet National Register listing criteria" (quoted from 36 CFR 800.2(e); compare National Historic Preservation Act, Section 301, Appendix 5). (See also "cultural resource-cultural property." "Cultural property" is an analogous BLM term not limited by National Register status.) (M-8100-1, BLM Cultural Resources Management) The term can also refer to cultural properties that have a period of use between Euro-American settlement to present.

IMPACTS (OR EFFECTS). Environmental consequences (the scientific and analytical basis for comparison of alternatives) as a result of a proposed action. Effects may be either direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable, or cumulative. (BLM National Management Strategy for OHV Use on Public Lands)

IMPLEMENTATION DECISIONS. Decisions that take action to implement land use plan decisions; generally appealable to the Interior Board of Land Appeals under 43 CFR 4.410. (from H-1601-1, BLM Land Use Planning Handbook).

IMPLEMENTATION PLAN. A subgeographic or site-specific plan written to implement decisions made in a land use plan. Implementation plans include activity plans and project plans. (They are types of implementation plans.) (H-1601-1, BLM Land Use Planning Handbook)

IMPORTANT VALUE. As related to ACECs, a relevant value, resource, system, process, or hazard that has substantial significance and values. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. A natural hazard can be important if it is a significant threat to human life or property. (43 CFR 1610.7-2 (a) (2))

INDIAN TRIBE. Any Indian group in the conterminous United States that the Secretary of the Interior recognizes as possessing tribal status (listed periodically in the *Federal Register*). (H-1601-1, BLM Land Use Planning Handbook)

INDICATORS. Components of a system whose characteristics (presence or absence, quantity, distribution) are used as an index of an attribute (e.g., rangeland health attribute) that are too difficult, inconvenient, or expensive to measure. (Interagency Technical Reference 1734-8, 2000) (H-4180-1, BLM Rangeland Health Standards Manual)

INHOLDING. A non-Federal parcel of land that is completely surrounded by Federal land.

INTERDISCIPLINARY TEAM. Staff specialists representing identified skill and knowledge needs working together to resolve issues and provide recommendations to an authorized officer (from H-4180-1, BLM Rangeland Health Standards Manual).

INTERIM MANAGEMENT POLICY. An interim measure governing lands under wilderness review. This policy (H-8550-1) protects wilderness study areas from impairment of their suitability as wilderness.

INTERMITTENT STREAM. A stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas. Generally, intermittent streams flow continuously for periods of at least 30 days and usually have visible vegetation or physical characteristics reflective of permanent water influences, such as the presence of cottonwoods.

INVASIVE SPECIES. An invasive plant species is one that displays rapid growth and spread, allowing it to establish over large areas.

JURISDICTION. The legal right to control or regulate use. Jurisdiction requires authority, but not necessarily ownership.

LAND TENURE ADJUSTMENTS. Ownership or jurisdictional changes are referred as “Land Tenure Adjustments.” To improve the manageability of the BLM lands and their usefulness to the public, BLM has numerous authorities for “repositioning” lands into a more consolidated pattern, disposing of lands, and entering into cooperative management agreements. These land pattern improvements are completed primarily through the use of land exchanges, but also through land sales, by jurisdictional transfers to other agencies, and through the use of cooperative management agreements and leases.

LAND USE ALLOCATION. The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the planning area, based on desired future conditions. (H-1601-1, BLM Land Use Planning Handbook)

LAND USE PLAN. A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; an assimilation of land use-plan-level decisions developed through the planning process outlined in 43 CFR 1600, regardless of the scale at which the decisions were developed. The term includes both RMPs and MFPs. (from H-1601-1, BLM Land Use Planning Handbook).

LEASE. Authorization to possess and use public lands for a fixed time period for any use not specifically authorized under other laws or regulations and not specifically forbidden by law.

LEASE STIPULATION. A modification of the terms and conditions on a lease form at the time of the lease sale.

LEASEABLE MINERALS. Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920, *as amended*. They include coal, phosphate, asphalt, sulphur, potassium, sodium minerals, and oil and gas.

LEK. An assembly area where birds, especially sage grouse, carry on display and courtship behavior.

LIMITED AREAS. Designated areas where the use of OHVs is subject to restrictions, such as limiting the number or types or vehicles allowed, dates and times of use (seasonal restrictions), limiting use to existing roads and trails, or limiting use to designated roads and trails where use would be allowed only on roads and trails that are signed for use. Combinations of restrictions are possible, such as limiting use to certain types of vehicles during certain times of the year. (BLM National Management Strategy for OHV Use on Public Lands)

LOCATABLE MINERALS. Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

MANAGEMENT SITUATION ANALYSIS (MSA). Assessment of existing resource conditions and current management direction, prepared in advance of a land use plan revision.

MINERAL. Any naturally formed inorganic material. Under Federal laws, considered as locatable (subject to the general mining laws), leasable (subject to the Mineral Leasing Act of 1920, and salable (subject to the Materials Act of 1947).

MINERAL ESTATE. The ownership of minerals, including rights necessary for access, exploration, development, mining, ore dressing, and transportation operations.

MINERAL MATERIALS. Materials such as sand and gravel and common varieties of stone, pumice, pumicite, and clay that are not obtainable under the mining or leasing laws. Mineral materials are considered salable minerals that can be acquired under the Materials Act of 1947, as amended.

MINERAL RESERVES. Identified resources that meet specified minimum physical and chemical criteria related to current mining and production practices, including those for grade, quality, thickness, and depth, and that can be economically extracted or produced at the time of determination. Includes only recoverable materials.

MINIMIZE. To reduce the adverse impact of an operation to the lowest practical level.

MINING CLAIM. A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law and local laws and rules. A mining claim may contain as many adjoining locations as the locator may make or buy. There are four categories of mining claims: lode, placer, mill site, and tunnel site.

MITIGATION. A measure that will result in a physical change to the proposed action that will actually reduce or eliminate impacts. CEQ NEPA regulations identify five types of measures to deal with significant environmental effects: (1) Avoiding the impact altogether by not taking a certain action or parts of an action; (2) Minimizing an impact by limiting the degree or magnitude of the action and its implementation; (3) Rectifying the impact by repairing, rehabilitating or restoring the affected environment; (4) Reducing or eliminating the impact over time by preservation and maintenance; or (5) Compensating for the impact by replacing or providing substitute resources or environments.

MONITORING. Observations, data collection, and studies that evaluate compliance of on-the ground management with the RMP direction, or the effectiveness of RMP-prescribed management direction, in meeting broader goals objectives. Monitoring evaluates whether actions 1) comply with NEPA decisions that have been implemented; 2) achieve the desired objectives (e.g. effectiveness); and 3) are based on accurate assumptions (e.g., validation).

MULTIPLE USE. The management of the public lands and their various resource values so that they are used in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output (FLPMA).

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) OF 1969, AS AMENDED. An Act which encourages productive and enjoyable harmony between man and his environment; promotes efforts to prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches the understanding of the ecological systems and natural resources important to the Nation; and establishes a Council on Environmental Quality. (BLM National Management Strategy for OHV Use on Public Lands)

NATIONAL REGISTER. The National Register of Historic Places, expanded and maintained by the Secretary of the Interior, as authorized by Section 2(b) of the Historic Sites Act and Section 101(a)(1)(A) of the National Historic Preservation Act. The National Register lists cultural properties found to qualify for inclusion because of their local, state, or national significance. Eligibility criteria and nomination procedures are found in 36 CFR Part 60. The Secretary's administrative responsibility for the National Register is delegated to the National Park Service. (M-8100-1, BLM Cultural Resources Management)

NATIONAL WILD AND SCENIC RIVERS SYSTEM. A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition. The system consists of three types of rivers: (1) recreational—rivers or sections of rivers that are readily accessible

by road or railroad and that may have some development along their shorelines and may have undergone some impoundments or diversion in the past, (2) scenic—rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped but accessible in places by roads, and (3) wild—rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.

NATURALNESS. Lands and resources affected primarily by the forces of nature where the imprint of human activity is substantially unnoticeable in an area of 5,000 acres or greater. BLM has authority to inventory, assess, and/or monitor the attributes of the lands and resources on public lands, which, taken together, are an indication of an area's naturalness. These attributes may include the presence or absence of roads and trails, fences and other improvements; the nature and extent of landscape modifications; the presence of native vegetation communities; and the connectivity of habitats (from IM-2003-275, Change 1, Considerations of Wilderness Characteristics in LUP, Attachment 1).

NEOTROPICAL MIGRATORY BIRDS. Birds that winter in Central America, South America, the Caribbean, and Mexico and then return to the United States and Canada during the spring to breed. Includes almost half of the bird species that breed in the United States and Canada.

NO SURFACE OCCUPANCY. A fluid minerals leasing constraint that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases granted with this stipulation through use of directional drilling from sites outside the area. Leasing with "no surface occupancy" means that there will be no development or disturbance whatsoever of the land surface, including establishment of wells or well pads, and construction of roads, pipelines, or power lines.

NONFUNCTIONING CONDITION. (1) Condition in which vegetation and ground cover are not maintaining soil conditions that can sustain natural biotic communities. (2) Riparian-wetland areas are considered to be in nonfunctioning condition when they do not provide adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and thus are not reducing erosion, improving water quality, or other normal characteristics of riparian areas. The absence of a floodplain may be an indicator of nonfunctioning condition. (H-4180-1, BLM Rangeland Health Standards Manual)

NOXIOUS WEEDS. A plant species designated by Federal or state law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or non-native, new, or not common to the United States.

OBJECTIVE. A description of a desired condition for a resource. Objectives can be quantified and measured and, where possible, have established timeframes for achievement. (H-1601-1, BLM Land Use Planning Handbook)

OFF-HIGHWAY VEHICLE (OFF-ROAD VEHICLE). Any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: (1) any nonamphibious registered motorboat: (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used for national defense. (H-1601-1, BLM Land Use Planning Handbook)

OFFICIAL USE. Use by an employee, agent, or designated representative of the Federal Government or one of its contractors, in the course of his employment, agency, or representation. (BLM National Management Strategy for OHV Use on Public Lands)

OPEN AREA. Generally denotes that an area is available for a particular use or uses. Refer to specific program definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 defines the specific meaning of "open" as it relates to off-highway vehicle use. (H-1601-1, BLM Land Use Planning Handbook)

OPERATOR. An operator is one who has authorization from the BLM to conduct activity on public land.

OUTSTANDINGLY REMARKABLE VALUES. Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act of 1968: "scenic, recreation, geologic, fish and wildlife, historic, cultural, or other similar values...." Other similar values that may be considered include ecological, biological or botanical, paleontological, hydrological, scientific, or research values. (M-8351, BLM WSR Policy and Program)

PALEONTOLOGICAL RESOURCES. Remains and traces of once-living organisms preserved in geologic formations that form the Earth's crust. They constitute a fragile and nonrenewable scientific record of the history of life on earth.

PERENNIAL STREAM. A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

PERMIT. A short-term, revocable authorization to use public lands for specific purposes, Section 302 of FLPMA provides BLM's authority to issue permits for the use, occupancy, and development of the public lands. Permits are issued for purposes such as commercial or noncommercial filming, advertising displays, commercial or noncommercial croplands, apiaries, harvesting of native or introduced species, temporary or permanent facilities for commercial purposes (does not include mining claims), residential occupancy, construction equipment storage sites, assembly yards, oil rig stacking sites, mining claim occupancy if the residential structures are not incidental to the mining operation, and water pipelines and well pumps related to irrigation and non-irrigation facilities. The regulations establishing procedures for the processing of these permits are found in 43 CFR 2920.

PERMITTED USE. The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease, and is expressed in Animal Unit Months (AUM). (43 CFR § 4100.0-5) (H-4180-1, BLM Rangeland Health Standards Manual)

PLANNING AREA. A geographical area for which land use and resource management plans are developed and maintained.

PLANNING CRITERIA. The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision making, analysis, and data collection during planning. Planning criteria streamline and simplify the resource management planning actions. (from H-1601-1, BLM Land Use Planning Handbook).

PREFERENCE. A superior or priority position against others for the purpose of receiving a grazing permit or lease. This priority is attached to base property owned or controlled by the permittee or lessee. (43 CFR 4100.0-5). Active preference and suspended preference together make up the total grazing preference.

PRESCRIBED FIRE. Any fire ignited by management action to meet specific objectives. A written approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition. (H-9214-1, BLM Prescribed Fire Management Handbook)

PRIMITIVE RECREATION. As defined in the Recreational Opportunity Spectrum, primitive recreation is managed to be essentially free from evidence of humans and on-site controls. Motor vehicle use is not permitted. Means of access include hiking, cross-country skiing, snowshoeing, non-motorized boating and horseback riding.

PROPERLY FUNCTIONING CONDITION (PFC). (1) An element of the Fundamental of Rangeland Health for watersheds, and therefore a required element of State or regional standard and guidelines under 43 CFR § 4180.2(b). (2) Condition in which vegetation and ground cover maintain soil conditions that can sustain natural biotic communities. For riparian areas, the process of determining function is described in BLM Technical Reference TR 1737-9. Final Environmental Impact Statement at 26, 72. (3) Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; filter sediment, capture bed load, and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is influenced by geomorphic features, soil, water, and vegetation. (4) Uplands function properly when the existing vegetation and ground cover maintain soil conditions capable of sustaining natural biotic communities. The functioning condition of uplands is influenced by geomorphic features, soil, water, and vegetation. SEE ALSO Nonfunctioning Condition and Functioning at Risk (from H-4180-1, BLM Rangeland Health Standards Manual).

PROPOSED SPECIES. Species that have been officially proposed for listing as threatened or endangered by the Secretary of the Interior. A proposed rule has been published in the *Federal Register*. (M-6840, Special Status Species Manual)

PUBLIC LAND. Any land and interest in land owned by the United States within the several states and administered by the Secretary of the Interior through the BLM, without regard to how the United States acquired ownership, except: lands located on the Outer Continental Shelf; lands held in trust for the benefit of Indians, Aleuts, and Eskimos; and lands where the United States retains the mineral estate but the surface is private. (H-8550-1)

RANGE IMPROVEMENT. An authorized physical modification or treatment which is designed to improve production of forage; change vegetation composition; control patterns of use; provide water; stabilize soil and water conditions; restore, protect and improve the condition of rangeland ecosystems to benefit livestock, wild horses and burros, and fish and wildlife. The term includes structures, treatment projects and use of mechanical devices or modifications achieved through mechanical means. (43 CFR § 4100.0-5) (H-4180-1, BLM Rangeland Health Standards Manual)

RANGELAND. A kind of land on which the native vegetation, climax or natural potential consists predominantly of grasses, grass like plants, forbs, or shrubs. Rangeland includes lands revegetated naturally or artificially to provide a non-crop plant cover that is managed like native vegetation. Rangeland may consist of natural grasslands, savannahs, shrublands, most deserts, tundra, alpine communities, coastal marshes, and wet meadows. (H-4180-1, BLM Rangeland Health Standards Manual)

RANGELAND DRILL: A heavy-duty, side-wheel drill developed for seeding rough terrain in semi-arid regions.

RAPTOR. A group of predatory avian species (hawks, eagles, falcons, and owls) also referred to as birds of prey, which share a variety of physical characteristics (e.g., sharp talons, strongly curved bill).

REASONABLE FORESEEABLE DEVELOPMENT (RFD) SCENARIO. The prediction of the type and amount of oil and gas activity that would occur in a given area. The prediction is based on geologic factors, past history of drilling, projected demand for oil and gas, and industry interest.

RECORD OF DECISION (ROD). A document signed by a responsible official recording a decision that was preceded by the preparing of an environmental impact statement.

RECREATION AND PUBLIC PURPOSES (R&PP) ACT (of 1926). Recreation and Public Purposes Act authorizes the lease or sale of public lands for public purposes to state and local government agencies and nonprofit organizations.

RECREATION OPPORTUNITY SPECTRUM (ROS). A framework for inventorying, planning and managing recreational opportunities. ROS is divided into six classes: primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, rural, and urban. (See definitions of each class.)

RECREATION RIVER. Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

RELEVANT VALUE. As related to areas of critical environmental concern, a relevant value is a significant historic, cultural, or scenic value; a fish or wildlife resource or other natural system or process; or natural hazard. (43 CFR 1610.7-2 (a) (1))

RELICT PLANT COMMUNITY. A remnant or fragment of vegetation remaining from a former period when the vegetation was more widely distributed.

RESOURCE ADVISORY COUNCIL. A council established by the Secretary of the Interior to provide advice or recommendations to BLM management. (H-1601-1, BLM Land Use Planning Handbook)

RESOURCE MANAGEMENT PLAN (RMP). A land use plan as described the Federal Land Policy and Management Act. The RMP generally establishes in a written document: (1) Land uses for limited, restricted or exclusive use; designations, including ACEC designation; and transfer from BLM administration; (2) Allowable resource uses (either singly or in combination) and related levels of production or use to be maintained; (3) Resource condition goals and objectives to be attained; (4) Program constraints and general management practices needed to achieve the above items; (5) Need for an area to be covered by more detailed and specific plans; (6) Support action, including such measures as resource protection, access, development, realty action, cadastral survey, etc., as necessary to meet the above; (7) General implementation sequences where carrying out a planned action is dependent upon prior accomplishment of another planned action; and (8) Intervals and standards for monitoring and evaluating the plan to determine the effectiveness of the plan and the need for amendment or revision. (43 CFR 1601.0-5(k))

RIGHT-OF-WAY (ROW). The public lands authorized to be used or occupied for the construction, operation, maintenance, and termination of a project, pursuant to a right-of-way authorization.

RIGHT-OF-WAY CORRIDOR. A parcel of land that has been identified by law, Secretarial order, through a land use plan or by other management decision as being the preferred location for existing and future right-of-way grants and suitable to accommodate one type of right-of-way or one or more rights-of-way which are similar, identical or compatible.

RIPARIAN AREA. A form of wetland transition between permanently saturated wetlands and upland areas. A riparian area is defined as an area of land directly influenced by permanent (surface or subsurface) water. Riparian areas exhibit vegetation or physical characteristics that reflect the influence of permanent surface or subsurface water. Typical riparian areas include lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, hanging gardens, and areas surrounding seeps and springs. Excluded are ephemeral streams or washes that lack vegetation and depend on free water in the soil.

RIVER. As defined in the Wild and Scenic Rivers Act, "river" means a flowing body of water or estuary or section, portion or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes.

ROADED NATURAL. As defined in the Recreational Opportunity Spectrum, roaded natural recreation is managed to provide a natural-appearing environment with moderate evidence of humans. Motor vehicle use is permitted and facilities for this use are provided. Activities include wood gathering, downhill skiing, fishing, off-highway vehicle driving, interpretive uses, picnicking, and vehicle camping.

RURAL. As defined in the Recreational Opportunity Spectrum, rural recreation is managed to provide a setting that is substantially modified with moderate to high evidence of civilization. Motor vehicle use is permitted and visitor conveniences may be provided. Activities are facility/vehicle dependent and include sightseeing, horseback riding, road biking, golf, swimming, picnicking, and outdoor games.

SALABLE MINERALS. Common variety mineral materials on the public lands, such as sand and gravel, that are used mainly for construction and are disposed of by sales or special permits.

SCENIC BYWAYS. Highway routes, which have roadsides or corridors of special aesthetic, cultural, or historic value. An essential part of the highway is its scenic corridor. The corridor may contain outstanding scenic vistas, unusual geologic features, or other natural elements.

