

## CHAPTER 4.0 ENVIRONMENTAL CONSEQUENCES

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### 4.1 INTRODUCTION

This chapter evaluates potential environmental impacts that could occur from implementing each of the resource management plan (RMP) alternatives described in Chapter 2 for the Ironwood Forest National Monument (IFNM or monument). An impact is defined as a modification of the existing environment that is brought about by an outside action. Potential impacts considered in this chapter include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems) aesthetic, historical, cultural, economic, social, and health (40 Code of Federal Regulations §1508.8 [40 CFR §1508.8]) impacts.

This chapter is organized by resource topic and contains potential impacts that could or would result from allocations, allowable uses, and management actions under Alternatives A, B, C, and D. Topics are presented in the same order as in Chapter 3. Discussions of cumulative impacts, irreversible and irretrievable commitment of resources, unavoidable adverse impacts, and the relationship between local short-term and long-term uses conclude the chapter. The baseline data used for determining the potential impacts are the current resource conditions described in Chapter 3.

### 4.2 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 deteriorate a resource. The evaluations highlight the actions that have direct, immediate, and more prominent effects. Impacts that result in indirect effects are described but may receive less attention in this analysis. 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 Bureau of Land Management's (BLM's) knowledge of resources and the project area, reviews of existing literature, and information provided by experts in the BLM, 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 reflect exact measures of on-the-ground situations. 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 plan. 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.

Indian trust assets are lands, natural resources, money, or other tangible assets held by the Federal Government in trust or restricted against alienation for Indian tribes and individual Indians. The BLM has determined that the actions described in this land use plan will not affect Indian trust assets.

#### 4.2.1 Impact Analysis Terminology

The following impact analysis identifies types of impacts—direct, indirect, and cumulative—as defined in Table 4-1, and uses the terms “increase” and “decrease” for comparison purposes. Direct and indirect impacts are discussed in Sections 4.3, 4.4, 4.5, and 4.6. Cumulative impacts and methodology used in the cumulative analysis are discussed in Section 4.7.

**Table 4-1: Types of Impacts**

Type	Description
<b>Direct Impacts</b>	These are effects that are caused by the action and occur at the same time and place. Examples include elimination of original land use through erection of a structure. Direct impacts may cause indirect impacts, such as ground disturbance resulting in particulate matter emissions (dust).
<b>Indirect Impacts</b>	These are effects that are caused by the action but occur later in time or are farther removed in distance but are still reasonably foreseeable and related to the action by a chain of cause-and-effect. Indirect impacts may reach beyond the natural and physical environment (e.g., environmental impact) to include growth -inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (BLM NEPA Handbook H-1790-1).
<b>Cumulative Impacts</b>	These are effects that result from the incremental impact of the action when it is 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 that take place over time.

For the purposes of the analysis, surface-disturbing actions are those activities that could or would result in human- or livestock-caused movement of soils or the removal of vegetation. Natural processes of wind and water erosion are not considered surface-disturbing, but erosion caused by motor-vehicle travel, as an example, would be considered surface disturbing.

The analysis considers the context, intensity, and duration of an impact. 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 5 years after the action is implemented. Long term is defined as lasting beyond 5 years.

For ease of reading, impacts presented are direct, broad (occurring within the planning area), and long term, unless otherwise noted as indirect, localized, or short-term/temporary. As impacts may be perceived as beneficial (positive) or adverse (negative) by different readers, these descriptors were not used in defining impacts.

#### 4.2.2 Assumptions

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; additional assumptions are presented under each resource or use topic.

- Management actions proposed in the alternatives apply to public lands only. However, cumulative impacts analyses consider potential actions by individuals or entities other than BLM.

- The alternatives would be implemented in accordance with laws, regulations, and standard operating procedures and existing rights.
- BLM policies, including Standards of Rangeland Health and Guidelines for Livestock Grazing Management, would be applied as appropriate across all alternatives. Standards would provide the basis for assessing rangeland health and Guidelines provide strategies to achieve desired resource conditions and management objectives.
- Funding would be available to implement the alternatives, as described in Chapter 2.
- Restrictions or prohibitions on activities in specific areas would protect sensitive resources.
- Mitigation requirements 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.
- 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.