SCENIC QUALITY RATINGS. The relative scenic quality (A, B, or C) assigned a landscape by applying the scenic quality evaluation key factors; scenic quality A being the highest rating, B a moderate rating, and C the lowest rating. The evaluation factors are landform, vegetation, water, color, adjacent scenery, scarcity and cultural modifications. (M-8400-Visual Resource Management)

SCENIC RIVER. A river or section of a river that is free of impoundments and whose shorelines are largely undeveloped but accessible in places by roads.

SCOPING. An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This involves the participation of affected Federal, state, and local agencies, and any affected Indian tribe, the proponent of the action, and other interested persons, unless there is a limited exception under 40 CFR 1507.3I.

SECTION 7 CONSULTATION. The requirement of Section 7 of the Endangered Species Act that all Federal agencies consult with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service if a proposed action might affect a Federally-listed species or its critical habitat.

SECTION 106 COMPLIANCE. The requirement of Section 106 of the National Historic Preservation Act that any project funded, licensed, permitted, or assisted by the Federal Government be reviewed for impacts to significant historic properties and that the State Historic Preservation Officer and the Advisory Council on Historic Preservation be allowed to comment on a project.

SEMI-PRIMITIVE MOTORIZED. As defined in the Recreational Opportunity Spectrum, semi-primitive motorized recreation is managed to provide a natural-appearing environment with evidence of humans and management controls present, but subtle. Means of access include motorized vehicles and mountain bicycles.

SEMI-PRIMITIVE NONMOTORIZED. As defined in the Recreational Opportunity Spectrum, semiprimitive nonmotorized recreation is managed to be largely free from evidence of humans and on-site controls. Motor vehicle use is not permitted (except as authorized). Facilities for the administration of livestock and for visitor use are allowed but limited. Means of access include hiking, cross-country skiing, snow shoeing, nonmotorized boating, and horseback riding.

SENSITIVE SPECIES. Those species designated by a State Director, usually in cooperation with the state agency responsible for managing the species and State Natural heritage programs, as sensitive. They are those species that (1) could become endangered in or extirpated from a state, or within a significant portion of its distribution; (2) are under status review by the FWS and/or NMFS; (3) are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution; (4) are undergoing significant current or predicted downward trends in population or density such that Federal listed, proposed, candidate, or state-listed status may become necessary; (5) typically have small and widely dispersed populations; (6) inhabit ecological refugia or other specialized or unique habitats; or (7) are state listed but that may be better conserved through application of BLM-sensitive species status (M6840, Special Status Species Manual).

SERAL. A seral community is an intermediate stage found in ecological succession in an ecosystem advancing towards its climax community, usually referred to by the name of its dominant vegetation species, which may be the largest or the most common.

SIGNIFICANT. An effect that is analyzed in the context of the proposed action to determine the degree or magnitude of importance of the effect, whether beneficial or adverse. The degree of significance can be related to other actions with individually insignificant but cumulatively significant impacts.

SOCIOECONOMIC STUDY AREA. The geographic area used for estimation and analysis of economic and social impacts.

SOLITUDE. Visitors may have outstanding opportunities for solitude, or primitive and unconfined types of recreation when the sights, sounds, and evidence of other people are rare or infrequent, where visitors can be isolated, alone or secluded from others, where the use of the area is through non-motorized, non-mechanical means, and where no or minimal developed recreation facilities are encountered in area of 5,000 acres or greater (from IM-2003-275, Change 1, Considerations of Wilderness Characteristics in LUP, Attachment 1).

SPECIAL RECREATION MANAGEMENT AREA (SRMA). A public land unit identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific, structured recreation opportunities (e.g., activity, experience, and benefit opportunities). (H-1601-1, BLM Land Use Planning Handbook)

SPECIAL STATUS SPECIES. Includes proposed species, listed species, and candidate species under the Endangered Species Act; state-listed species; and BLM state director-designated sensitive species (see BLM Manual 6840, Special Status Species Policy). (H-1601-1, BLM Land Use Planning Handbook)

SPLIT ESTATE. Surface land and mineral estate of a given area under different ownerships. Frequently, the surface will be privately owned and the minerals Federally-owned.

STANDARD. A description of the physical and biological conditions or degree of function required for healthy, sustainable lands (e.g., Land Health Standards). To be expressed as a desired outcome (goal). (from H-1601-1, BLM Land Use Planning Handbook).

STANDARDS FOR RANGELAND HEALTH. Descriptions of the desired condition of the biological and physical components and characteristics of rangeland. The four standards deal with upland soils, riparian and wetland areas, desired species, and water quality.

STATE LISTED SPECIES. Species listed by a state in a category implying but not limited to potential endangerment or extinction. Listing is either by legislation or regulation. (M-6840, Special Status Species Manual)

STIPULATIONS. Requirements that are part of the terms of various types of leases. Some stipulations are standard on all Federal leases. Other stipulations may be applied to the lease at the discretion of the surface management agency to protect valuable surface resources and uses.

SUPPRESSION. All the work of extinguishing or containing a fire, beginning with its discovery.

SURFACE DISTURBANCE. The alteration or removal of soil or vegetation, usually caused by motorized or mechanical actions, that results in more than negligible disturbance to public lands and resources. Surface disturbance accelerates the natural erosive process. Surface disturbance may result from activities using earth-moving and drilling equipment; geophysical exploration; off road vehicle travel; vegetation treatments; prescribed fire; herbicide applications; and construction of facilities like power lines, pipelines, oil and gas wells, recreation sites, livestock facilities, wildlife waters, or new roads. Surface disturbance may, but does not always require reclamation. Surface disturbance is not normally caused by casual use. Activities that are not typically surface disturbing include, but are not limited to, proper livestock grazing, cross-country hiking, and vehicle travel on designated routes.

SURFACE OCCUPANCY. Placement or construction on the land surface (either temporary or permanent) for more than 14 days requiring continual service or maintenance. Casual use is not included.

SUITABLE RIVER. An eligible river evaluated in the land use planning process and found suitable for inclusion in the national wild and scenic river system. Suitability may vary by alternative based on the theme of the alternative.

SUSTAINED YIELD. The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use.

TAKE. For the purposes of the endangered species act, the term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. (Endangered Species Act of 1973)

THREATENED SPECIES. Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. (Endangered Species Act of 1973)

TIMING LIMITATION (SEASONAL RESTRICTION). A fluid minerals leasing constraint that prohibits surface use during specified time periods to protect identified resource values. The constraint does not apply to the operation and maintenance of production facilities unless analysis demonstrates that such constraints are needed and that less stringent, project-specific constraints would be insufficient.

TOTAL MAXIMUM DAILY LOAD (TMDL). An estimate of the total quantity of pollutants (from all sources: point, nonpoint, and natural) that may be allowed into waters without exceeding applicable water quality criteria. (H-1601-1, BLM Land Use Planning Handbook)

TOTAL PREFERENCE. The total number of animal units of livestock grazing on public lands, apportioned and attached to base property owned or controlled by a permittee or lessee. The active preference and suspended preference are combined to make up the total grazing preference.

UNALLOTTED LANDS. Public lands available for grazing that currently have no livestock grazing authorized.

UNSUITABILITY CRITERIA. Criteria of the Federal coal management program by which lands may be assessed as unsuitable for all or certain stipulated methods of coal mining. (43 CFR 4300.)

URBAN. As defined in the Recreational Opportunity Spectrum, urban recreation is managed to provide a setting that is largely modified. Large numbers of users can be expected and vegetation cover is often exotic and manicured. Facilities for highly intensified motor vehicle use and parking are available, with mass transit often included to carry people throughout the site.

USER DAY. Any calendar day, or portion thereof, for each individual accompanied or serviced by an operator or permittee on the public lands or related waters; synonymous with passenger day or participant day.

UTILITY. A service provided by a public utility, such as electricity, telephone, or water.

UTILITY CORRIDOR. A parcel of land either linear or aerial in character that has been identified by law, Secretarial Order, the land-use planning process, or by other management decision, as being a preferred location for existing and future right-of-way grants and suitable to accommodate more than one type of right-of-way or one or more rights-of-way which are similar, identical or compatible.

VALID EXISTING RIGHTS. Legal "rights" or interest that are associated to a land or mineral estate and that cannot be divested from the estate until that interest expires or is relinquished. Lands within the RFO are subject to various authorizations, some giving "rights" to the holders and some of which could be construed as providing valid, but lesser, interests. Valid existing rights are established by various laws, leases, and filings under Federal law.

Mineral: Authorizations for activities on existing mineral leases and mining claims are governed by valid existing rights. Valid existing rights vary from case to case with respect to oil and gas leases, mineral leases, and mining claims, but generally involve rights to explore, develop, and produce within the constraints of laws, regulations, and policies at the time the lease/claim was established or authorized.

Non-Mineral: There are other situations, unrelated to minerals, in which BLM has authorized some use of public land or has conveyed some limited interest in public land. The authorization may be valid and existing and may convey some "right" or interest. Many rights-of-way, easements, and leases granted on public land are this type of valid existing right. These types vary from case to case, but the details of each one are specified in the authorizing document. Valid and existing authorizations of this type would continue to be allowed subject to the terms and conditions of the authorizing document.

RS-2477: Some government entities may have a valid existing right to an access route under Revised Statutes (R.S.) 2477, Act of June 26, 1866, ch. 262, § 8, 14 Stat. 251 [codified as amended at 43 U.S.C. § 932 until repealed in 1976 by the Federal Land Policy and Management Act of 1976 (FLPMA), Public Law 94-579, Section 706(a), Stat. 2744, 2793 (1976)], which granted "[the right-of-way for the construction of highways over public lands, not reserved for public uses.]" The validity of individual claims would have to be determined on a case-by-case basis. If claims are determined to be valid R.S. 2477 highways, the Resource Management Plan would respect those as valid existing rights.

Access: The presence of non-Federal land within the decision area has implications for valid existing rights because owners of non-Federal land surrounded by public land are entitled to reasonable access to their land. Reasonable access is defined as access that the Secretary of the Interior deems adequate to secure the owner reasonable use and enjoyment of the non-Federal land. Such access is subject to rules and regulations governing the administration of public land. In determining reasonable access, the BLM has discretion to evaluate and would consider such things as proposed construction methods and location, reasonable alternatives, and reasonable terms and conditions as are necessary to protect the public interest and resources of the RFO.

Other: There are a variety of other land use authorizations that do not involve the granting of legal "rights" or interests. Outfitter and guide permits are an example. These permits authorize certain uses of public land for a specified time, under certain conditions, without conveying a right, title, or interest in the land or resources used. If at any time it is determined that an outfitter and guide permit, other such permit, or any activities under those permits, are not consistent with the approved Resource Management Plan, then the authorization would be adjusted, mitigated, or revoked where legally possible. Grazing permits are also in this category. Grazing permits or leases convey no right, title, or interest in the land or resources used. Other applicable laws and regulations govern changes to existing grazing permits and levels of livestock grazing.

VEGETATION TYPE. A plant community with distinguishable characteristics described by the dominant vegetation present.

VISUAL RESOURCE MANAGEMENT (VRM). A system by which BLM inventories and manages scenic values and visual quality of public lands. The system is based on research that has produced ways of assessing aesthetic qualities of the landscape in objective terms. In resource management plans, lands are assigned management classes), which determine the amount of modification allowed for the basic elements of the landscape. (See also Scenic Quality Ratings.)

VISUAL RESOURCE MANAGEMENT (VRM) CLASSES. Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective which prescribes the amount of change allowed in the characteristic landscape. (H-1601-1, BLM Land Use Planning Handbook)

- **VRM Class I:** Preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract visitor attention.

- **VRM Class II**: Retain the existing character of the landscape. The level of change to the landscape should be low. Management activities may be seen but should not attract the attention of the casual observer.

- **VRM Class III:** Partially retain the existing character of the landscape. The level of change to the landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer.

- **VRM Class IV:** Provide for management activities that require major modification of the existing character of the landscape. The level of change to landscape can be high.

WAIVER. Permanent exemption from a lease stipulation. The stipulation no longer applies anywhere within the leasehold.

WATER QUALITY. The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

WATERSHED. All lands and water that drain to a given point. Watersheds are often defined in terms of topographic divides (e.g., ridge lines).

WAY. A vehicle route within a wilderness study area that was in existence and identified during the FLPMA Section 603-mandated wilderness inventory. Interim Management Policy for Lands under Wilderness Review (H-8550-1) defines a way as "a track maintained solely by the passage of vehicles which has not been improved and/or maintained by mechanical means to ensure relatively regular and continuous use." The term is also used during wilderness inventory to identify routes that are not roads. The term is developed from the definition of the term "roadless" provided in the Wilderness Inventory Handbook (September 27, 1978), as follows: "roadless: refers to the absence of roads which have been improved and maintained by mechanical means to insure relatively regular and continuous use. A way maintained solely by the passage of vehicles does not constitute a road."

WETLANDS. Areas that are inundated or saturated by surface or ground water often and long enough to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

WILD HORSES AND BURROS. Unbranded and unclaimed horses and burros that use public lands as all or part of their habitat or that have been removed from these lands by the authorized officer but have not lost their status under Section 3 of the Act. (H-4750-2, BLM Wild Horse and Burro Adoption Handbook)

WILD RIVER. Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

WILDERNESS. A congressionally designated area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that (1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres or is large enough to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

WILDERNESS CHARACTERISTICS. Features of the land associated with the concept of wilderness that specifically deal with naturalness and opportunities for solitude and primitive unconfined recreation. These characteristics may be considered in land use planning when BLM determines that those characteristics are reasonably present, of sufficient value (condition, uniqueness, relevance, importance) and need (trend, risk), and are practical to manage (from IM-2003-275, Change 1, Considerations of Wilderness Characteristics in LUP, Attachment 1).

WILDERNESS STUDY AREA (WSA). An area identified pursuant to Section 603 of the Federal Land Policy and Management Act as having wilderness characteristics as described in the Wilderness Act of 1964, that is, an area that (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) is at least 5,000 acres or is of sufficient size to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic or historical value.

WILDLAND FIRE. Any fire, regardless of ignition source, that is burning outside of a prescribed fire and any fire burning on public lands or threatening public land resources, where no fire prescription standards have been prepared. (H-1742-1, BLM Emergency Fire Rehabilitation Handbook)

WILDLAND FIRE USE. The management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in pre-defined geographic areas outlined in Fire Management Plans.

WILDLAND URBAN INTERFACE (WUI). The line, area, or zone in which structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

WINTER RANGE. Range that is grazed by livestock or wildlife during winter.

WITHDRAWAL. An action that restricts the use of public lands by removing them from the operation of some or all of the public land laws, such as the mineral entry laws.

WOODLAND. A forest community occupied primarily by non-commercial species such as juniper, pinyon pine, mountain mahogany, or quaking aspen groves; all western juniper forestlands are considered woodlands, since juniper is classified as a non-commercial species.

ACRONYMS AND ABBREVIATIONS

ACEC	Area of Critical Environmental Concern
ADC	Animal Damage Control
AML	Appropriate Management Level/Abandoned Mine Lands
AMLIS	Abandoned Mine Land Inventory System
AMP	Allotment Management Plan
AMR	Appropriate Management Response
AMS	Analysis of the Management Situation
AO	Authorized Officer
APD	Application for Permit to Drill (an oil or gas well)
APHIS	Animal and Plant Health Inspection Service (USDA)
ARAR	Applicable or Relevant and Appropriate Requirements
ARPA	Archaeological Resource Protection Act (of 1979)
ASCII	American Standard Code for Information Interchange
ATV	All-Terrain Vehicle
AU	Assessment Unit
AUM	Animal Unit Month
BA	Biological Assessment
BAER	Burned Area Emergency Rehabilitation
BCC	Birds of Conservation Concern
bcf	Billion Cubic Feet
bcfg	Billion Cubic Feet Gas
BHCA	Bird Habitat Conservation Area
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice

BO	Biological Opinion
BOR	(United States) Bureau of Reclamation
BPS	Budget Planning System
Btu	British Thermal Unit
CAA	Clean Air Act (of 1970)
CBM	*See* CBNG; Coal Bed Methane
CBNG	Coal Bed Natural Gas
CCC	Civilian Conservation Corps
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (of 1980)
CFR	*Code of Federal Regulations*
CIS	Cumulative Impact Score
CO	Carbon Monoxide
COA	Conditions of Approval
CRMP	Cultural Resource Management Plan
CSU	Controlled Surface Use
CWA	Clean Water Act (of 1977)
CWMA	Cooperative Weed Management Area
CX	Categorical Exclusion
dB	Decibel
dBA	A-weighted Decibel
DEIS	Draft Environmental Impact Statement
DFC	Desired Future Condition
DLE	Desert Land Entry
DOD	Department of Defense
DOI	(United States) Department of the Interior

DPC	Desired Plant Community
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMF	Electric and Magnetic Fields
EMI	Electromagnetic Interference
EO	Executive Order
EPA	Environmental Protection Agency
EPCA	Energy Policy and Conservation Act (of 1975)
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act (of 1973)
ESR	Emergency Stabilization and Rehabilitation
ESRI	Environmental Systems Research Institute
FAA	Federal Aviation Administration
FE	Federal—Endangered
FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FIRE	Fire, Insurance, and Real Estate
FLPMA	Federal Land Policy and Management Act (of 1976)
FMP	Fire Management Plan
FMU	Fire Management Unit
FMZ	Fire Management Zone
FO	Field Office
FOGRMA	Federal Oil and Gas Royalty Management Act (of 1982)
FOOGLRA	Federal Onshore Oil and Gas Leasing Reform Act of 1987
FPA	Fire Program Analysis

FR	*Federal Register*
FT	Federal—Threatened
FY	Fiscal Year
GAP	Geographical Analysis Program
GIS	Geographic Information Systems
GRC	General Risk Categories
HFI	Healthy Forest Initiative
HFRA	Healthy Forests Restoration Act (of 2003)
HMA	Herd Management Area
HMAP	Herd Management Area Plan
HMP	Habitat Management Plan
HMRRP	Hazard Management and Resource Restoration Program
HUC	Hydrologic Unit Code
HUD	(Department of) Housing and Urban Development
IBLA	Interior Board of Land Appeals
ID	Inter-Disciplinary
IMP	Interim Management Policy (for Lands Under Wilderness Review)
KGRA	Known Geothermal Resource Area
KRCRA	Known Recoverable Coal Resource Area
LTA	Land Tenure Agreement
LUP	Land Use Plan
LWCF	Land and Water Conservation Fund
MBTA	Migratory Bird Treaty Act (of 1918)
mcf	Thousand Cubic Feet
Mcfg	Thousand Cubic Feet Gas
MFP	Management Framework Plan (pre-FLPMA BLM land use plan)

MMS	Minerals Management Service
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPDS	Maximum Potential Development Scenario
MSA	Management Situation Analysis
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act (of 1990)
NCA	National Conservation Area
NCRDS	National Coal Resources Data System
NEPA	National Environmental Policy Act (of 1969)
NHL	National Historic Landmark
NHP	Natural Heritage Program
NHPA	National Historic Preservation Act
NL-b	Not Likely to Adversely Affect—completely beneficial
NL-d	Not Likely to Adversely Affect—discountable
NL-i	Not Likely to Adversely Affect—insignificant
NLCS	National Landscape Conservation System
NNL	National Natural Landmark
NOA	Notice of Availability (published in the *Federal Register*)
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent (published in the *Federal Register*)
NP	National Park
NPA	National Programmatic Agreement
NPS	National Park Service
NRA	National Recreation Area
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
NRI	National Rivers Inventory
NSO	No Surface Occupancy (a stipulation on an oil and gas lease)
NWSRS	National Wild and Scenic River System
OHV	Off-Highway Vehicle
PAC	Protected Activity Center
PARM	Parker Mountain Adaptive Resource Management
PFC	Proper Functioning Condition (of riparian/wetland areas)
PIF	Partners in Flight
PILT	Payments in Lieu of Taxes
PL	Public Law
PM	Particulate Matter
PDF	Portable Document Format
PRIA	Public Rangelands Improvement Act
PSD	Prevention of Significant Deterioration
R&I	Relevance and Importance
R&PP	Recreation and Public Purposes (Act of 1926)
RCRA	Resource Conservation and Recovery Act (1976)
RDCC	(Utah) Resource Development and Coordinating Committee
REA	Rural Electric Association
RFA	Reasonably Foreseeable Action (or Activity)
RFD	Reasonably Foreseeable Development
RFO	Richfield Field Office
RHS	Rangeland Health Standards
RMA	Recreation Management Area
RMIS	Recreation Management Information System

RMP	Resource Management Plan (BLM land use plan under FLPMA)
RNA	Research Natural Area
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
ROW	Right-of-Way
RUP	Recreation Use Permits
S&G	Standards and Guidelines
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SHPO	State Historic Preservation Officer
SITLA	(Utah) School and Institutional Trust Lands Administration
SRH	Standards for Rangeland Health
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
SSS	Special Status Species
STSA	Special Tar Sand Area
SUFCO	Southern Utah Fuel Company
SUWA	Southern Utah Wilderness Alliance
T&E	Threatened and/or Endangered (species as per ESA of 1973)
Tcf	Trillion Cubic Feet
TCP	Traditional Cultural Property
TDS	Total Dissolved Solids
TL	Timing Limitation
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
UDAQ	Utah Department of Air Quality
UDEQ	Utah Division of Environmental Quality

UDNR	Utah Department of Natural Resources
UDOGM	Utah Division of Oil, Gas, and Mining
UDOT	Utah Department of Transportation
UDWaR	Utah Division of Water Resources
UDWQ	Utah Division of Water Quality
UDWR	Utah Division of Wildlife Resources
UGS	Utah Geological Survey
URC	Utah Rivers Council
USA-ALL	Utah Shared Access Alliance
USC	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	Volatile Organic Compound
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WAFWA	Western Association for Fish and Wildlife Agencies
WIA	Wilderness Inventory Area
WMA	Wildlife Management Area
WSA	Wilderness Study Area
WSR	Wild and Scenic River
WUG	Western Utility Group
WUI	Wildland Urban Interface

REFERENCES

Anderson, Michelle D. 2002. *Pinus edulis*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Website: http://www.fs.fed.us/database/feis/. Accessed July 22, 2004.

Arno S. and Ottmar, R. D. 1994. Reducing the Risk of Catastrophic Fire in Everett, Richard L., comp. 1994. Restoration of stressed sites, and processes. Gen. Tech. Rep. PNW-GTR- 330. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 123 p. (Everett, Richard L., assessment team leader; Eastside forest ecosystem health assessment; volume IV.)

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Raptor Protection on Power Lines: the State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Institute, Washington, DC and Sacramento, CA.

Avian Power Line Interaction Committee (APLIC) and U.S. Fish and Wildlife Service (USFWS). 2005. Avian Protection Plan Guidelines. April 2005.

Bartos, D. L. & Campbell, R. B. 1998. Decline of Quaking Aspen n the Interior West-Examples from Utah. Rangelands. Society for Rangeland Management. 20:1 February 1998.

Belsky, A. Joy and Dana M. Blumenthal. 1997. Effects of Livestock Grazing on Stand Dynamics and Soils in Upland Forests of the Interior West. Conservation Biology Volume 11, Issue 2, Page 315-327, April 1997

Berry, K.H. 1980. A review of the effect of off-road vehicles on birds and other vertebrates. pages 451-467. In R.M. DeGraaf and N.G. Tilghman, compilers. Workshop proceedings - management of western forest and grasslands for nongame birds. USDA Forest Service General Technical Report INT-86.

Beschta, R. L. *et al.* 2004. Postfire management on public lands of the western US. Conservation Biology. Volume 18, No. 4. pages 957-967.

Block, William M., and Deborah M. Finch, technical editors. 1997. Songbird ecology in southwestern ponderosa pine forests: a literature review. Gen. Tech. Rep. RM-GTR-292. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 152 p.

Bosworth III, William R. 2003. Vertebrate Information Compiled by the Utah Heritage Program: A Progress Report, Publication Number 03-45, Utah Division of Wildlife Resources.

Bourque J. and M. Villard. 2001. Effects of Selection Cutting and Landscape-Scale Harvesting on the Reproductive Success of Two Neotropical Migrant Bird Species. Conservation Biology Volume 15, Issue 1, Page 184-195, February 2001.

Bowker, J.M., J.E. Harvard III, John C. Bergstrom, H. Ken Cordell, Donald B.K. English, John B. Loomis. The Multiple Values of Wilderness. USFS Southern Research Station, 2005. pp. 161-181.

Bradley, Anne F., Nonan V. Noste, and William C. Fischer. 1992. Fire ecology of forests and woodlands in Utah. Gen. Tech. Rep. INT-287. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 128 p.

Brockway, Dale G., Richard G. Gatewood, and Randi B. Paris. 2002. Restoring grassland savannas from degraded pinyon-juniper woodlands: effects of mechanical overstory reduction and slash treatment alternatives. Journal of Environmental Management (2002) 64, 179-197

Bromley, M. 1985. Wildlife management implications of petroleum exploration and development in wildland environments. General Technical Report, USDA, Forest Service, Intermountain Research Station, Ogden, Utah, USA. INT-191.

Brown, J. K. and J K. Smith, eds. 2000. Wildland fire in ecosystems: effects of fire on flora. Gen. Tech. Rep. RMRS-GTR-42-vol. 2. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, p. 257.

Buenger, B. 2003. The Impact of Wildland and Prescribed Fire on Archaeological Resources. Dissertation. Submitted to the Department of Anthropology, University of Kansas. http://www.blm.gov/heritage/docum/Fire/Dissertation_Buenger.htm

Burns, Russell M. and Barbara H. Honkala, technical coordinators. 1990. Silvics of North America: 1. Conifers; 2. Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, D.C. vol.2, p. 877.

Bureau of Land Management (BLM). 1982. Henry Mountain Management Framework Plan. U.S. Department of the Interior Bureau of Land Management, Utah State Office, Richfield District, Sevier River Resource Area.

Bureau of Land Management (BLM). 1990a. Henry Mountains Desert Bighorn Habitat Management. Plan, HMP-UT-05-T5. Henry Mountain Resource Area, Richfield District, Utah, August 1990.

Bureau of Land Management (BLM). 1990b. Utah BLM Statewide Wilderness Final Environmental Impact Statement. Seven Volumes.

Bureau of Land Management (BLM). 1991a. Utah Statewide Wilderness Study Report, BLM Utah State Office, Salt Lake City, UT.

Bureau of Land Management (BLM). 1991b. Riparian-Wetland Initiative for the 1990s. BLM/WO/G1-91/001+4340.

Bureau of Land Management (BLM). 1993. Utah Fish and Wildlife 2000: A Statewide Strategy for the Wildlife Program. Approved August 20, 1993.

Bureau of Land Management (BLM). 1997. Utah's Standards for Rangeland Health and Guidelines for Management. U.S. Department of the Interior, Bureau of Land Management, Utah State Office, 1997.

Bureau of Land Management (BLM). 1998a. Revised Guidelines for Management of Domestic Sheep and Goats In: Native Wild Sheep Habitats. Instruction Memoranda 98-140.

Bureau of Land Management (BLM). 1998b. BLM Water Rights Database.

Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service (USFWS). 2001. Consultation Agreement Between the USDI, BLM and USDI, FWS for the Following BLM Land Use Plan Revisions: Price Field Office: Price River MFP and the San Rafael RMP: Richfield Field Office: Henry Mountains MFP, Parker Mountain MFP, Mountain Valley MFP, Cedar/Beaver/Garfield/Antimony (CBGA) RMP, and San Rafael/Forest MFP; and Vernal Field Office: Book Cliffs RMP and Diamond Mountain RMP. 7 pp.

Bureau of Land Management (BLM). 1999. Utah Wilderness Inventory. Oct. 24, 1999. Website: http://www.gpo.gov/blm/utah/index.html.

Bureau of Land Management (BLM). 2002. Instructional Memorandum 2002-164. Guidance to Address Environmental Justice in Land Use Plans and Related National Environmental Policy Act Documents. May 2, 2002.

Bureau of Land Management (BLM). 2003a. Riparian-Wetland Soils, Technical Reference 1737-19, 2003.

Bureau of Land Management (BLM). 2003b. Baseline Socioeconomic Profile, Richfield Field Office Resource Management Plan/Environmental Impact Statement. August 2003, 47 pp.

Bureau of Land Management (BLM). 2004a. Management Situation Analysis (MSA), Richfield Field Office, BLM, June 2004.

Bureau of Land Management (BLM). 2004b. Partners Agains Noxious Weeds, Website: http://www.blm.gov/ utah/resources/weeds/weed5.htm. Accessed October 26, 2004.

Bureau of Land Management (BLM). 2004c. BLM Land and Mineral Records LR2000 Database. Website: http://www.blm.gov/lr2000/. Accessed 2004.

Bureau of Land Management (BLM). 2005a. Evaluation Report: Areas of Critical Environmental Concern, Richhfield Field Office, January 2005.

Bureau of Land Management (BLM). 2005b. Mineral Potential Report. Richfield Field Office. March, 2005.

Bureau of Land Management (BLM). 2005c. Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States. June 2005.

Bureau of Land Management (BLM). 2005d. Record of Decision: Implementation of a Wind Energy Development Program and Associated Land Use Plan Amendments. December 2005. Website: http://windeis.anl.gov/.

Bureau of Land Management (BLM). 2005e. Utah Land Use Plan Amendment for Fire and Fuels Management. UT-USO-04-01. September 2005. Website: http://www.ut.blm.gov/fireplanning/LUPEAFire92605FINAL.pdf.

Bureau of Land Management (BLM). 2007. Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement. Website: http://www.blm.gov/wo/st/en/prog/more/veg_eis.html.

Burns, Russell M., and Barbara H. Honkala, tech. coords. 1990. Silvics of North America: 1. Conifers; 2. Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC. vol.2, 877 pp.

Clark, D.L. and T.O. Clark. 1999. Rare plant survey at Capitol Reef National Park, Park Science: Integrating Research and Resource Management., 19, 2 (1999): 27. Website: http://www.nature.nps.gov/parksci/vol19(2)/14-1clark.htm. Accessed October 16, 2004.

Clark, R. 2001. Fire Effects Guide. National Wildlife Coordinating Group, Fire Use Working Team. National Interagency Fire Center.

Cole, D.N. 1985. Recreational Trampling Effects on Six Habitat Types in Western Montana. U.S. Department of Agriculture, Forest Service, Research Paper INT-350. Intermountain Research Station.

Cole, D.N. 1986. Resource impacts caused by recreation. In: A literature review: The President's Commission on Americans Outdoors. Washington, DC: The President's Commission on Americans Outdoors: Management 1-11pp.

Cole, D.N. 1988. Disturbance and recovery of trampled montane grassland and forests in Montana. Res. Pap. INT-389. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 37 p.

Cole, D.N. and Peter Landres. 1995. Indirect Effects of Recreation on Wildlife. Wildlife and Recreationists—Coexistence Through Management and Research. Washington, DC: Island Press: Chapter 11, 183-202.

Cook, J.G. 1982. Nutrition and Food. In North American elk; ecology and management, eds. D.E. Toweill and J.W. Thomas, pp. 259-349. Washington and London; Smithsonian Institution Press.

Condon, Steven M. 1997. Geology of the Pennsylvanian and Permian Cutler Group and Permian Kaibab Limestone in the Paradox Basin, southeastern Utah and southwestern Colorado. U.S. Geological Survey Bulletin 2000–P. U.S. Government Printing Office, Washington, D.C.

Cothran, G.E. 2001. Genetic Analysis of the Cyclone Rim, WY HMA. Unpublished Report. Available at the BLM Rawlins Wyoming Field Office.

Council on Environmental Quality (CEQ). 1981. CEQ NEPA Guidance: NEPA's Forty Most Asked Questions. March 16, 1981. Website: http://ceq.eh.doe.gov/nepa/regs/40/40p3.htm.

Council on Environmental Quality (CEQ). 1997. Environmental Justice: Guidance Under the National Environmental Policy Act. U.S. Government Printing Office, Washington, DC. 40pp. December 10, 1997.

Deal, K. No Date. Fire Effects to Flaked Stone, Ground Stone, and Other Stone Artifacts (DRAFT). IN: Kevin C. Ryan and Anne Trinkle Jones, editors. Wildland Fire in Ecosystems: Effects of Fire on Cultural Resources and Archeology. Rainbow Series, Rocky Mountain Research Station, USDA Forest Service. In press.

DeByle, Norbert; Philip Urness, and Deborah Blank. 1989. Forage Quality in Burned and Unburned Aspen Communities. U.S. Forest Service, June 1989.

DeCelles, Peter G. and James C. Coogan. 2006. Regional structure and kinematic history of the Sevier fold-and-thrust belt, central Utah. GSA Bulletin; v. 118; no. 7/8; p. 841-864.

Delaney, D.K., T.G. Grubb, and L.L. Pater. 1997. Effects of Helicopter Noise on Nesting Mexican Spotted Owls. Project Order No. DE P.O. 95-4, U.S. Air Force, Holloman Air Force Base, New Mexico.

D.K. Shifflet & Associates. (2006), Utah Overnight Leisure: 2005 Visitor Profile (September, 2006). Website:

http://travel.utah.gov/research_and_planning/documents/YE2005UtahVisitorProfileReport_PublicVersion_Final.pdf

Doelling, H.H. 2004. Interim Geological Map of the East Half of the Salina 30' x 60' Quadrangle, Emery, Sevier, and Wayne Counties, Utah. Utah Geological Survey Open File Report 438.

Dohrenwend, J.C. No date. Accelerated erosion in areas disturbed by OHV activity in the Mancos Shale badlands of the Factory Butte – North Caineville Mesa area, Wayne County, Utah: A report to the Richfield Field Office Bureau of Land Management.

Dwire, K and J. B. Kauffmann. 2003. Fire and riparian ecosystems in landscapes of the western USA. Forest Ecology and Management 178 (2003) 61–74.

Environmental Protection Agency (EPA) and National Park Service (NPS). 2007. Interagency Modeling of Protected Visual Environments (IMPROVE). Accessed August 2007. http://vista.cira.colostate.edu/improve/.

Evans, Raymond A. 1988. Management of pinyon-juniper woodlands. Gen. Tech. Rep. INT-249. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 34 pp.

Fay, Philip A. 2003. Insect Diversity in Two Burned and Grazed Grasslands. Environmental Entomology. Volume 32, (5) p 1099-1104

Finch, Deborah M., Ed. 2004. Assessment of grassland ecosystem conditions in the Southwestern United States. Volume 1. Gen. Tech. Rep. RMRS-GTR-135-vol. 1. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 167 p.

Fire Effects Guide. 2001 National Wildlife Coordinating Group. Fire Use Working Team. NIFC, Great Basin Area Cache, Boise ID.

Floyd, L.M., T.L. Fleischner, D. Hanna., and P. Whitefield. 2003. Effects of Historic Livestock Grazing on Vegetation at Chaco Culture National Historic Park, New Mexico. Conservation Biology. Volume 17 (6) December 2003.

Frissell, S. S., Jr. and D.P. Duncan. 1965. Campsite preference and deterioration in the Quetico-Superior canoe country. Journal-of Forestry. 65: 256-260.

Ganskopp, D.C., A.J. Svejcar, J. Farstvedt, and F. Taylor. 2003. Can Early Spring Cattle Grazing Enhance Bitterbrush Growth? Abstracts of 56th Annual Meeting of the Society for Range Management. 2003. p. 85.

Garfield County 1998. Garfield County General Plan.

Godfrey, A. E. 2002. Mancos Shale erosion monitoring, Wayne and Emery Counties, Utah. Unpublished report provided to the Richfield Field Office of the Bureau of Land Management.

Gom, L. A., and S.B. Rood. 1999. Fire induces clonal sprouting of riparian cottonwoods Canadian Journal of Botany; Nov 1999; 77, 11; Sciences Module p. 1604.

Geist, V. 1978. Harassment of wildlife. Big Game of North America (J.L. Schmidt & D.L. Gilbert eds.) pp. 287-293. Stackpole Books, Harrisburg, Pennsylvania. 494 pp.

Graffam, M. and J. Bourdon. 1999. Ptychodids from the Tropic Shale. Website: http://www.elasmo.com/frameMe.html?file=paleo/fauna/ut_cret.html&menu=bin/menu_fauna-alt.html.

Hall, T.E. and T.A. Farrell. 2001. Fuelwood depletion at wilderness campsites: extent and potential ecological significance. Environmental Conservation 2001. Volume 28 (3) pp 241-247.

Hammitt, W. E. and D. N. Cole. 1998. Wildland Recreation: Ecology and Management. John Wiley & Sons Inc. New York: NY.

Harris, T.A., P.A. Gregory, and M.E. Miller. 2003. Changes in Vegetation Structure after Long-term Grazing in Pinyon-Juniper Ecosystems: Integrating Imaging Spectroscopy and Field Studies. Ecosystems (2003) 6: 368–383;

Hart, Jason. 1999. From Earlham College website. Invasive Species in the Southwest: Tamarix sp. (Salt Cedar). May 2, 1999. http://www.earlham.edu/~biol/desert/invasive.htm.

Hartnett, D. C., A. A. Steuter, and K. R. Hickman. 1997. Comparative ecology of native and introduced ungulates, pp. 72-101. In F. L. Knopf and F. B. Samson [eds.], Ecology and conservation of Great Plains vertebrates. Springer, New York.

Haskins, K. E. and C.A. Gehring. 2004. Long-term effects of burning slash on plant communities and arbuscular mycorrhizae in a semi-arid woodland. Journal of Applied Ecology. 41 (2), 379-388.

Hassink, J., L.A. Bouwman, K.B. Zwart, and L. Brussaard. 1993. Relationships between habitable pore space, soil biota and mineralization rates in grassland soils. Soil Biology and Biochemistry [SOIL BIOL. BIOCHEM.]. Vol. 25, no. 1, pp. 47-55.

Hillel, D. 1998. Environmental Soil Physics. Academic Press. August 1998. 771 pp.

Hintze, L.F. 1988. Geologic History of Utah, Brigham Young University Geology Studies, Provo UT. 202 pp.

Hintze, L.F., F.D. Davis, P.D. Rowley, C.G. Cunningham, T.A. Steven, and G.C. Willis. 2003. Geologic Map of the Richfield 30'x 60' Quadrangle, Southeast Millard County and parts of Beaver, Piute, and Sevier Counties. UGS Map 195.

Huebner, C.D., J. L. Vanakt, and W. H. Renwick. 1999. Change in vegetation mosaic of central Arizona USA between 1940 and 1989. Plant Ecology Volume 144: 83-91

Hunt, C.B. 1974. Natural regions of the United States and Canada: W. H. Freeman and Company, San Francisco, 725 pp.

Hunt, L.P. 2001. Low seed availability my limit recruitment in grazed *Atriplex vesicaria* and contribute to local extinction. In: Plant Ecology, Volume 157 p. 53-67.

Hunter M. E., P. N. Omi, E.J. Martinson, G. W. Chong, M.A. Kalkhan, and Stohlgren. 2003. Effects of fuel treatments, post-fire rehabilitation treatments and wildfire on establishment of invasive species. Proceeding of the 2nd International Wildland Fire Ecology and Fire Management Congress, Orlando Florida, November 16-20th.