#### **4.2.3 Availability of Data and Incomplete Information**

Council on Environmental Quality (CEQ) regulations implementing National Environmental Policy Act (NEPA) require that agencies evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement (EIS) identify incomplete or unavailable information, if that information is essential to a reasoned choice among alternatives (43 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 plan. Considerable effort has been taken to acquire and convert resource data into digital format for use in this plan—data were acquired from both BLM and from outside sources, such as the Arizona Game and Fish Department (AGFD). However, certain information was unavailable for use in developing this plan, usually because inventories have not been conducted or are incomplete. The following types of data are unavailable for the entire planning area:

- Field inventory of soils and water conditions
- Field inventory of wildlife and special status species occurrence and condition
- Comprehensive inventory of traditional cultural properties
- Surveys for cultural or paleontological resources
- Specific hazards associated with former and existing mines

For these resources, 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 plan.

## 4.3 RESOURCES

### 4.3.1 Impacts on Air Quality

The analysis of impacts on air quality included a qualitative comparison of the proposed management decisions based on air quality conditions as discussed in Chapter 3 and a quantitative analysis for PM<sub>10</sub> emissions associated with estimated motorized travel on open motorized routes. The PM<sub>10</sub> analysis was calculated using vehicle traffic counts, soil types, soil moisture, and estimated vehicle speeds. However, in most cases, impacts are primarily described using qualitative terms because most data regarding typical land usage for various activities occurring within the IFNM are not available. Without detailed information on emission sources it is not possible to quantitatively assess changes in air quality using dispersion models or similar tools. The only assumption used in the air quality impact analysis is that population growth would continue, and that subsequent increased demand for uses would occur, as demonstrated by the trends for the State of Arizona over the past 10 years.

The method used in this air quality analysis identifies the pollutants associated with a planning decision, describes the relative magnitude of emissions changes, and indicates the extent of potential impacts. These impacts are assessed for the different alternatives to ensure compliance with Federal air quality standards. It is important to note that all alternatives recognize that BLM must continue to comply with applicable State and Federal air quality control regulations, as well as the identified air quality administrative actions.

The assessment of climate changing pollutant emissions and climate change is in its formative phase; therefore, it is not yet possible to know with confidence the net impact to climate. However, the Intergovernmental Panel on Climate Change (IPCC 2007) recently concluded that “warming of the climate system is unequivocal” and “most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic [man-made] greenhouse gas concentrations.”

The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts. Currently BLM does not have an established mechanism to accurately predict the effect of resource management-level decisions from this planning effort on global climate change. However, potential impacts to air quality due to climate change are likely to be varied. For example, if global climate change results in a warmer and drier climate, increased particulate matter impacts could occur due to increased wind blown dust from drier and less stable soils. Cool season plant species' spatial ranges are predicted to move north and to higher elevations, and extinction of endemic threatened or endangered plants may be accelerated. Due to loss of habitat, or due to competition from other species whose ranges may shift northward, the population of some animal species may be reduced. In the future, as tools for predicting climate changes in a management area improve and/or changes in climate affect resources and necessitate changes in how resources are managed, BLM may be able to re-evaluate decisions made as part of this planning process and adjust management accordingly.

#### 4.3.1.1 **Impacts Common to All Alternatives**

Management of fire ecology and energy and minerals could impact air quality. Carbon monoxide, volatile organic compounds, particulate matter, and nitrogen oxides could be released into the air from the smoke associated with wildfires. Depending on the size of the fire and meteorological conditions, emissions could reach far outside the burn area potentially impairing visibility in nearby Class I air quality areas. Maintaining full suppression in all areas, implementing programs to reduce ignitions, emphasizing prevention and detection, and using rapid suppression response techniques would minimize air pollutant emissions from fires; however, surface disturbance from suppression activities and fuels treatments could result in the release of particulate matter (dust).

Energy and mineral activities could degrade air quality in localized areas due to dust and engine emissions. Less than half of the current mining activities within the IFNM boundary (including non-Federal land) occur within the nonattainment area for PM<sub>10</sub> (particulate matter less than 10 microns [0.000393 inch] in diameter, which is a regulated pollutant when airborne), where mining activities would be more tightly regulated. Permits could be required for any future mining activity, depending on the area affected and the type of equipment required. A permit would specify mitigation measures included in individual right-of-way grants for fugitive dust emissions.