IHS Energy Well Data. 2004. IHS Energy Well Data CD-ROM.

Irwin, Larry L., John G Cook, Robert A. Riggs, and Jon M. Skovlin. 1994. Effects of long-term grazing by big game and livestock in the Blue Mountains forest ecosystems. Gen. Tech. Rep. PNW-GTR-325. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 49 p. (Everett, Richard L., assessment team leader; Eastside forest ecosystem health assessment; Hessburg, Paul F., science team leader and tech. ed., Volume III: assessment.)

Intermountain West Joint Venture (IWJV). 2005. Coordinated Implementation Plan for Bird Conservation in Utah. Prepared by the Utah Steering Committee, Intermountain West Joint Venture.

Jennings *et al*. 2004. Guidelines for Describing Associations and Alliances of the U.S. National Vegetation Classification, The Ecological Society of America Vegetation Classification Panel, Version 4.0, July, 2004. Website: http://www.esa.org/vegweb/docFiles/NVC_Guidelines-v40.pdf Accessed on October 22, 2004.

Jessup, D. A. 1985. Disease of domestic livestock which threaten bighorn sheep populations. Desert Bighorn Counc. Trans. 29:29-33.

Johnson, W.C. and S.K. Collinge. 2004. Landscape effects on black-tailed prairie dog colonies. Biological Conservation 115: 487-497

Jules, E.S. 1998. Habitat fragmentation and demographic change for a common plant: trillium in old-growth forest. Ecology July 1998.

Kass, Ronald J. 2001. Mortality of the Endangered Wright Fishhook Cactus (*Sclerocactus wrightiae*) by an *Opuntia*-Borer Beetle (Cerambycidae: *Moneilema semipunctatum*). Western North American Naturalist 61(4): 495-497.

Kay, C. E., and D.L. Bartos. 2000. Ungulate herbivory on Utah aspen: Assessment of long-term exclosures. Journal of Rangeland Mangement. Volume 53, March 2000.

Kelly, R. and D. F. McCarthy. 2001. Effects of Fire on Rock Art. IN: Steven Freers and Alanah Woody, eds. American Indian Rock Art. Vol. 27, pp 169-176.

Keyes, C. P., R. L. LaMadeleine, V. Applegate, and D. Atkins. 2003. Utah Forest Health Report: A Baseline as Forest Health Monitoring, State of Utah Dept. of Natural Resources, Division of Forestry, Fire and State Lands, January 2003, Salt Lake City, UT.

Kindschy, Robert R., Charles Sundstrom, James D. Yoakum. 1982. Pronghorns Gen. Tech. Rep. PNW-145 in Wildlife habitat in managed rangelands - the Great Basin of southeastern Oregon. [technical editors] J. W. Thomas, Chris Maser.

Kleiner, Edgar F. 1983. Successional Trends in in Ungrazed, Arid Grassland Over a Decade. Journal Of Range Management, 36(l). January 1983.

Kreutzweiser, D.P., S.S. Capell, and F.D. Beall. 2004. Effects of Selective Forest Harvesting on Organic Matter Inputs and Accumulation in Headwater Streams. Northern Journal of Applied Forestry, Volume 21, Number 1, March 2004, pp. 19-30(12).

Laun, H.C. 1957. A life history study of the mountain plover, *Eupoda montana* townsend, on the Laramie plains, Albany County, Wyoming. Master's thesis, University of Wyoming, Laramie, WY.

Leininger, W. C., and G. F. Payne. 1979. The effects of off-road vehicle travel on rangeland in southeastern Montana. Agricultural Experiment Station, Montana State University. Research Rapt. 153. 47 pp.

Leonard, R. E., J. L. McMahon, and K. M. Kehoe. 1985. Hiker trampling impacts on eastern forests. U.S. Forest Service Res. Paper NE-55. Northeastern Forest Experiment Station.

Loyd, J. M. *et al.* Eds. 2002. IN: The Effects of Fire and Heat on Obsidian. Bureau of Land Management, Cultural Resources Publication, Bishop Field Office, California.

Loeser, M.R, T.D. Sisk, and T.E. Crews. 2001. Plant Community Responses to Livestock Grazing: an Assessment of Alternative Management Practices in a Semiarid Grassland. In: Vance, Regina K.; Edminster, Carleton B.; Covington, W. Wallace; Blake, Julie A. comps. 2001. Ponderosa pine ecosystems restoration and conservation: steps toward stewardship; 2000 April 25–27; Flagstaff, AZ. Proceedings RMRS-P-22. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Louda, S.M. 2000. Rhinocyllus conicus - Insights to Improve Predictability and Minimize Risk of Biological Control of Weeds. In 187 Proceedings of the X International Symposium on Biological Control of Weeds. 4-14 July 1999, Montana State University, Bozeman, Montana, USA. Neal R. Spencer [ed.]. pp. 187-193 (2000)

Lovich, J.E. and D. Bainbridge. 1999. Anthropogenic Degradation of the Southern California Desert Ecosystem and Prospects for Natural Recovery and Restoration. Environmental Management 1999. Volume 24 (3) pp 309-326

MacArthur, R. H., and E. O. Wilson. 1967. The theory of island biogeography. Princeton University Press, Princeton, New Jersey, USA.

Mack, R. N. 1986. Alien plant invasion into the Intermountain West: a case history. Pages 191-213 in Ecology of Biological Invasions of North America and Hawaii. H. A. Mooney and J. A. Drake, eds. NewYork: Springer-Verlag. Referenced in: Knight, R. L. and K. J. Gutzwiller, eds. Wildlife and Recreationists: Coexistence Through Management and Research. 1995. Island Press, Washington, D.C.

Madany, M. H., and N. E. West. 1983. Livestock grazing-fire regime interactions within montane forests of Zion National Park, Utah. Ecology 64:661-667.

Martin, T. and D. Finch, eds. 1995. Ecology and Management of Neotropical Migratory Birds. A synthesis and review of critical issues. Oxford University Press, NY. 489 pp.

Mason R. R and B.E. Wickman. 1994. Procedure to reduce landscape hazard from insect outbreaks in Everett, Richard L., comp. 1994. Restoration of stressed sites, and processes. Gen. Tech. Rep. PNW-GTR- 330. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 123 p. (Everett, Richard L., assessment team leader; Eastside forest ecosystem health assessment; volume IV.)

McCarty, G. W., and J. A. Bailey. 1994. Habitat requirements of desert bighorn sheep. Colorado Division of Wildlife Species Rep. No. 69, Denver, 27 pp.

McConnell, B.R. and J.G. Smith. 1977. Influence of grazing on age-yield interactions in bitterbrush. Journal of Range Management 30:91-93

Miller, R. and J.A. Rose. 1995. Historic Expansion of Juniperus Occidentalis (Western Juniper) in Southeastern Oregon. Great Basin Naturalist 55(1)37-45. January 1995.

Miller, S. 2002. Interstate-70: 25 Years of Central Utah Archaeology. San Rafael Swell Resource Form. Emery High School, Castle Dale, Utah. September, 2002.

Minnesota IMPLAN Group (MIG). 2001. Minnesota IMPLAN Group Home Page. Website: http://www.implan.com/index.html. Accessed 2001.

Monsen, Stephen B., Richard Stevens, and Nancy L. Shaw, Comps. 2004. Restoring western ranges and wildlands. Gen. Tech. Rep. RMRS-GTR-136-vol-1. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Pages 1-294 plus index.

Morse, S.F. and S.K. Robinson. 1999. Nesting Success of a Neotropical Migrant in a Multiple-Use, Forested Landscape. Conservation Biology. Vol 13. No. 2 pgs 327-337.

Muzika, R. M. and A.M. Liebhold. 2000. A critique of silvicultural approaches to managaing defoliating insects in North America. In Agricultural and Forest Entomology (2000) 2, 97-105.

National Park Service (NPS). 1999. Glen Canyon National Recreation Area, Grazing Management Plan (General Management Plan – Grazing Component).

National Park Service (NPS). 2001. Draft National Historic Trail Feasibility Study and Environmental Assessment. Old Spanish Trail. New Mexico, Colorado, Utah, Arizona, Nevada, California. July 2001.

National Wildfire Coordinating Group (NWCG). 2001. Fire Effects Guide. Internet: http://www.nwcg.gov/pms/RxFire/FEG.pdf. Accessed August 4, 2004.

National Wildlife Federation. 2000. Petition for rule listing the black-tailed prairie dog (*Cynomys ludovicianus*) as threatened throughout its range.

National Wildlife Federation and Environmental Defense. 2002. Status of White-Tailed and Gunnison's Prairie Dogs. Prepared by Fauna West Wildlife Consultants, Boulder, Montana, November 2002.

NatureServe. 2004. NatureServe Explorer: An online encyclopedia of life [web application]. Version 5.0. NatureServe, Arlington, Virginia. Available: http://www.natureserve.org/explorer. Accessed July, 2004.

Nelson, J.R. 1982. Relationships of elk and other large herbivores. In Elk of North America, ecology and management eds. J.W. Thomas and D.E. Toweill, 415-441. Harrisburg, PA: Stackpole Books.

Nicholoff, S. H., compiler. 2003. Wyoming Bird Conservation Plan, Version 2.0. Wyoming Partners In Flight. Wyoming Game and Fish Department, Lander, WY.

O'brien, R. A. and S. H. Waters. 1998. Forest Resources of the Fishlake National Forest. U.S. Department of Agriculture, Rocky Mountain Research Station. May 1998.

Office of Surface Mining. 2002. Permitting Hydrology, A Technical Reference Document for Determination of Probable Hydrologic Consequences (PHC) and Cumulative Hydrologic Impact Assessments (CHIA) - Baseline Data. Accessed online February 15, 2005 via http://www.osmre.gov/hydrologicinformation.htm.

Olff, H. and M.E. Ritchie. 1998. Effects of herbivores on grassland plant diversity. Trends in Ecology and Evolution 13, 261-265

Oster, E. No Date. The Effects of Fire on Subsurface Archeological Materials (DRAFT). Kevin C. Ryan and Anne Trinkle Jones. Eds. IN: Wildland Fire in Ecosystems: Effects of Fire on Cultural Resources and Archeology. Rainbow Series, Rocky Mountain Research Station, USDA Forest Service. In press.

Padgett, Wayne, Andrew Youngblood, and Alma Winward. 1989. Riparian Community Type Classificiation of Utah and Southeastern Idaho. U.S. Forest Service, December 1989.

Parrish, J. R., F. P. Howe, R. E. Norvell. 2002. Utah Partners in Flight Avian Conservation Strategy Version 2.0. Utah Partners in Flight Program, Utah Division of Wildlife Resources, 1594 West North Temple, Salt Lake City, UT 84116, UDWR Publication Number 02-27. i–xiv + 302 pp.

Peterson, David L., Morris C. Johnson, James K. Agee, Theresa B. Jain, Donald McKenzie, and Elizabeth D. Reinhardt. 2005. Forest structure and fire hazard in dry forests of the Western United States. Gen. Tech. Rep. PNW-GTR-628. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 30 pp.

Piute County 1994. Piute County General Plan.

Plumb, G.E. and J. L. Dodd. 1993. Foraging Ecology of Bison and Cattle on a Mixed Prairie: Implications for Natural Area Management. Ecological Applications. Vol 3. No. 4. November 1993. pp. 631-643.

Powell, A.K., ed. 1994. Utah History Encyclopedia. Website: http://www.media.utah.edu/UHE/. Accessed 2002. Originally published by the University of Utah Press in 1994.

Rice, D. 2000. Coal bed methane potential and concerns, Utah: U.S. Geological Survey, Fact Sheet FS-123-00.

Riggs, Robert. A., Arthur R. Tiedemann, John G. Cook, Teena M. Ballard, Paul J. Edgerton, Martin Vavra, William C. Krueger, Frederick C. Hall, Larry D. Bryant, Larry L. Irwin, and Timothy Delcurto. 2000. Modification of mixed-conifer forests by ruminant herbivores in the Blue Mountains ecological province. Res. Pap. PNW-RP-527. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 77 p.

Ritchie, Mark E. and Ellen Cheng. 2001. Effects of grazing and habitat quality on UPD. 1998-1999 Final Report. Submitted to the Utah Division of Wildlife Resources, Bureau of Land Management, U.S. Fish and Wildlife Service.

Romin, Laura and James Muck. 2002. Utah Office Guidelines for Raptor Protection from Human and Land Use Disturbances. U.S.F.W.S, January 2002.

Rowley, P. D., C. G. Cunningham, T. A. Steven, J. B. Workman, J. J. Anderson, and K. M. Theissen. 2002. Geologic map of the central Marysvale volcanic field, southwestern Utah. USGS Geologic Investigations Series Map I-2645-A.

Rowley, P.D., G.S. Vice, J.J. Anderson, R.E. McDonald, D.J. Maxwell, B.R. Wardlaw, C.G. Cunningham, T.A. Steven, and M.N. Machette. 2004. Progress Report: Geologic Map of the

South Half of the Beaver 30' x 60' Quadrangle, Beaver, Piute, Iron, and Garfield Counties, Utah. Utah Geological Survey Open File Report 435.

Sanpete County 1997. Sanpete County General Plan.

Schmidt, K.M., J.P. Menakis, C.C. Hardy, W.J. Hann, and D.L. Bunnell. 2002. Development of coarse-scale spatial data for wildland fire and fuel management. General Technical Report RMRS-GTR-87. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 41 p (and CD).

Schott, M.R. and R.D. Pieper. 1987. Succession of Pinyon-Juniper Communities after Mechanical Disturbance in Southcentral New Mexico. Journal of Range Management 40(l), January 1987

Sevier County 1998. Sevier County General Plan.

Shackley, M., S. Dillian, and C. Dillian. 2002. Thermal and Environmental Effects on Obsidian Geochemistry: Experimental and Archaeological Evidence. J. M. Loyd, T. M. Origer, and D. A. Fredrickson eds. IN: The Effects of Fire and Heat on Obsidian. Bureau of Land Management, Cultural Resources Publication, Bishop Field Office, CA.

Shepperd, W.D. 2000. Manipulations to Regenerate Aspen Ecosystems. In Shepperd, Wayne D.; Binkley, Dan; Bartos, Dale L.; Stohlgren, Thomas J.; and Eskew, Lane G., compilers. 2001. Sustaining Aspen in Western Landscapes: Symposium Proceedings; 13–15 June 2000; Grand Junction, CO. Proceedings RMRS-P-18. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. p. 460.

Shepperd, Wayne D. *et al.*, compilers. 2001. Sustaining Aspen in Western Landscapes: Symposium Proceedings; 13–15 June 2000; Grand Junction, CO. Proceedings RMRS-P-18. Fort Collins, CO. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. p. 460.

Sigler, W.F. and J.W. Sigler. 1996. Fishes of Utah: A Natural History. University of Utah Press. 375 pp.

Simonin, Kevin A. 2000. *Pleuraphis jamesii*. In Fire Effects Information System [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Website: http://www.fs.fed.us/database/feis/ Accessed July 22, 2004.

Simonin, Kevin A. 2001. *Atriplex confertifolia*. In Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Website: http://www.fs.fed.us/database/feis/ Accessed July 22, 2004.

Solomon, M. 2002. Fire and Glass: Effects of Fire on Obsidian Hydration Bands. J. M. Loyd, T. M. Origer and D. A. Fredrickson eds. IN: The Effects of Fire and Heat on Obsidian. Bureau of Land Management, Cultural Resources Publication, Bishop Field Office, CA.

Smith, R.E. 1955. Natural history of the prairie dog in Kansas. University of Kansas Museum of Natural History and State Biological Survey. Publication 16, Lawrence, KS. 36pp.

Spangler, J. 2001. Human Landscapes and Prehistoric Paradigms: A Class I Overview of Cultural Resources in Grand Staircase-Escalante National Monument. Utah Museum of Natural History Reports of Investigations 01-2.

Stack, Peggy F. 2002. "LDS, Evangelicals Nation's Fastest Growing Churches." Salt Lake Tribune, 18 Sept. 2002. pp. A-1 & A-15.

Steven, T.A., H.T. Morris, and P.D. Rowley. 1990. Geologic Map of the Richfield 1˚ x 2˚ Quadrangle, West-Central Utah. USGS Miscellaneous Investigations Series Map I-1901.

Stevens, V. 1997. The ecological role of coarse woody debris: an overview of the ecological importance of CWD in B.C. forests. Res. Br., B.C. Min. For., Victoria, B.C. Work. Pap. 30/1997.

Stokes, W.L. 1986. Geology of Utah. Utah Museum of Natural History, University of Utah and Utah Geological and Mineral Survey, Department of Natural Resources. Salt Lake City, Utah. 280 pp.

Stone, W.E. and M.L. Wolfe. 1996. Response of understory vegetation to variable tree mortality following a mountain pine beetle epidemic in lodgepole pine stands in northern Utah. Vegetation 122: 1-12

Svejcar, T., and M. Vavra. 1985. The influence of several range improvements on estimated carrying capacity and potential beef production. Journal of Range Management 38:395-399.

Tabet, David. 2003. Coal Resources of the BLM Richfield Planning Area. Utah Geological Survey report for the U.S. Bureau of Land Management.

Taylor, Jennifer L. 1999. *Sporobolus flexuosus*. In Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Website: http://www.fs.fed.us/database/feis/ July 22, 2004.

Tempel, Douglas. 2003. Linking Wilderness Research and Management Volume 5 –Backcountry Recreation Impacts to Wildlife: An Annotated Reading List DRAFT Aldo Leopold Wilderness Research Institute, September 2003.

Thompson, W. W., and F.R. Gartner. 1971. Native Forage Response to Clearing Low Quality Ponderosa Pine. Journal of Range Management. Vol 24, 4. July 1971.

Tipps, B. 1988. Archaic and Numic Encampment in the Little Boulder Basin, Eureka County, Nevada. Cultural Resources Report 424-1-8805. P-III Associates, Inc., Salt Lake City, Utah. BLM Report 1-1188(P). Submitted to Bureau of Land Management, Elko District Office, Elko, Nevada.

Tratebas, A. 2004. Rock Art and Fire. PowerPoint presentation. Website: http://www.blm.gov/heritage/powerpoint/Alice_Tratebas_firearch2_files/frame.htm.

U.S. Census Bureau. 2004. Census 2000 State and County QuickFacts. Website: http://quickfacts.census.gov/qfd/. Accessed 2004.

U.S. Census Bureau. 2005. Census 1990 Publications Library, 1990 Decennial Census. Website: http://www.census.gov/prod/www/abs/decennial.html. Accessed 2005.

United States Code (USC) 2003. Healthy Forests Restoration Act of 2003. 16USC 6501, Public Law 108-148. December 3, 2003.

U.S. Department of Agriculture (USDA). 2003. Recreation Research Update. Special Fire Issue. U.S. Forest Service, Pacific Southwest Research Station, Wildland Recreation and Urban Cultures, Riverside, CA. 2p

U.S. Department of Agriculture (USDA). 2004a. USDA Economics, Statistics and Market Information System. Website: http://usda.mannlib.cornell.edu/MannUsda/homepage.do. Accessed 2004.

U.S. Department of Agriculture (USDA). 2004b. National Agricultural Statistics Service. Census of Agriculture. Website: http://www.nass.usda.gov/Census_of_Agriculture/index.asp. Accessed 2004.

U.S. Department of the Interior (USDI). 1991. Riparian-Wetland Initiative for the 1990's.

U.S. Department of the Interior (USDI). 2004. Payments in Lieu of Taxes (PILT), County Payments and Acres. Website: http://www.nbc.gov/pilt/search.cfm. Accessed 2004.

U.S. Department of the Interior (USDI) and U.S. Department of Energy (USDOE). 2003. Assessing the Potential for Renewable Energy of Public Lands. February, 2003. Website: http://www.nrel.gov/docs/fy03osti/33530.pdf.

U.S. Department of the Interior (USDI), U.S. Department of Agriculture (USDA), U.S. Department of Energy (USDOE). 2003. Scientific Inventory of Onshore Federal Lands' Oil and Gas Resources and Reserves and the Extent and Nature of Restrictions or Impediments to Their Development, January 2003. Website: http://www.blm.gov/energy/epca/ExecSum.pdf.

U.S. Energy Information Administration. 2004. Coal Statistics. Website: http://www.eia.doe.gov/fuelcoal.html. Accessed 2004.

U.S. Environmental Protection Agency (USEPA) 1999. Regional Haze Regulations: Final Rule. Federal Register Vol. 64, No. 126 pp 35713-74. July 1,1999.

U.S. Fish and Wildlife Service (USFWS). 1979. Endangered and Threatened Wildlife and Plants; Determination That the Purple-Spined Hedgehog Cactus and Wright Fishhook Cactus Are Endangered Species. Federal Register Vol. 44, No. 198. October 11, 1979.

U.S. Fish and Wildlife Service (USFWS). 1985. Endangered and Threatened Wildlife and Plants: Final Rule to Determine Townsendia aprica (Last Chance Townsendia) to be a Threatened Species. Federal Register Vol. 50, No. 162, pp. 33734-33737. August, 21, 1985.

U.S. Fish and Wildlife Service. 1990a. Bonytail Chub Recovery Plan. U.S. Fish and Wildlife Service, Region 6, Denver, Colorado. September 4, 1990. 35 pp.

U.S. Fish and Wildlife Service. 1990b. Humpback Chub Recovery Plan. U.S. Fish and Wildlife Service, Region 6, Denver, Colorado. September 19, 1990. 43 pp.

U.S. Fish and Wildlife Service. 1991. Colorado squawfish recovery plan. U.S. Fish and Wildlife Service, Region 6, Denver, Colorado. August 6, 1991. 56 pp.

U.S. Fish and Wildlife Service (USFWS). 1992. Endangered and Threatened Wildlife and Plants; Final Rule to List the Plant *Spiranthes diluvialis*, Ute Ladies'- Tresses, as a Threatened Species. Federal Register Vol. 57, No. 12, pp. 2048-2054. January 17, 1992.

U.S. Fish and Wildlife Service (USFWS). 1993a. Last Chance townsendia (*Townsendia aprica*) recovery plan, U.S. Fish and Wildlife Service, Denver, Colorado, 18 pp.

U.S. Fish and Wildlife Service (USFWS). 1994a. Utah reed-mustards: clay reed-mustard (*Schoenocrambe argillacea*), Barneby reed-mustard (*Schoenocrambe barnebyi*), shrubby reed-mustard (*Schoenocrambe suffrutescens*) recovery plan, U.S. Fish and Wildlife Service, Denver, Colorado. September 14, 1994, p. 22.

U.S. Fish and Wildlife Service (USFWS). 1994b. Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for the Colorado River Endangered Fishes: Razorback Sucker, Colorado Squawfish, Humpback Chub, and Bonytail Chub. Federal Register Vol. 59, No. 54, pp. 13374-13400. March 21, 1994.

U.S. Fish and Wildlife Service (USFWS). 1995b. Ute Ladies'-Tresses (*Spiranthes Diluvialis)* Recovery Plan, USFWS, Denver, Colorado, 46 pp.

U.S. Fish and Wildlife Service (USFWS). 1995c. Availability of a Draft Recovery Plan for the Utah Pediocactus: San Rafael Cactus (*Pediocactus despainii*) and Winkler Cactus (*Pediocactus winkleri*

U.S. Fish and Wildlife Service (USFWS). 1995d. Maguire daisy (*Erigeron maguirei*) recovery plan. U.S. Fish and Wildlife Service, Denver, Colorado. 13pp.

U.S. Fish and Wildlife Service. 1998. Razorback sucker recovery plan. U.S. Fish and Wildlife Service, Region 6, Denver, Colorado.

U.S. Fish and Wildlife Service (USFWS). 2002a. Bonytail (*Gila elegans*) recovery goals: amendment and supplement to the Bonytail Chub Recovery Plan, Mountain Prairie Region (6) Denver, Colorado, 2002.

U.S. Fish and Wildlife Service (USFWS). 2002b. Colorado Pikeminnow (*Ptychocheilus lucius*) recovery goals: amendment and supplement to the Colorado Squawfish Recovery Plan, Mountain Prairie Region (6) Denver, Colorado, 2002.

U.S. Fish and Wildlife Service (USFWS). 2002c. Humpback chub (*Gila cypha)* recovery goals: amendment and supplement to the Humpback Chub Recovery Plan, Mountain Prairie Region (6) Denver, Colorado, 2002.

U.S. Fish and Wildlife Service (USFWS). 2002d. Razorback sucker (*Xyrauchen texanus*) recovery goals: amendment and supplement to the Razorback Sucker Recovery Plan U.S. Fish and Wildlife Service, Mountain-Prairie Region (6) Denver, Colorado.U.S. Fish and Wildlife Service (USFWS), 2004.

U.S. Fish and Wildlife Service (USFWS). 2002e. Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances, Prepared by Lori A Romin and James A. Muck, U.S. Fish and Wildlife Service, January 2002.

U.S. Fish and Wildlife Service (USFWS). 2004. Species Information. Threatened and Endangered Animals and Plants. Website: http://www.fws.gov/endangered/wildlife.html. Accessed July, 2004.

U.S. Fish and Wildlife Service (USFWS) and The Edison Electric Institute's Avian Power Line Interaction Committee (APLIC). 2005. Avian Protection Plan (APP) Guidelines. April, 2005.

U.S. Forest Service (USFS). 2000. Utah Fire Amendment: Environmental Assessment, Forest Service, Intermountain Region, October 2000.

U.S. Forest Service (USFS). 2001. Restoring Fire-Adapted Ecosystems on Federal Lands – A Cohesive Strategy for Protecting People and Sustaining Natural Resources, Draft December 2001, USDA Forest Service and U.S. Department of the Interior.

U.S. Forest Service (USFS) 2003. Paiute and Great Western Trails 2003 Use Report. Fishlake National Forest, 2003.

U.S. Forest Service (USFS). 2004. Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Fire Effects Information System. Website: http://www.fs.fed.us/database/feis/. Accessed July 2004.

U.S. Forest Service (USFS). 2007. National Visitor Use Monitoring Results for Moab Field Office, National Visitor Use Monitoring Program.

U.S. Geological Survey (USGS). No date. Hydrologic units, hydrologic unit codes, and hydrologic unit names. (Modified from Slack and Landwehr, 1992 and Seaber, Kapinos, & Knapp, 1987). Website: http://water.usgs.gov/nawqa/sparrow/wrr97/geograp/hucs.txt.

U.S. Geological Survey (USGS). 1969. Mineral and water resources of Utah: Utah Geological and Mineral Survey, Bulletin 73, 275 pp.

U.S. Geological Survey (USGS). 2000. Water produced with coal bed methane. Fact Sheet FS-156-00.

U.S. Geological Survey (USGS). 2004. GAP Analysis Program. Utah GAP Data. http://gapanalysis.usgs.gov/portal/server.pt. Accessed 2004.

Utah Code. 2004. Title 59 – Revenue and Taxation, Title 40 – Mines and Mining. Website: http://www.le.state.ut.us/%7Ecode/code.htm. Accessed 2004.

Utah Department of Agriculture and Food. 2003a. Insect Report, December 21, 2003. Website: http://ag.utah.gov/plantind/InsectReport2003.pdf. Accessed July 6, 2004.

Utah Department of Agriculture and Food. 2003b. County Noxious Weeds, Website: http://ag.utah.gov/plantind/nox_county.pdf. Accessed October 26, 2004.

Utah Department of Environmental Quality (UDEQ). 2006. Utah's 2006 Integrated Report. Volume II - 303(d) List of Impaired Waters. Utah Department Environmental Quality, Division of Water Quality. April 1, 2006.

Utah Division of Oil, Gas and Mining (UDOGM). 2004. Utah Oil & Gas Production by County. Website: http://www.ogm.utah.gov/oilgas/PUBLICATIONS/Reports/prodbycnty.htm. Accessed 2004.

Utah Division of Travel Development 2004. 2003 State and County Economic & Travel Indicator Profiles. pp. 119. March 2004. Website: http://travel.utah.gov/research_and_planning/economic_planning/index.html. Accessed 2004.

Utah Division of Air Quality (UDAQ). 2003. Utah Enhanced Smoke Management Plan. 16 pp. http://www.airquality.utah.gov/Public-Interest/Current-Issues/Regionalhazesip/regionalhazepdf/Public_Comments_and_related_docs/ESMP081103.pdf.

Utah Division of Air Quality (UDAQ) 2004. State Implementation Plan. Website: http://www.airquality.utah.gov/Planning/SIP/Section/sip-section.htm.

Utah Division of Air Quality (UDAQ). 2007. UDAQ Annual Report 2006. May 2007. 41 pp. www.airquality.utah.gov/Public-Interest/annual-report/2006_Annual_Report_Final_MB.pdf.

Utah Division of Wildlife Resources (UDWR). 1999. Statewide Management Plan for Bighorn Sheep. September 1999. Website: http://www.wildlife.utah.gov/hunting/biggame/pdf/bighorn_plan.pdf

Utah Division of Wildlife Resources (UDWR). 2003. Utah Sensitive Species List. Website: http://wildlife.utah.gov/publications/. Accessed 2003.

Utah Division of Wildlife Resources (UDWR). 2005a. Utah Conservation Data Center. Website: http://dwrcdc.nr.utah.gov/ucdc/ Accessed January 5, 2005.

Utah Division of Wildlife Resources (UDWR). 2005b. Utah Big Game Trend Studies. Website: http://www.wildlife.utah.gov/range/. Accessed April 23, 2005.

Utah Division of Wildlife Resources (UDWR). 2005c. Utah Comprehensive Wildlife Conservation Strategy (CWCS). Utah Division of Wildlife Resources Publication Number 05-19. Written by: Gorrell, J.V., Andersen, M.E., Bunnell, K.D., Canning, M.F., Clark, A.G., Dolsen, D.E., and Howe, F.P. 280pp.

Utah Division of Wildlife Resources (UDWR). 2005d. Plant Information Compiled by the Utah Natural Heritage Program: A Progress Report. Publication Number 05-40. Utah Division of Wildlife Resources, 1594 West North Temple, Salt Lake City, Utah, James F. Karpowitz, Director. 341 pages.

Utah Division of Wildlife Resources (UDWR). 2006. Utah Conservation Data Center. Utah Sensitive Species List. Website: http://dwrcdc.nr.utah.gov/ucdc/ Accessed May 12, 2006.

Utah Division of Wildlife Resources (UDWR). 2007. Web site: www.wildlife.utah.gov. Accessed September 14, 2007.

Utah Geological Survey (UGS). 2002. Automated Geographic Reference Center (AGRC) and GIS Databases of BLM Web Site, Utah.

Utah Geological Survey (UGS). 2004. Utah Geological Survey Coal Data. Website: http://geology.utah.gov/sep/energydata/coaldata.htm. Accessed 2004.

Utah Governor's Office of Planning and Budget. 2005. Demographic and Economic Analysis. 2005 Baseline Economic and Demographic Projections. Website: http://governor.utah.gov/dea/LongTermProjections.html. Accessed 2005.

Utah Governor's Office of Planning and Budget. 2007. 2007 Economic Report to the Governor. January 2007. Website: http://www.governor.utah.gov/DEA/ERG2007.html.

Utah Native Plant Society. 2007. Web site: www.unps.org. Accessed September 14, 2007.

Utah Native Plant Society. 2004. *Utah Rare Plant Guide* Website: http://www.utahrareplants.org/rpg_species.html. Accessed July 2004.

Utah Natural Heritage Program (UNHP). 2004. Utah Natural Heritage Program, Utah Division of Wildlife Resources. Element Occurrence Database and Files. Salt Lake City, Utah.

Utah State Tax Commission. 2003. Annual Report Fiscal Year 2002-2003. 43 pp.

Utah State Tax Commission. 2004. Property Tax Division. 2003 Annual Statistical Report for Locally Assessed Real Property, Locally Assessed Personal Property, Centrally Assessed Property, and Motor Vehicle Fee-In-Lieu of Tax. September 1, 2004. Website: http://www.propertytax.utah.gov/finalannualstats/2003annualreport.pdf. Accessed 2004.

Van Vuren, D. H. 2001. Spatial Relations of American bison (*Bison bison*) and domestic cattle in a montane environment. Animal Biodiversity and Conservation Volume 24: 1. 2001.

Vavra, M. and R.L. Phillips. 1980. Drought effects on cattle performance. In Proceedings, Western Section, American Society of Animal Science 31:157-160.

Wambolt, Carl L.and Myles J. Watts. 1996. High stocking rate potential for controlling Wyoming big sagebrush. In: Barrow, Jerry R.; McArthur, E. Durant; Sosebee, Ronald E.; Tausch, Robin J., comps. Proceedings: shrubland ecosystem dynamics in a changing environment; 1995 May 23–25; Las Cruces, NM. Gen. Tech. Rep. INT-GTR-338. Ogden, UT

Wallace, L.L. Effects of clipping and soil compaction on growth, morphology and mycorrhizal colonization of *Schizachyrium scoparium*, a C4 bunchgrass. Oecologia (Berlin) (1987) 72 : 423-428 .

Warr, G. 2003. BLM Utah Statewide Wild Horse and Burro Program Specialist, Personal Communication, E-Mail, July 10, 2003.

Wayne County 1994. Wayne County General Plan.

Weaver T. and T. Dale. 1978. Trampling effects of hikers, motorcycles and horses in meadows and forests. Journal of Applied Ecology 15:451-457.

Welch, Bruce. 2002. Bird Counts of Burned Versus Unburned Big Sagebrush Sites. Research Note, RMRS-RN-16, September 2002.

Welsh, S. L., N.D.Attwood, S. Goodrich, and L. C. Higgins, Eds. 1993. A Utah Flora. Second Edition, revised. Brigham Young University, Provo, Utah.

West, Neil E., 2000, *Synecology and Distribution Regimes of Sagebrush Steppe Ecosystems*, In : Proceedings: Sagebrush Steppe Ecosystems Symposium, pp. 15–26, Bureau of Land Management Publication No. BLM/ID/PT-001001+1150, Boise, Idaho

Western Partners in Flight, Birds in Sagebrush Sea.

Western Regional Climate Center, 2004. http://www.wrcc.dri.edu/. Accessed in 2004.

Willat, S.T. and D.M. Pullar. 1983. Changes in soil physical properties under grazed pastures. Australian Journal of Soil Research 22:343–348

Williams, G. W. 2003. References on the American Indian Use of Fire in Ecosystems, Website: http://www.blm.gov/heritage/docum/Fire/Bibliography%20-20Indian%20Use%20of%20Fire.pdf. Accessed: July 26, 2004.

Wuerthner, G. 1997. Viewpoint: The black-tailed prairie dog – headed for extinction? Journal of Rangeland Management 50: 459-66.

Wyoming Game and Fish Department (WGFD). 2003. Wyoming Greater Sage-Grouse Conservation Plan, Final Draft, May 27, 2003.

Zabiniski, C. A. and J. E. Gannon. 1997. Effects of Recreational Impacts on Soil Microbial Communities. Environmental Management 1997. Volume 21 (2). Pp 233-238.

Zlatnik, Elena. 1999. *Juniperus osteosperma*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Website: http://www.fs.fed.us/database/feis/. Accessed July 22, 2004.

Zouhar, Kris. 2003. *Bromus tectorum*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Website: http://www.fs.fed.us/database/feis/. Accessed July 27, 2004.

INDEX

ACEC..... *See* area of critical environmental concern
area of critical environmental concern..... ES-1, ES-2, ES-11, ES-13, 1-6, 1-7, 1-11, 2-3, 2-7, 2-8, 2-27, 2-35, 2-47, 2-48, 2-50, 2-51, 2-53, 2-56, 2-57, 2-58, 2-69, 2-70, 2-69, 2-70, 2-73, 2-76, 2-78, 2-79, 2-80, 2-85, 2-86, 2-85, 2-86, 2-87, 2-88, 2-87, 2-88, 2-88, 2-89, 2-94, 2-98, 2-99, 2-98, 2-99, 2-99, 2-100, 2-99, 2-100, 2-101, 2-102, 2-103, 2-104, 2-105, 2-106, 2-107, 2-107, 2-108, 2-108, 2-109, 2-110, 2-111, 2-111, 2-112, 2-112, 2-113, 2-113, 2-114, 2-114, 2-115, 2-115, 2-116, 2-117, 2-117, 2-118, 2-118, 2-119, 2-120, 2-120, 2-121, 2-125, 2-127, 2-128, 2-127, 2-128, 2-129, 2-129, 2-130, 2-131, 2-132, 2-131, 2-132, 2-134, 2-138, 2-139, 2-139, 2-142, 3-90, 3-91, 3-92, 3-93, 3-94, 3-95, 3-96, 3-97, 4-13, 4-14, 4-17, 4-19, 4-20, 4-21, 4-22, 4-24, 4-29, 4-32, 4-33, 4-34, 4-35, 4-36, 4-37, 4-38, 4-46, 4-48, 4-51, 4-54, 4-55, 4-57, 4-59, 4-63, 4-67, 4-69, 4-72, 4-74, 4-76, 4-77, 4-79, 4-84, 4-85, 4-87, 4-90, 4-92, 4-93, 4-94, 4-95, 4-98, 4-101, 4-102, 4-106, 4-108, 4-109, 4-110, 4-111, 4-112, 4-113, 4-114, 4-115, 4-130, 4-131, 4-132, 4-133, 4-138, 4-142, 4-143, 4-147, 4-148, 4-149, 4-151, 4-152, 4-153, 4-162, 4-163, 4-166, 4-167, 4-172, 4-175, 4-176, 4-180, 4-181, 4-183, 4-184, 4-185, 4-187, 4-188, 4-189, 4-190, 4-191, 4-196, 4-198, 4-200, 4-202, 4-203, 4-228, 4-229, 4-236, 4-242, 4-250, 4-251, 4-252, 4-253, 4-257, 4-258, 4-259, 4-263, 4-264, 4-266, 4-267, 4-269, 4-273, 4-274, 4-276, 4-278, 4-279, 4-280, 4-281, 4-282, 4-283, 4-286, 4-287, 4-290, 4-291, 4-292, 4-294, 4-296, 4-299, 4-301, 4-303, 4-304, 4-305, 4-307, 4-308, 4-310, 4-311, 4-312, 4-313, 4-314, 4-315, 4-317, 4-320, 4-323, 4-324, 4-326, 4-329, 4-330, 4-332, 4-335, 4-345, 4-347, 4-348, 4-349, 4-351, 4-352, 4-354, 4-355, 4-356, 4-357, 4-358, 4-359, 4-360, 4-361, 4-362, 4-373, 4-376, 4-379, 4-381, 4-383, 4-384, 4-385, 4-386, 4-387, 4-388, 4-389, 4-390, 4-391, 4-392, 4-393, 4-395, 4-396, 4-397, 4-398, 4-399, 4-400, 4-401, 4-402, 4-403, 4-404, 4-405, 4-406, 4-407, 4-408, 4-409, 4-410, 4-411, 4-412, 4-413, 4-414, 4-415, 4-416, 4-417, 4-418, 4-419, 4-420, 4-421, 4-422, 4-423, 4-424, 4-425, 4-426, 4-427, 4-428, 4-429, 4-430, 4-431, 4-432, 4-433, 4-434, 4-435, 4-436, 4-437, 4-438, 4-439, 4-440, 4-441, 4-442, 4-443, 4-444, 4-445, 4-446, 4-447, 4-448, 4-449, 4-450, 4-451, 4-452, 4-453, 4-454, 4-455, 4-461, 4-465, 4-469, 4-470, 4-471, 4-473, 4-474, 4-475, 4-