Under all alternatives, impacts on air quality would not be anticipated as a result of management decisions for geology and caves, special status species, paleontological resources, scenic and visual resources, special designations, and lands managed to protect wilderness characteristics. Certain management decisions for other resources (for example, recreational shooting) would not be expected to affect air quality, so only those decisions with a potential effect are discussed in the alternatives that follow.

#### **4.3.1.2 Alternative A (No Action)**

Under Alternative A, management of travel, recreation, lands and realty, and vegetation could affect air quality. To a lesser extent, impacts also could occur from management of soil and water resources, wildlife and wildlife habitat, cultural resources, and livestock grazing. No impacts on air quality would be anticipated under Alternative A from decisions for air quality (as no management decisions exist).

Approximately 820 acres of the BLM surface lands would be closed to vehicular traffic under this alternative; motor vehicle use would be allowed on existing routes on the remaining 127,580 acres. Emissions of particulate matter, carbon monoxide, nitrogen dioxide, volatile organic compounds, and sulfur dioxide from the combustion of fuel would therefore occur throughout most of the IFNM. About 29,930 acres of the area where motorized vehicle use is allowed, but limited to existing routes, is within a PM<sub>10</sub> nonattainment area. Emission levels would vary by area according to traffic volume.

The amount of PM<sub>10</sub> dust expected to be produced by passage of motor vehicles varies depending on the number of miles of roads designated for motorized use under each alternative. Under Alternative A, PM<sub>10</sub> dust emissions from passage of motor vehicles are estimated at 114 to 147 tons per year, based on vehicle speeds varying from 15 to 25 miles per hour. The method of analysis is based on EPA guidance (EPA 1995, undated 2006). Site-specific factors considered in this analysis are vehicle miles driven, vehicle speed, soil type, and soil moisture.

Continued custodial management of recreation would allow for dispersed uses throughout the IFNM, including vehicle-based camping (near existing routes) and dispersed camping, along with wood campfires, which would result in emissions of pollutants in localized areas.

Surface-disturbing activities related to management of lands and realty and vegetation have potential to impact air quality, depending on the magnitude of disturbance and type of activity. Under this alternative, there would, in general, be no restrictions on rights-of-way (i.e., no right-of-way exclusion or avoidance areas would be designated within the IFNM, and the major utility corridors would be maintained) except within the Waterman Mountains Area of Critical Environmental Concern (ACEC). Surface disturbance associated with right-of-way authorizations could result in increased emissions of particulate matter (dust), worsening air quality in localized areas. Mitigation measures included in individual right-of-way grants would minimize dust resulting from displaced soil. Management of vegetation according to the activity plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area would focus on increasing soil cover and reducing sediment yield, therefore reducing the potential for windblown dust.

Management to improve soil cover and productivity would result in an overall reduction in erosion, including erosion by wind, which contributes to the release of particulate matter into the air.

Management of wildlife, wildlife habitat, and cultural resources would regulate the use of motorized vehicles in localized areas, resulting in potential decreases in vehicle emissions. In the Silver Bell Desert Bighorn Sheep Management Area, vehicles would be restricted to existing roads (see Map 2-19); this could discourage proliferation of traffic and emissions in that area and perhaps in the IFNM as a whole (though traffic could shift to other areas). Closure of the 800-acre Ragged Top area and 20 acres within a Special Management Area (for cultural resources) also would have the potential to discourage proliferation of traffic and emissions.

Under Alternative A, livestock grazing would continue on all 11 grazing allotments (128,400 acres of public land). This could limit revegetation in areas that are disturbed, sparsely vegetated, or vulnerable to wind erosion, which could increase particulate matter emission in very localized areas.

Implementation-level decisions concerning livestock grazing and transportation could affect air quality. The provision of additional or modification of existing livestock water sources would disturb soil and vegetation in the immediate vicinity of the water development; the exposure of fine sediment and loss of vegetation around the livestock waters could create the conditions for wind-driven dust and degrade air quality in localized areas. Vehicle traffic would be allowed on approximately 346 miles of routes on public land throughout the monument (outside the 820 acres closed to vehicular traffic), which could result in the release of traffic-related emissions throughout the monument.

#### **4.3.1.3 Alternative B**

Under Alternative B, management of travel, air quality, and recreation could affect air quality. To a lesser extent, impacts also could occur from management of soil and water resources, vegetation, wildlife and wildlife habitat, cultural resources, livestock grazing, and lands and realty.