477, 4-478, 4-479, 4-490, 4-492, 4-494, 4-495, 4-496, 5-1, 5-4, 5-12, 5-13, 5-14
bald eagle 1-13, 3-29, 3-30, 3-97, 4-118, 4-119, 4-120, 4-124, 4-129, 4-133, 4-134, 4-138, 4-139, 4-140, 4-142, 4-143, 4-145, 4-147, 4-148, 4-151, 4-309, 4-451, 4-453, 4-455
Barneby reed-mustard 3-30, 3-34
Best Management Practices 1-15, 2-12, 2-13, 2-25, 2-32, 2-80, 2-81, 2-103, 2-106, 2-107, 2-108, 2-109, 3-51, 4-4, 4-5, 4-13, 4-14, 4-17, 4-19, 4-22, 4-27, 4-30, 4-33, 4-35, 4-37, 4-46, 4-47, 4-51, 4-186, 4-270, 4-287, 4-319, 4-324, 4-498
bighorn sheep 1-13, 2-28, 2-30, 2-43, 2-52, 2-106, 2-113, 2-114, 3-11, 3-49, 3-95, 4-124, 4-139, 4-145, 4-153, 4-158, 4-160, 4-166, 4-167, 4-171, 4-173, 4-175, 4-178, 4-180, 4-182, 4-184, 4-250, 4-272, 4-313, 4-325, 4-327, 4-330, 4-333, 4-411, 4-413, 4-414, 4-415, 4-434, 4-435, 4-436
bison 2-27, 2-29, 2-30, 2-29, 2-73, 2-109, 2-110, 2-132, 3-48, 3-64, 3-69, 3-94, 3-99, 4-57, 4-113, 4-124, 4-153, 4-157, 4-162, 4-164, 4-166, 4-167, 4-170, 4-171, 4-174, 4-175, 4-179, 4-180, 4-182, 4-183, 4-184, 4-206, 4-212, 4-237, 4-243, 4-253, 4-261, 4-266, 4-268, 4-281, 4-298, 4-299, 4-301, 4-303, 4-305, 4-309, 4-314, 4-316, 4-321, 4-325, 4-327, 4-328, 4-330, 4-331, 4-333, 4-334, 4-384, 4-421, 4-422, 4-423, 4-424, 4-425, 4-426, 4-466
bonytail chub 3-30, 3-32, 3-33, 3-34
Bull Creek Archaeological District ES-11, 2-17, 2-18, 2-56, 2-98, 2-104, 3-21, 3-92, 3-93, 4-148, 4-181, 4-207, 4-230, 4-236, 4-250, 4-257, 4-258, 4-320, 4-329, 4-410
California condor 3-30, 3-31, 4-132, 4-137, 4-142
Canyonlands National Park 1-12, 3-3, 3-52, 3-94, 3-112, 4-491, 4-493, 5-4, 5-11
Capitol Reef National Park 1-12, 2-38, 2-39, 2-43, 2-53, 2-91, 2-93, 2-94, 2-93, 3-3, 3-11, 3-15, 3-19, 3-22, 3-25, 3-61, 3-63, 3-81, 3-93, 3-94, 3-98, 3-112, 4-12, 4-28, 4-65, 4-107, 4-111, 4-127, 4-148, 4-181, 4-204, 4-213, 4-234, 4-249, 4-257, 4-321, 4-331, 4-349, 4-363, 4-371, 4-372, 4-374, 4-375, 4-381, 4-403, 4-405, 4-408, 4-417, 4-419, 4-459, 4-483, 4-486, 4-491, 5-4, 5-9, 5-10, 5-11
Colorado pikeminnow 3-30, 3-33
Colorado River 2-12, 3-2, 3-6, 3-11, 3-32, 3-33, 3-35, 3-36, 3-41, 3-42, 4-118, 4-119, 4-123, 4-125, 4-143
Desert Bighorn Sheep ..... *See* bighorn sheep
Dirty Devil River ES-2, ES-10, 2-51, 2-50, 2-91, 2-92, 2-105, 2-141, 3-1, 3-7, 3-15, 3-25, 3-33, 3-34, 3-79, 3-81, 3-90, 3-92, 3-93, 3-94, 4-119, 4-143, 4-148, 4-176, 4-181, 4-228, 4-242, 4-249, 4-257, 4-287, 4-289, 4-292, 4-303, 4-305, 4-313, 4-319, 4-329, 4-332, 4-358, 4-368, 4-369, 4-371, 4-372, 4-373, 4-375, 4-376, 4-377, 4-378, 4-380, 4-411, 4-416, 4-474, 4-486

elk..... 2-28, 2-29, 2-28, 2-29, 2-28, 2-29, 2-30, 2-73, 3-49, 3-50, 4-58, 4-135, 4-140, 4-145, 4-153, 4-157, 4-162, 4-164, 4-165, 4-166, 4-169, 4-171, 4-173, 4-174, 4-175, 4-178, 4-179, 4-180, 4-183, 4-184, 4-206, 4-261, 4-266, 4-268, 4-281, 4-301, 4-303, 4-305, 4-309, 4-314, 4-316, 4-321, 4-325, 4-327, 4-328, 4-330, 4-331, 4-333, 4-334, 4-466, 4-498
Endangered Species Act 1-8, 1-9, 2-24, 2-26, 3-29, 3-30, 3-31, 3-32, 3-42, 4-117, 4-127, 4-132, 4-141, 4-150, 4-285, 4-321, 4-354, 5-4, 5-6, 5-7, 5-8
ESA..... *See* Endangered Species Act
Factory Butte..... ES-2, ES-5, ES-6, 2-45, 2-47, 2-48, 2-64, 2-66, 2-65, 2-137, 3-1, 3-69, 3-70, 3-78, 3-87, 3-93, 4-13, 4-16, 4-19, 4-27, 4-28, 4-31, 4-33, 4-45, 4-50, 4-53, 4-70, 4-73, 4-86, 4-89, 4-104, 4-107, 4-129, 4-136, 4-141, 4-170, 4-174, 4-232, 4-237, 4-238, 4-275, 4-277, 4-288, 4-291, 4-300, 4-302, 4-326, 4-328, 4-347, 4-348, 4-375, 4-399, 4-401, 4-404, 4-406
Federal Land Policy and Management Act..... ES-1, ES-9, ES-10, ES-11, 1-1, 1-3, 1-4, 1-6, 1-7, 1-8, 1-9, 1-10, 1-11, 1-12, 1-14, 1-15, 2-7, 2-10, 2-76, 2-77, 2-90, 2-139, 3-58, 3-63, 3-65, 3-71, 3-72, 3-73, 3-75, 3-88, 3-89, 3-90, 4-28, 4-31, 4-33, 4-35, 4-37, 4-100, 4-105, 4-111, 4-218, 4-234, 4-246, 4-276, 4-280, 4-304, 4-308, 4-310, 4-312, 4-313, 4-315, 4-317, 4-352, 4-363, 4-364, 4-383, 4-397, 4-410, 4-419, 4-433, 4-461, 4-467, 4-473, 5-3, 5-5, 5-6
FLPMA ..... *See* Federal Land Policy and Management Act
Fremont River ES-10, 2-53, 2-91, 2-93, 2-94, 2-93, 3-1, 3-7, 3-15, 3-43, 3-90, 3-94, 4-28, 4-143, 4-148, 4-176, 4-181, 4-228, 4-242, 4-249, 4-257, 4-292, 4-313, 4-322, 4-329, 4-369, 4-371, 4-372, 4-374, 4-375, 4-381, 4-403, 4-405, 4-408, 4-482, 4-486
fuels treatments 2-15, 2-14, 2-35, 2-124, 2-134, 3-56, 4-9, 4-39, 4-192, 4-193, 4-194, 4-196, 4-198, 4-199, 4-200, 4-201, 4-202, 4-212, 4-213, 4-261, 4-266, 4-422, 4-458, 4-476, 4-487, 4-492
Garfield County 1-1, 1-12, 3-1, 3-28, 3-63, 3-70, 3-72, 3-76, 3-95, 3-97, 3-98, 3-99, 3-100, 3-101, 3-105, 3-107, 3-109, 3-110, 3-111, 3-112, 3-114, 4-342, 4-363, 4-434, 4-456, 4-484, 4-485, 5-9, 5-11
geothermal 2-83, 3-77, 3-79, 3-80, 4-226, 4-235, 4-241, 4-248, 4-256, 4-341, 4-342, 4-464
Gilbert Badlands ES-11, 2-70, 2-98, 2-102, 2-142, 3-1, 3-91, 3-93, 4-133, 4-167, 4-263, 4-320, 4-323, 4-329, 4-345, 4-355, 4-384, 4-396, 4-397, 4-398, 4-399, 4-401, 4-402, 4-404
Glen Canyon National Recreation Area..... 1-1, 1-12, 3-1, 3-2, 3-52, 3-61, 3-63, 3-72, 3-97, 3-112, 4-483, 4-491, 4-493, 5-4, 5-9, 5-10, 5-11
grazing ..... *See* livestock grazing
Great Western Trail..... 2-75, 3-71, 3-99, 4-162
greater sage grouse..... *See* sage grouse

Green River 3-26, 3-33, 3-34, 3-80, 3-86, 3-94, 4-336, 4-428
Henry Mountains ES-2, ES-5, ES-7, ES-8, ES-9, ES-11, 1-13, 2-27, 2-28, 2-45, 2-56, 2-57, 2-70, 2-71, 2-73, 2-78, 2-84, 2-84, 2-86, 2-88, 2-89, 2-98, 2-108, 2-109, 2-113, 2-132, 2-133, 2-134, 2-135, 2-137, 2-143, 2-142, 3-1, 3-2, 3-5, 3-6, 3-14, 3-21, 3-22, 3-25, 3-43, 3-47, 3-48, 3-49, 3-51, 3-53, 3-55, 3-61, 3-63, 3-64, 3-66, 3-69, 3-78, 3-81, 3-82, 3-84, 3-87, 3-92, 3-93, 3-94, 3-98, 3-99, 3-116, 4-19, 4-21, 4-53, 4-55, 4-57, 4-62, 4-76, 4-91, 4-108, 4-111, 4-113, 4-124, 4-146, 4-148, 4-152, 4-179, 4-180, 4-181, 4-184, 4-196, 4-198, 4-202, 4-203, 4-204, 4-226, 4-237, 4-238, 4-244, 4-250, 4-251, 4-254, 4-257, 4-258, 4-262, 4-278, 4-279, 4-281, 4-286, 4-291, 4-293, 4-294, 4-295, 4-296, 4-302, 4-304, 4-305, 4-306, 4-307, 4-328, 4-330, 4-331, 4-334, 4-335, 4-342, 4-343, 4-344, 4-345, 4-346, 4-347, 4-348, 4-349, 4-350, 4-351, 4-359, 4-360, 4-361, 4-366, 4-367, 4-377, 4-384, 4-406, 4-407, 4-409, 4-421, 4-423, 4-424, 4-425, 4-426, 4-427, 4-428, 4-459, 4-464, 4-468, 4-469, 4-475, 4-478, 4-483, 5-7
humpback chub 3-30, 3-33, 3-34
invasive species ES-4, 2-14, 2-16, 2-36, 2-117, 3-16, 3-18, 3-39, 3-47, 4-31, 4-38, 4-42, 4-43, 4-45, 4-49, 4-50, 4-53, 4-54, 4-55, 4-56, 4-58, 4-59, 4-64, 4-104, 4-110, 4-121, 4-134, 4-138, 4-144, 4-156, 4-161, 4-168, 4-172, 4-177, 4-182, 4-268, 4-270, 4-273, 4-276, 4-278, 4-280, 4-282, 4-284, 4-292, 4-389, 4-487, 4-493, 5-12
Last Chance townsendia 1-13, 3-30, 3-35, 4-118
livestock grazing ES-2, ES-4, ES-6, 1-8, 1-9, 2-6, 2-10, 2-15, 2-27, 2-26, 2-40, 2-41, 2-42, 2-43, 2-99, 2-100, 2-101, 2-106, 2-110, 2-112, 2-114, 2-116, 2-117, 2-136, 2-144, 3-14, 3-15, 3-16, 3-34, 3-43, 3-46, 3-63, 3-65, 3-69, 3-91, 3-111, 4-2, 4-9, 4-10, 4-12, 4-14, 4-16, 4-18, 4-20, 4-21, 4-22, 4-23, 4-25, 4-27, 4-29, 4-30, 4-33, 4-34, 4-35, 4-36, 4-37, 4-39, 4-40, 4-44, 4-48, 4-49, 4-52, 4-54, 4-56, 4-57, 4-58, 4-63, 4-66, 4-69, 4-70, 4-73, 4-74, 4-75, 4-77, 4-78, 4-96, 4-99, 4-103, 4-104, 4-107, 4-109, 4-111, 4-113, 4-114, 4-117, 4-127, 4-128, 4-135, 4-141, 4-143, 4-146, 4-150, 4-154, 4-160, 4-169, 4-174, 4-176, 4-178, 4-183, 4-185, 4-186, 4-187, 4-188, 4-189, 4-190, 4-193, 4-195, 4-196, 4-197, 4-199, 4-201, 4-203, 4-205, 4-214, 4-229, 4-231, 4-237, 4-242, 4-244, 4-250, 4-254, 4-258, 4-263, 4-269, 4-270, 4-271, 4-272, 4-273, 4-274, 4-275, 4-276, 4-277, 4-278, 4-279, 4-280, 4-281, 4-282, 4-369, 4-371, 4-373, 4-375, 4-377, 4-380, 4-382, 4-386, 4-387, 4-388, 4-389, 4-390, 4-391, 4-392, 4-393, 4-394, 4-395, 4-396, 4-397, 4-398, 4-399, 4-400, 4-401, 4-404, 4-406, 4-

407, 4-409, 4-411, 4-413, 4-421, 4-425, 4-441, 4-442, 4-456, 4-457, 4-458, 4-459, 4-466, 4-469, 4-472, 4-477, 4-483, 4-486, 4-492, 4-494, 4-495, 4-496, 4-497, 4-498, 5-2, 5-9, 5-10, 5-12, 5-13, 5-14
locatable minerals 2-7, 2-86, 2-87, 2-140, 3-77, 3-83, 4-29, 4-31, 4-32, 4-33, 4-34, 4-36, 4-38, 4-47, 4-84, 4-102, 4-106, 4-109, 4-112, 4-115, 4-132, 4-137, 4-143, 4-148, 4-152, 4-166, 4-171, 4-175, 4-180, 4-184, 4-227, 4-235, 4-242, 4-249, 4-257, 4-262, 4-316, 4-352, 4-353, 4-354, 4-355, 4-356, 4-357, 4-358, 4-359, 4-360, 4-361, 4-362, 4-373, 4-376, 4-378, 4-380, 4-402, 4-403, 4-405, 4-406, 4-408, 4-409, 4-410, 4-414, 4-416, 4-420, 4-426, 4-427, 4-431, 4-437, 4-441, 4-443, 4-449, 4-453, 4-464, 4-478, 4-494
Maguire daisy..... 1-13, 3-30, 3-35
Mexican spotted owl 1-8, 1-13, 2-44, 2-52, 2-105, 2-106, 2-107, 3-29, 3-30, 3-31, 3-94, 4-124, 4-133, 4-134, 4-137, 4-138, 4-139, 4-140, 4-141, 4-142, 4-143, 4-145, 4-147, 4-148, 4-150, 4-151, 4-411, 4-413
migratory birds..... 2-26, 3-29, 3-47, 3-50, 3-51, 4-147, 4-153, 4-155, 4-156, 4-157, 4-160, 4-161, 4-162, 4-163, 4-170, 4-174, 4-176, 4-179, 4-180, 4-181, 4-183, 5-13, 12, 8
mule deer..... 2-27, 2-30, 2-108, 2-109, 2-110, 2-112, 2-113, 2-118, 2-119, 2-132, 3-46, 3-49, 3-50, 3-94, 3-95, 3-96, 4-57, 4-113, 4-124, 4-155, 4-159, 4-164, 4-165, 4-166, 4-168, 4-171, 4-175, 4-177, 4-180, 4-184, 4-212, 4-237, 4-243, 4-261, 4-309, 4-384, 4-385, 4-417, 4-418, 4-419, 4-420, 4-421, 4-422, 4-423, 4-424, 4-425, 4-426, 4-431, 4-432, 4-433, 4-434, 4-447, 4-448, 4-449, 4-450, 4-451
National Historic Preservation Act 1-9, 1-15, 2-17, 3-19, 3-23, 4-61, 4-63, 4-64, 4-65, 4-66, 4-67, 4-70, 4-71, 4-74, 4-76, 4-79, 4-353, 4-422, 4-488, 5-6, 5-7, 5-9
National Park Service ES-12, 1-1, 1-3, 1-12, 1-16, 2-17, 2-63, 2-71, 3-1, 3-4, 3-5, 3-22, 3-58, 3-59, 3-61, 3-72, 4-153, 4-223, 4-434, 4-482, 4-483, 4-495, 5-4, 5-8, 5-9, 5-10, 5-11
noxious weeds..... 1-8, 1-10, 2-16, 2-128, 2-136, 3-16, 3-17, 3-65, 4-13, 4-14, 4-38, 4-41, 4-42, 4-43, 4-44, 4-46, 4-63, 4-97, 4-116, 4-121, 4-123, 4-134, 4-138, 4-140, 4-144, 4-153, 4-156, 4-158, 4-166, 4-168, 4-173, 4-177, 4-186, 4-270, 4-273, 4-276, 4-278, 4-280, 4-282, 4-284, 4-292, 4-370, 4-387, 4-487
NPS ..... *See* National Park Service
off-highway vehicle ES-1, ES-2, ES-4, ES-5, ES-6, ES-7, ES-10, ES-13, 1-7, 1-8, 1-10, 1-13, 2-3, 2-5, 2-8, 2-28, 2-29, 2-28, 2-29, 2-28, 2-29, 2-29, 2-45, 2-47, 2-48, 2-49, 2-51, 2-52, 2-54, 2-55, 2-55, 2-56, 2-58, 2-59, 2-60, 2-61, 2-62, 2-63, 2-64, 2-65, 2-66, 2-67, 2-68, 2-65, 2-69, 2-71, 2-72, 2-73, 2-74, 2-75, 2-76, 2-90, 2-93, 2-93, 2-94, 2-94, 2-95, 2-95, 2-96, 2-96, 2-97, 2-98, 2-99, 2-100, 2-101, 2-102, 2-103, 2-104, 2-106, 2-108, 2-

110, 2-112, 2-113, 2-114, 2-115, 2-116, 2-117, 2-118, 2-118, 2-119, 2-120, 2-121, 2-125, 2-125, 2-126, 2-127, 2-128, 2-129, 2-129, 2-130, 2-129, 2-130, 2-131, 2-132, 2-133, 2-135, 2-136, 2-137, 2-141, 3-15, 3-34, 3-35, 3-36, 3-38, 3-43, 3-45, 3-66, 3-68, 3-69, 3-70, 3-71, 3-91, 3-92, 3-112, 4-5, 4-6, 4-7, 4-8, 4-9, 4-12, 4-13, 4-14, 4-15, 4-16, 4-18, 4-19, 4-20, 4-21, 4-22, 4-23, 4-27, 4-28, 4-29, 4-31, 4-32, 4-33, 4-34, 4-35, 4-36, 4-37, 4-45, 4-48, 4-49, 4-50, 4-52, 4-53, 4-54, 4-55, 4-56, 4-57, 4-58, 4-60, 4-67, 4-69, 4-70, 4-71, 4-73, 4-74, 4-76, 4-77, 4-78, 4-83, 4-85, 4-86, 4-87, 4-89, 4-90, 4-91, 4-93, 4-99, 4-100, 4-103, 4-104, 4-105, 4-107, 4-108, 4-109, 4-111, 4-113, 4-114, 4-115, 4-123, 4-129, 4-130, 4-132, 4-136, 4-141, 4-143, 4-146, 4-147, 4-148, 4-149, 4-150, 4-151, 4-157, 4-161, 4-162, 4-166, 4-169, 4-170, 4-174, 4-176, 4-179, 4-181, 4-183, 4-186, 4-187, 4-188, 4-189, 4-190, 4-195, 4-196, 4-204, 4-214, 4-215, 4-217, 4-218, 4-220, 4-229, 4-232, 4-233, 4-237, 4-238, 4-239, 4-242, 4-243, 4-245, 4-246, 4-250, 4-251, 4-252, 4-253, 4-254, 4-255, 4-257, 4-258, 4-259, 4-262, 4-263, 4-266, 4-267, 4-268, 4-272, 4-275, 4-277, 4-278, 4-279, 4-280, 4-281, 4-282, 4-283, 4-285, 4-286, 4-288, 4-289, 4-290, 4-291, 4-292, 4-293, 4-294, 4-295, 4-296, 4-297, 4-298, 4-299, 4-300, 4-301, 4-302, 4-303, 4-304, 4-305, 4-306, 4-307, 4-309, 4-314, 4-316, 4-328, 4-347, 4-348, 4-354, 4-356, 4-363, 4-364, 4-366, 4-367, 4-371, 4-373, 4-375, 4-377, 4-380, 4-381, 4-382, 4-386, 4-387, 4-389, 4-393, 4-396, 4-397, 4-400, 4-402, 4-404, 4-406, 4-407, 4-409, 4-410, 4-411, 4-414, 4-417, 4-419, 4-423, 4-424, 4-425, 4-426, 4-430, 4-432, 4-433, 4-436, 4-439, 4-440, 4-442, 4-444, 4-445, 4-446, 4-447, 4-448, 4-449, 4-450, 4-451, 4-452, 4-454, 4-455, 4-460, 4-465, 4-467, 4-470, 4-471, 4-473, 4-474, 4-475, 4-477, 4-478, 4-479, 4-483, 4-484, 4-486, 4-487, 4-488, 4-489, 4-490, 4-491, 4-492, 4-493, 4-494, 4-496, 4-497, 4-498, 5-2, 5-5, 5-12, 5-13, 5-14

OHV ..... *See* off-highway vehicle

oil and gas ES-2, ES-4, ES-7, ES-8, ES-10, ES-13, 1-8, 1-13, 1-14, 1-17, 2-2, 2-3, 2-5, 2-7, 2-25, 2-29, 2-30, 2-31, 2-34, 2-37, 2-52, 2-79, 2-80, 2-82, 2-83, 2-84, 2-85, 2-86, 2-88, 2-90, 2-93, 2-93, 2-94, 2-94, 2-95, 2-95, 2-96, 2-96, 2-97, 2-98, 2-99, 2-100, 2-101, 2-102, 2-103, 2-107, 2-108, 2-111, 2-112, 2-114, 2-115, 2-116, 2-121, 2-125, 2-127, 2-129, 2-130, 2-131, 2-132, 2-135, 2-136, 2-140, 2-139, 2-140, 2-140, 2-141, 3-8, 3-43, 3-74, 3-77, 3-78, 3-79, 3-80, 3-81, 3-91, 3-92, 3-97, 3-104, 3-107, 3-110, 3-111, 3-115, 4-5, 4-13, 4-14, 4-15, 4-17, 4-19, 4-20, 4-22, 4-23, 4-

24, 4-29, 4-31, 4-32, 4-34, 4-36, 4-37, 4-46, 4-47, 4-48, 4-51, 4-54, 4-56, 4-57, 4-58, 4-59, 4-67, 4-68, 4-69, 4-71, 4-74, 4-76, 4-77, 4-78, 4-79, 4-84, 4-85, 4-90, 4-92, 4-93, 4-94, 4-101, 4-102, 4-104, 4-105, 4-106, 4-108, 4-109, 4-112, 4-113, 4-115, 4-116, 4-124, 4-131, 4-132, 4-133, 4-137, 4-142, 4-143, 4-147, 4-148, 4-151, 4-152, 4-158, 4-163, 4-164, 4-165, 4-166, 4-167, 4-171, 4-175, 4-176, 4-180, 4-181, 4-184, 4-187, 4-190, 4-191, 4-196, 4-220, 4-223, 4-224, 4-225, 4-226, 4-227, 4-229, 4-230, 4-234, 4-235, 4-240, 4-241, 4-242, 4-247, 4-248, 4-250, 4-251, 4-252, 4-254, 4-256, 4-258, 4-259, 4-262, 4-263, 4-273, 4-275, 4-277, 4-278, 4-280, 4-281, 4-282, 4-289, 4-292, 4-294, 4-317, 4-318, 4-319, 4-320, 4-321, 4-322, 4-323, 4-324, 4-325, 4-326, 4-327, 4-328, 4-329, 4-330, 4-331, 4-332, 4-333, 4-334, 4-335, 4-336, 4-337, 4-338, 4-339, 4-340, 4-341, 4-342, 4-346, 4-351, 4-352, 4-355, 4-356, 4-358, 4-360, 4-362, 4-363, 4-372, 4-373, 4-375, 4-376, 4-378, 4-380, 4-381, 4-382, 4-383, 4-386, 4-387, 4-388, 4-390, 4-393, 4-396, 4-397, 4-402, 4-403, 4-405, 4-406, 4-407, 4-409, 4-410, 4-415, 4-420, 4-423, 4-426, 4-427, 4-430, 4-432, 4-436, 4-440, 4-443, 4-444, 4-445, 4-448, 4-449, 4-453, 4-457, 4-461, 4-462, 4-463, 4-465, 4-468, 4-470, 4-471, 4-473, 4-474, 4-475, 4-477, 4-478, 4-479, 4-480, 4-483, 4-485, 4-486, 4-488, 4-491, 4-494, 4-495, 4-496, 4-497, 4-498, 5-2

Parker Mountain..... ES-11, 1-2, 1-13, 2-1, 2-2, 2-99, 2-116, 2-117, 2-116, 2-134, 2-143, 2-142, 3-1, 3-51, 3-93, 3-96, 3-98, 4-148, 4-181, 4-202, 4-321, 4-330, 4-332, 4-385, 4-443, 4-445, 4-475, 4-479

Piute County 1-12, 2-67, 3-5, 3-22, 3-70, 3-72, 3-78, 3-98, 3-99, 3-105, 3-109, 3-110, 3-112, 4-204, 4-318, 5-9, 5-11

prairie dog 1-8, 1-13, 2-116, 2-117, 3-30, 3-32, 3-38, 3-39, 3-96, 4-120, 4-121, 4-122, 4-124, 4-125, 4-126, 4-127, 4-128, 4-129, 4-130, 4-131, 4-134, 4-140, 4-144, 4-145, 4-147, 4-151, 4-206, 4-385, 4-443, 4-444

prescribed fire 1-15, 2-5, 2-14, 2-16, 2-27, 2-35, 2-124, 2-132, 2-133, 3-4, 3-57, 4-3, 4-4, 4-5, 4-10, 4-26, 4-30, 4-42, 4-48, 4-64, 4-69, 4-81, 4-85, 4-90, 4-97, 4-103, 4-120, 4-124, 4-125, 4-135, 4-145, 4-155, 4-158, 4-159, 4-169, 4-178, 4-191, 4-192, 4-193, 4-195, 4-196, 4-199, 4-200, 4-206, 4-212, 4-213, 4-243, 4-261, 4-263, 4-271, 4-309, 4-365, 4-422, 4-472

pronghorn antelope 2-31, 3-12, 3-46, 3-49, 4-140, 4-145, 4-165, 4-166, 4-171, 4-173, 4-175, 4-178, 4-180, 4-184, 4-194, 4-321, 4-325, 4-327, 4-328, 4-331, 4-334, 4-444

pygmy rabbit 1-8, 2-116, 2-117, 3-12, 3-41, 3-47, 3-96, 4-127, 4-132, 4-137, 4-140, 4-141, 4-142, 4-144, 4-145, 4-147, 4-151, 4-152, 4-385, 4-443, 4-444

raptor 2-25, 2-26, 2-32, 2-44, 2-80, 3-47, 3-48, 3-51, 4-129, 4-142, 4-147, 4-155, 4-156, 4-161, 4-166, 4-180, 4-211, 4-288, 4-290, 4-293, 4-401, 4-413, 4-423, 4-429, 4-435, 4-439, 4-444, 4-448, 4-450, 4-452, 4-454, 5-13
razorback sucker 3-30, 3-34
reasonably foreseeable development scenario ES-7, ES-8, 2-136, 3-77, 3-79, 4-68, 4-84, 4-101, 4-223, 4-224, 4-225, 4-235, 4-241, 4-247, 4-248, 4-256, 4-318, 4-319, 4-323, 4-328, 4-331, 4-332, 4-334, 4-335, 4-336, 4-340, 4-342, 4-449, 4-462, 4-463, 4-464, 4-478, 4-485
RFD ..... *See* reasonably foreseeable development scenario
sage grouse 1-8, 2-14, 2-29, 2-31, 2-116, 2-117, 3-12, 3-36, 3-38, 3-46, 3-50, 3-96, 3-97, 4-121, 4-122, 4-124, 4-132, 4-134, 4-135, 4-137, 4-140, 4-142, 4-145, 4-147, 4-150, 4-152, 4-155, 4-157, 4-159, 4-161, 4-162, 4-166, 4-168, 4-169, 4-170, 4-173, 4-174, 4-177, 4-178, 4-179, 4-181, 4-183, 4-194, 4-199, 4-201, 4-206, 4-263, 4-265, 4-299, 4-301, 4-311, 4-321, 4-325, 4-327, 4-385, 4-443, 4-444, 4-451
Sanpete County 1-12, 3-1, 3-2, 3-22, 3-70, 3-72, 3-80, 3-97, 3-98, 3-99, 3-105, 3-109, 3-110, 3-111, 3-112, 5-9, 5-11
Sevier County 1-12, 2-67, 3-4, 3-5, 3-19, 3-29, 3-44, 3-70, 3-72, 3-76, 3-79, 3-80, 3-82, 3-95, 3-96, 3-97, 3-98, 3-99, 3-101, 3-104, 3-105, 3-109, 3-110, 3-112, 4-204, 4-224, 4-431, 4-441, 4-443, 4-445, 4-453, 4-463, 4-464, 5-7, 5-9, 5-11
Sevier River ES-5, 2-45, 2-46, 2-46, 3-2, 3-6, 3-7, 3-8, 3-26, 3-66, 3-95, 3-96, 4-254, 4-295, 4-306, 4-335, 4-431, 4-450
socioeconomics 1-9, 2-143, 2-144, 3-1, 3-76, 3-97, 3-98, 3-99, 3-100, 3-101, 3-102, 3-104, 3-107, 3-110, 3-111, 3-112, 3-113, 3-114, 4-455, 4-456, 4-457, 4-458, 4-459, 4-460, 4-461, 4-463, 4-464, 4-465, 4-466, 4-467, 4-469, 4-470, 4-471, 4-472, 4-474, 4-475, 4-476, 4-477, 4-478, 4-479, 4-480, 4-495, 4-496, 5-9, 5-14
southwestern willow flycatcher 3-30, 3-32, 3-97, 4-118, 4-119, 4-120, 4-121, 4-129, 4-142, 4-156, 4-422, 4-451
special recreation management area ES-1, ES-2, ES-5, ES-6, 1-7, 2-6, 2-44, 2-45, 2-46, 2-47, 2-48, 2-47, 2-48, 2-47, 2-48, 2-48, 2-49, 2-50, 2-51, 2-51, 2-52, 2-53, 2-52, 2-53, 2-52, 2-53, 2-54, 2-53, 2-54, 2-55, 2-56, 2-57, 2-56, 2-57, 2-56, 2-57, 2-58, 2-59, 2-60, 2-61, 2-61, 2-62, 2-70, 2-71, 2-105, 2-107, 2-137, 2-138, 2-139, 3-66, 4-16, 4-19, 4-21, 4-23, 4-31, 4-33, 4-35, 4-37, 4-50, 4-53, 4-56, 4-58, 4-59, 4-70, 4-73, 4-76, 4-78, 4-86, 4-89, 4-91, 4-93, 4-99, 4-104, 4-107, 4-108, 4-111, 4-114, 4-136, 4-141, 4-146, 4-151, 4-169, 4-170, 4-174, 4-179, 4-183, 4-186, 4-187, 4-190, 4-199, 4-201, 4-214, 4-231, 4-232, 4-237, 4-238, 4-244, 4-254, 4-264, 4-275, 4-277, 4-280, 4-282, 4-286, 4-288, 4-290, 4-291, 4-293, 4-295, 4-300, 4-301, 4-302, 4-303, 4-

304, 4-306, 4-322, 4-326, 4-328, 4-331, 4-332, 4-335, 4-345, 4-347, 4-348, 4-349, 4-351, 4-352, 4-366, 4-367, 4-371, 4-375, 4-377, 4-383, 4-401, 4-404, 4-406, 4-407, 4-409, 4-414, 4-419, 4-425, 4-430, 4-467, 4-469, 4-472, 4-492, 4-494
Special Recreation Permits ES-5, 2-52, 2-62, 2-116, 3-66, 3-106, 4-66, 4-99, 4-129, 4-161, 4-283, 4-285, 4-286, 4-442
special status species..... ES-11, 1-8, 2-4, 2-14, 2-24, 2-25, 2-25, 2-35, 2-72, 2-76, 2-80, 2-99, 2-103, 2-105, 2-106, 2-109, 2-111, 2-112, 2-115, 2-118, 2-119, 2-120, 2-120, 2-121, 2-131, 2-143, 3-29, 3-36, 3-50, 3-65, 3-93, 3-94, 3-96, 3-97, 4-3, 4-10, 4-11, 4-15, 4-18, 4-20, 4-23, 4-39, 4-43, 4-48, 4-52, 4-55, 4-58, 4-96, 4-98, 4-104, 4-107, 4-110, 4-113, 4-115, 4-116, 4-117, 4-118, 4-119, 4-120, 4-121, 4-122, 4-123, 4-124, 4-125, 4-126, 4-127, 4-128, 4-129, 4-130, 4-131, 4-132, 4-133, 4-134, 4-135, 4-136, 4-137, 4-138, 4-139, 4-140, 4-141, 4-142, 4-143, 4-144, 4-145, 4-146, 4-147, 4-148, 4-149, 4-150, 4-151, 4-152, 4-154, 4-157, 4-167, 4-168, 4-169, 4-172, 4-178, 4-180, 4-181, 4-182, 4-185, 4-186, 4-187, 4-188, 4-189, 4-190, 4-193, 4-194, 4-197, 4-198, 4-200, 4-202, 4-205, 4-211, 4-230, 4-237, 4-243, 4-253, 4-260, 4-261, 4-263, 4-265, 4-266, 4-268, 4-270, 4-271, 4-275, 4-277, 4-279, 4-281, 4-284, 4-285, 4-288, 4-290, 4-293, 4-294, 4-297, 4-299, 4-301, 4-303, 4-305, 4-308, 4-309, 4-311, 4-312, 4-314, 4-315, 4-319, 4-321, 4-325, 4-327, 4-330, 4-333, 4-352, 4-354, 4-356, 4-357, 4-359, 4-360, 4-369, 4-370, 4-371, 4-374, 4-377, 4-380, 4-382, 4-383, 4-384, 4-385, 4-400, 4-401, 4-404, 4-405, 4-407, 4-408, 4-411, 4-413, 4-421, 4-422, 4-423, 4-425, 4-428, 4-429, 4-434, 4-435, 4-438, 4-439, 4-441, 4-443, 4-444, 4-447, 4-448, 4-450, 4-451, 4-452, 4-453, 4-454, 4-455, 4-475, 4-479, 4-489, 4-490, 4-498, 5-9, 5-12, 5-13, 5-14
SRMA ..... *See* special recreation management area
SRP ..... *See* Special Recreation Permits
Standards for Rangeland Health 1-9, 2-4, 2-11, 2-12, 2-14, 2-15, 2-14, 2-40, 2-43, 3-6, 3-16, 3-65, 4-2, 4-9, 4-10, 4-28, 4-99, 4-160, 4-269, 4-387
tar sands 1-13, 1-14, 2-83, 3-77, 3-80, 3-81, 4-328, 4-332, 4-334, 4-335, 4-342, 4-464, 4-495
tourism 2-43, 3-97, 3-112, 4-459, 4-471, 4-474, 4-495, 4-496
U.S. Fish and Wildlife Service..... ES-12, 1-16, 1-17, 2-24, 2-25, 2-25, 2-26, 2-32, 2-76, 2-106, 2-117, 2-120, 3-29, 3-30, 3-31, 3-32, 3-33, 3-34, 3-35, 3-36, 3-51, 4-117, 4-129, 4-131, 4-132, 4-133, 4-137, 4-138, 4-142, 4-143, 4-146, 4-147, 4-148, 4-151, 4-285, 4-321, 4-354, 4-453, 5-4, 5-5, 5-6, 5-7, 5-8, 5-11

U.S. Forest Service ES-12, 1-3, 1-13, 1-16, 2-63, 2-71, 2-75, 2-115, 3-1, 3-8, 3-11, 3-12, 3-13, 3-14, 3-17, 3-55, 3-56, 3-57, 3-58, 3-61, 3-71, 3-72, 3-99, 4-101, 4-458, 4-460, 4-476, 4-495, 5-4, 5-8
UDWR ..... *See* Utah Division of Wildlife Resources
USFS ..... *See* U.S. Forest Service
USFWS ..... *See* U.S. Fish and Wildlife Service
Utah Division of Wildlife Resources 1-9, 2-24, 2-25, 2-26, 2-27, 2-32, 2-46, 2-106, 2-110, 2-113, 2-117, 2-120, 3-30, 3-31, 3-32, 3-33, 3-34, 3-37, 3-38, 3-39, 3-41, 3-42, 3-43, 3-45, 3-48, 3-49, 3-50, 4-3, 4-466
Utah prairie dog ..... *See* prairie dog
visual resource management ES-2, ES-3, ES-4, ES-10, ES-13, 1-10, 2-5, 2-8, 2-23, 2-37, 2-52, 2-54, 2-78, 2-80, 2-84, 2-85, 2-87, 2-88, 2-87, 2-88, 2-90, 2-103, 2-105, 2-106, 2-107, 2-108, 2-109, 2-111, 2-112, 2-113, 2-114, 2-115, 2-125, 2-126, 2-127, 2-129, 2-130, 2-130, 2-131, 2-133, 2-134, 2-133, 2-135, 2-137, 2-138, 2-137, 2-141, 3-27, 3-28, 3-29, 3-89, 4-9, 4-11, 4-14, 4-15, 4-18, 4-20, 4-22, 4-23, 4-37, 4-42, 4-48, 4-52, 4-55, 4-57, 4-58, 4-65, 4-69, 4-72, 4-75, 4-77, 4-78, 4-82, 4-85, 4-86, 4-88, 4-91, 4-93, 4-95, 4-96, 4-97, 4-98, 4-99, 4-100, 4-101, 4-103, 4-104, 4-105, 4-106, 4-107, 4-108, 4-109, 4-110, 4-111, 4-112, 4-113, 4-114, 4-115, 4-123, 4-133, 4-134, 4-137, 4-139, 4-142, 4-145, 4-149, 4-157, 4-167, 4-168, 4-171, 4-172, 4-175, 4-177, 4-182, 4-190, 4-194, 4-198, 4-202, 4-204, 4-208, 4-211, 4-220, 4-230, 4-236, 4-243, 4-250, 4-251, 4-252, 4-253, 4-254, 4-257, 4-258, 4-259, 4-261, 4-263, 4-265, 4-266, 4-267, 4-268, 4-271, 4-275, 4-277, 4-279, 4-281, 4-282, 4-283, 4-285, 4-288, 4-290, 4-292, 4-294, 4-304, 4-308, 4-309, 4-311, 4-312, 4-314, 4-315, 4-316, 4-320, 4-324, 4-327, 4-330, 4-333, 4-344, 4-345, 4-346, 4-347, 4-349, 4-350, 4-352, 4-353, 4-355, 4-357, 4-358, 4-359, 4-360, 4-361, 4-363, 4-370, 4-374, 4-377, 4-379, 4-381, 4-382, 4-383, 4-386, 4-387, 4-389, 4-390, 4-392, 4-393, 4-394, 4-395, 4-397, 4-398, 4-400, 4-401, 4-403, 4-404, 4-405, 4-407, 4-408, 4-412, 4-413, 4-417, 4-418, 4-422, 4-423, 4-424, 4-429, 4-435, 4-436, 4-439, 4-457, 4-458, 4-465, 4-469, 4-472, 4-474, 4-475, 4-476, 4-478, 4-479, 4-488, 4-489, 5-12, 5-13, 5-14
Visual Resource Management (VRM) 4-113, 4-268, 4-316
VRM ..... *See* visual resource management
Wayne County 1-12, 3-5, 3-22, 3-28, 3-29, 3-30, 3-32, 3-34, 3-38, 3-42, 3-45, 3-52, 3-70, 3-72, 3-76, 3-78, 3-83, 3-87, 3-91, 3-93, 3-94, 3-95, 3-96, 3-98, 3-99, 3-100, 3-105, 3-109, 3-110, 3-112, 4-399, 4-410, 4-417, 4-421, 4-428, 4-443, 4-445, 4-486, 5-9, 5-11

wild and scenic river ES-1, ES-2, ES-10, ES-13, 1-6, 1-7, 1-13, 2-2, 2-3, 2-8, 2-39, 2-50, 2-51, 2-52, 2-70, 2-69, 2-70, 2-71, 2-76, 2-77, 2-78, 2-79, 2-80, 2-85, 2-87, 2-88, 2-88, 2-89, 2-91, 2-93, 2-92, 2-93, 2-94, 2-94, 2-95, 2-95, 2-96, 2-97, 2-98, 2-105, 2-125, 2-127, 2-128, 2-127, 2-129, 2-130, 2-131, 2-132, 2-131, 2-139, 2-140, 2-141, 3-59, 3-60, 3-89, 3-90, 3-94, 4-14, 4-17, 4-20, 4-22, 4-24, 4-29, 4-32, 4-34, 4-36, 4-38, 4-47, 4-51, 4-54, 4-57, 4-59, 4-68, 4-72, 4-74, 4-77, 4-79, 4-85, 4-87, 4-90, 4-92, 4-95, 4-102, 4-106, 4-109, 4-112, 4-114, 4-115, 4-123, 4-133, 4-138, 4-140, 4-142, 4-143, 4-146, 4-147, 4-148, 4-150, 4-151, 4-152, 4-153, 4-158, 4-167, 4-172, 4-174, 4-175, 4-176, 4-178, 4-180, 4-181, 4-182, 4-183, 4-184, 4-185, 4-196, 4-198, 4-200, 4-202, 4-203, 4-228, 4-236, 4-242, 4-249, 4-257, 4-262, 4-264, 4-266, 4-267, 4-269, 4-273, 4-274, 4-276, 4-278, 4-280, 4-283, 4-287, 4-289, 4-292, 4-294, 4-296, 4-299, 4-301, 4-303, 4-304, 4-305, 4-307, 4-310, 4-312, 4-313, 4-314, 4-315, 4-317, 4-323, 4-326, 4-329, 4-332, 4-335, 4-355, 4-356, 4-358, 4-359, 4-361, 4-367, 4-368, 4-369, 4-370, 4-371, 4-373, 4-374, 4-376, 4-377, 4-378, 4-379, 4-380, 4-381, 4-382, 4-383, 4-393, 4-395, 4-396, 4-403, 4-405, 4-406, 4-408, 4-409, 4-411, 4-416, 4-417, 4-420, 4-421, 4-428, 4-438, 4-447, 4-461, 4-465, 4-468, 4-469, 4-470, 4-471, 4-473, 4-474, 4-477, 4-478, 4-483, 4-486, 4-494, 4-495, 4-496, 5-1, 5-3, 5-4, 5-12, 5-13, 5-14

wild burros 2-4, 2-33, 2-133, 3-52, 4-124, 4-140, 4-145, 4-158, 4-173, 4-178, 4-186, 4-187, 4-188, 4-189, 4-190, 4-191, 4-212, 4-237, 4-244, 4-285

wild horses ES-4, 2-4, 2-33, 2-133, 3-7, 3-51, 3-52, 3-61, 4-10, 4-11, 4-15, 4-18, 4-21, 4-23, 4-40, 4-43, 4-49, 4-52, 4-55, 4-58, 4-117, 4-124, 4-135, 4-140, 4-145, 4-150, 4-154, 4-158, 4-169, 4-173, 4-178, 4-182, 4-185, 4-186, 4-187, 4-188, 4-189, 4-190, 4-205, 4-211, 4-212, 4-213, 4-217, 4-223, 4-224, 4-226, 4-227, 4-228, 4-230, 4-232, 4-234, 4-237, 4-239, 4-244, 4-245, 4-246, 4-248, 4-250, 4-252, 4-253, 4-257, 4-259, 4-270, 4-272, 4-275, 4-277, 4-279, 4-281, 4-284, 4-285, 4-288, 4-291, 4-293, 4-295, 4-316, 4-334, 4-408, 4-439, 4-490, 4-497, 5-13

wilderness characteristics..... ES-2, ES-3, ES-4, ES-6, ES-7, ES-8, ES-9, 1-7, 2-3, 2-5, 2-27, 2-37, 2-39, 2-46, 2-47, 2-48, 2-51, 2-51, 2-52, 2-53, 2-54, 2-54, 2-56, 2-58, 2-60, 2-61, 2-69, 2-72, 2-73, 2-78, 2-79, 2-80, 2-80, 2-84, 2-85, 2-88, 2-88, 2-103, 2-104, 2-105, 2-106, 2-107, 2-108, 2-109, 2-110, 2-111, 2-111, 2-112, 2-113, 2-113, 2-114, 2-115, 2-118, 2-120, 2-125, 2-128, 2-128, 2-129, 2-129, 2-130, 2-131, 2-132, 2-134, 2-135, 2-136, 2-139, 2-140, 2-141, 3-58, 3-59, 3-60, 3-61, 3-

65, 3-88, 3-89, 4-10, 4-12, 4-15, 4-18, 4-21, 4-23, 4-25, 4-26, 4-30, 4-33, 4-35, 4-37, 4-40, 4-44, 4-49, 4-52, 4-55, 4-58, 4-63, 4-65, 4-70, 4-73, 4-75, 4-78, 4-81, 4-82, 4-86, 4-88, 4-91, 4-93, 4-96, 4-99, 4-104, 4-107, 4-110, 4-113, 4-114, 4-115, 4-117, 4-126, 4-135, 4-140, 4-146, 4-150, 4-151, 4-152, 4-154, 4-159, 4-169, 4-173, 4-178, 4-182, 4-183, 4-184, 4-185, 4-186, 4-187, 4-188, 4-189, 4-190, 4-191, 4-193, 4-195, 4-197, 4-199, 4-201, 4-203, 4-204, 4-205, 4-206, 4-207, 4-208, 4-211, 4-212, 4-213, 4-214, 4-215, 4-217, 4-218, 4-219, 4-220, 4-223, 4-224, 4-225, 4-226, 4-227, 4-228, 4-229, 4-230, 4-231, 4-232, 4-233, 4-234, 4-235, 4-236, 4-237, 4-238, 4-240, 4-241, 4-242, 4-243, 4-244, 4-245, 4-246, 4-247, 4-248, 4-249, 4-250, 4-251, 4-252, 4-253, 4-254, 4-255, 4-256, 4-257, 4-258, 4-259, 4-260, 4-261, 4-264, 4-265, 4-266, 4-267, 4-268, 4-270, 4-272, 4-275, 4-277, 4-279, 4-282, 4-283, 4-284, 4-285, 4-288, 4-291, 4-293, 4-295, 4-296, 4-297, 4-298, 4-299, 4-301, 4-303, 4-305, 4-306, 4-307, 4-308, 4-309, 4-311, 4-313, 4-314, 4-316, 4-317, 4-319, 4-322, 4-326, 4-328, 4-331, 4-334, 4-335, 4-344, 4-345, 4-346, 4-348, 4-349, 4-350, 4-352, 4-354, 4-356, 4-357, 4-359, 4-361, 4-362, 4-363, 4-364, 4-365, 4-366, 4-367, 4-369, 4-371, 4-374, 4-377, 4-380, 4-382, 4-383, 4-400, 4-401, 4-404, 4-406, 4-407, 4-408, 4-410, 4-411, 4-412, 4-413, 4-414, 4-416, 4-417, 4-418, 4-420, 4-421, 4-424, 4-426, 4-428, 4-429, 4-430, 4-431, 4-432, 4-433, 4-434, 4-436, 4-438, 4-439, 4-446, 4-454, 4-457, 4-458, 4-465, 4-466, 4-469, 4-472, 4-476, 4-477, 4-478, 4-479, 4-488, 4-490, 4-491, 4-492, 4-494, 4-495, 5-12, 5-13

wilderness study area ES-2, ES-3, ES-4, ES-8, ES-9, ES-10, 1-7, 1-10, 2-3, 2-5, 2-8, 2-18, 2-23, 2-37, 2-39, 2-43, 2-46, 2-47, 2-48, 2-50, 2-51, 2-51, 2-52, 2-53, 2-54, 2-54, 2-56, 2-58, 2-60, 2-61, 2-62, 2-64, 2-69, 2-70, 2-69, 2-70, 2-69, 2-70, 2-69, 2-70, 2-71, 2-72, 2-73, 2-74, 2-75, 2-76, 2-78, 2-79, 2-80, 2-80, 2-82, 2-84, 2-85, 2-86, 2-87, 2-88, 2-88, 2-90, 2-91, 2-92, 2-99, 2-103, 2-104, 2-105, 2-106, 2-107, 2-108, 2-109, 2-110, 2-111, 2-111, 2-112, 2-113, 2-113, 2-114, 2-115, 2-118, 2-120, 2-125, 2-128, 2-128, 2-129, 2-129, 2-130, 2-131, 2-132, 2-133, 2-134, 2-135, 2-136, 2-138, 2-139, 2-138, 2-139, 2-140, 2-141, 2-142, 3-28, 3-29, 3-52, 3-58, 3-59, 3-60, 3-61, 3-70, 3-83, 3-87, 3-88, 3-89, 3-91, 3-92, 3-93, 3-94, 3-95, 4-10, 4-12, 4-14, 4-15, 4-16, 4-17, 4-18, 4-20, 4-21, 4-22, 4-23, 4-24, 4-25, 4-26, 4-29, 4-30, 4-32, 4-33, 4-34, 4-35, 4-36, 4-37, 4-38, 4-40, 4-44, 4-47, 4-49, 4-51, 4-52, 4-54, 4-55, 4-57, 4-58, 4-63, 4-65, 4-68, 4-70, 4-71, 4-72,

4-73, 4-74, 4-75, 4-76, 4-77, 4-78, 4-79, 4-81, 4-82, 4-85, 4-86, 4-87, 4-88, 4-89, 4-90, 4-91, 4-92, 4-93, 4-95, 4-96, 4-98, 4-99, 4-100, 4-102, 4-103, 4-104, 4-105, 4-106, 4-107, 4-108, 4-109, 4-110, 4-111, 4-112, 4-113, 4-114, 4-115, 4-117, 4-123, 4-126, 4-132, 4-133, 4-134, 4-135, 4-136, 4-137, 4-138, 4-140, 4-141, 4-142, 4-143, 4-146, 4-148, 4-150, 4-151, 4-152, 4-154, 4-158, 4-159, 4-166, 4-167, 4-169, 4-170, 4-171, 4-173, 4-174, 4-175, 4-176, 4-178, 4-179, 4-180, 4-181, 4-182, 4-183, 4-184, 4-185, 4-186, 4-187, 4-188, 4-189, 4-190, 4-191, 4-193, 4-195, 4-196, 4-197, 4-198, 4-199, 4-200, 4-201, 4-202, 4-203, 4-204, 4-205, 4-206, 4-207, 4-208, 4-211, 4-212, 4-213, 4-214, 4-215, 4-217, 4-218, 4-219, 4-220, 4-223, 4-224, 4-225, 4-226, 4-227, 4-228, 4-229, 4-230, 4-231, 4-232, 4-233, 4-234, 4-235, 4-236, 4-237, 4-238, 4-239, 4-240, 4-241, 4-242, 4-243, 4-244, 4-245, 4-246, 4-247, 4-248, 4-249, 4-250, 4-251, 4-252, 4-253, 4-254, 4-255, 4-256, 4-257, 4-258, 4-259, 4-260, 4-261, 4-263, 4-264, 4-265, 4-266, 4-267, 4-268, 4-270, 4-272, 4-275, 4-277, 4-279, 4-282, 4-283, 4-284, 4-285, 4-286, 4-287, 4-288, 4-289, 4-290, 4-291, 4-292, 4-293, 4-294, 4-295, 4-296, 4-297, 4-298, 4-299, 4-300, 4-301, 4-302, 4-303, 4-304, 4-305, 4-306, 4-307, 4-308, 4-309, 4-310, 4-311, 4-312, 4-313, 4-314, 4-315, 4-316, 4-317, 4-319, 4-320, 4-322, 4-323, 4-324, 4-326, 4-327, 4-328, 4-329, 4-330, 4-331, 4-332, 4-333, 4-334, 4-335, 4-344, 4-345, 4-346, 4-348, 4-349, 4-350, 4-352, 4-353, 4-354, 4-355, 4-356, 4-357, 4-358, 4-359, 4-360, 4-361, 4-362, 4-363, 4-364, 4-365, 4-366, 4-367, 4-368, 4-369, 4-371, 4-372, 4-373, 4-374, 4-375, 4-376, 4-377, 4-378, 4-379, 4-380, 4-381, 4-382, 4-383, 4-384, 4-386, 4-389, 4-390, 4-391, 4-392, 4-393, 4-394, 4-395, 4-396, 4-397, 4-398, 4-399, 4-400, 4-401, 4-402, 4-403, 4-404, 4-405, 4-406, 4-407, 4-408, 4-409, 4-410, 4-411, 4-412, 4-413, 4-414, 4-415, 4-416, 4-417, 4-418, 4-420, 4-421, 4-424, 4-425, 4-426, 4-428, 4-429, 4-430, 4-431, 4-432, 4-433, 4-434, 4-435, 4-436, 4-437, 4-438, 4-439, 4-446, 4-454, 4-457, 4-458, 4-461, 4-464, 4-465, 4-466, 4-468, 4-469, 4-470, 4-472, 4-473, 4-474, 4-475, 4-476, 4-477, 4-478, 4-479, 4-488, 4-491, 4-492, 4-494, 4-495, 5-12, 5-13, 5-14

Wilderness Study Area (WSA) 4-268, 4-282, 4-316

wildland fire 1-15, 2-5, 2-14, 2-24, 2-27, 2-34, 2-35, 2-105, 2-113, 2-117, 2-118, 2-119, 2-124, 2-128, 2-129, 2-132, 2-133, 3-52, 3-53, 3-56, 3-57, 3-62, 4-3, 4-4, 4-5, 4-6, 4-10, 4-11, 4-15, 4-26, 4-43, 4-48, 4-63, 4-64, 4-69, 4-81, 4-85, 4-97, 4-98, 4-103, 4-124, 4-125, 4-135,

4-145, 4-158, 4-159, 4-169, 4-176, 4-178, 4-191, 4-192, 4-193, 4-194, 4-195, 4-196, 4-197, 4-198, 4-199, 4-200, 4-212, 4-229, 4-261, 4-271, 4-274, 4-309, 4-364, 4-365, 4-374, 4-413, 4-433, 4-448, 4-450, 4-458, 4-489, 4-491, 4-492, 4-493, 4-498, 5-12, 5-13, 5-14

Winkler cactus 3-30, 3-35, 3-97, 4-141, 4-142, 4-143, 4-147, 4-151, 4-400, 4-451

withdrawal ES-4, 1-8, 1-9, 2-5, 2-7, 2-37, 2-77, 2-86, 2-87, 2-88, 2-87, 2-88, 2-87, 2-88, 2-93, 2-101, 2-125, 2-127, 2-129, 2-130, 2-131, 2-135, 2-140, 3-38, 3-72, 3-73, 3-74, 3-80, 3-92, 4-9, 4-13, 4-17, 4-19, 4-22, 4-24, 4-28, 4-29, 4-31, 4-32, 4-33, 4-34, 4-36, 4-37, 4-38, 4-46, 4-47, 4-51, 4-54, 4-56, 4-57, 4-59, 4-71, 4-73, 4-74, 4-76, 4-77, 4-79, 4-84, 4-87, 4-89, 4-92, 4-94, 4-101, 4-102, 4-105, 4-106, 4-108, 4-109, 4-112, 4-114, 4-115, 4-130, 4-137, 4-138, 4-142, 4-143, 4-147, 4-151, 4-162, 4-170, 4-171, 4-175, 4-180, 4-183, 4-204, 4-205, 4-218, 4-227, 4-229, 4-234, 4-240, 4-242, 4-246, 4-250, 4-251, 4-252, 4-254, 4-255, 4-258, 4-259, 4-263, 4-286, 4-291, 4-294, 4-296, 4-307, 4-308, 4-316, 4-354, 4-355, 4-356, 4-357, 4-358, 4-359, 4-360, 4-361, 4-373, 4-375, 4-378, 4-379, 4-380, 4-381, 4-386, 4-387, 4-388, 4-389, 4-390, 4-393, 4-394, 4-396, 4-397, 4-398, 4-404, 4-407, 4-409, 4-413, 4-414, 4-416, 4-424, 4-426, 4-427, 4-430, 4-431, 4-436, 4-437, 4-441, 4-442, 4-449, 4-453, 4-465, 4-471, 4-474, 4-486, 4-491

Wright fishhook cactus 1-8, 1-13, 2-120, 3-30, 3-34, 3-97, 4-118, 4-133, 4-136, 4-137, 4-141, 4-142, 4-143, 4-147, 4-150, 4-151, 4-400, 4-438, 4-451, 4-453, 4-454

WSA..... *See* wilderness study area