Approximately 38,040 acres of the BLM surface lands would be closed to vehicular traffic: motor vehicle use would be allowed on designated routes (paved and unpaved) on the remaining 90,360 acres (see Map 2-20). With greater area closed to motor vehicle use, as compared with Alternative A, overall emissions within the IFNM likely would be reduced. (As with Alternative A, emission levels would vary by area according to traffic volume.) The PM<sub>10</sub> nonattainment area overlaps 23,650 acres where motorized vehicle use would be allowed on designated routes. Management of air quality to control emissions, such as applying gravel, would reduce dust in localized areas.

The amount of PM<sub>10</sub> dust expected to be produced by passage of motor vehicles varies depending on the number of miles of roads designated for motorized use under each alternative. Under Alternative B, PM<sub>10</sub> dust emissions from passage of motor vehicles are estimated at 26 to 33 tons per year, based on vehicle speeds varying from 15 to 25 miles per hour. The method of analysis is based on EPA guidance (EPA 1995, undated 2006). Site-specific factors considered in this analysis are vehicle miles driven, vehicle speed, soil type, and soil moisture.

Management of recreation could affect air quality in the Roaded Natural and Semi-Primitive Motorized recreation management zones (RMZs) (17,610 and 14,540 acres, respectively), as motorized recreational uses would be concentrated in those areas. Motor vehicle emissions would increase in these areas, with potential effect on the PM<sub>10</sub> nonattainment area (which overlaps 10,630 acres of these RMZs). However, with fewer miles of routes open to motorized vehicles within the monument as a whole, overall emissions from such use would likely decrease, as compared with Alternative A. No wood campfires would be allowed, though use of camp stoves or charcoal fires would be permitted, which would result in emissions of pollutants in localized areas.

## Impacts on Air Quality (cont.)

Management of soil and water resources, vegetation, wildlife and wildlife habitat, lands and realty, and livestock grazing would potentially reduce emissions through greater restrictions on activities, as compared with Alternative A. Surface-disturbing activities would be prohibited on 11,340 acres of sensitive and fragile soils within the PM<sub>10</sub> nonattainment area, with coincidental protection of air quality in that area. Management to improve soil cover and productivity would reduce erosion (including erosion by wind), reducing release of dust into the air. Restricting surface disturbance to prevent loss of vegetation in localized areas would provide coincidental protection of air quality in those areas, and development of a restoration plan for the IFNM would reduce the potential for windblown dust throughout the monument, given the strategies to identify and restore disturbed areas. Similarly, implementation of measures to reduce fugitive dust to protect scenic resources would protect air quality. The retirement of grazing leases, and subsequently making allotments unavailable to grazing, would allow revegetation of small, highly localized areas presently vulnerable to wind erosion; the recovered grasses would help prevent erosion and windblown dust in those areas. Without designated utility corridors, and the designation of the IFNM as a right-of-way exclusion area, construction-related fugitive dust emissions within the IFNM would decrease compared to Alternative A. However, utilities could be routed around the IFNM, resulting in an increase in fugitive dust emissions in localized areas outside the IFNM.

Desert bighorn sheep lambing areas would be closed to human entry for four months (from January 1 through April 30), reducing emissions from motorized vehicles in those areas during that time.

Implementation of erosion control measures would reduce exposure of fine sediment and loss of vegetation, reducing the potential for emissions of dust. Restrictions attached to land use authorizations that would minimize surface disturbance also would minimize the potential for dust emissions. Emissions from motor vehicles also would be reduced: only 63 miles of routes would be available for motorized vehicle travel, as compared with the 346 miles that would remain available under Alternative A.

### **4.3.1.4 Alternative C**

Under Alternative C, management of travel, air quality, and recreation could affect air quality. To a lesser extent, management of soil and water resources, vegetation, wildlife and wildlife habitat, cultural resources, livestock grazing, and lands and realty would potentially impact air quality.

Approximately 10,880 acres of the BLM surface lands would be closed to vehicular traffic; motor vehicle use would be allowed on routes designated for motorized use on the remaining 117,520 acres (see Map 2-21). Emissions from motorized vehicle use on paved and unpaved routes would be similar to those under Alternatives A and B, but would be confined to fewer acres, compared with Alternative A, and could occur on more acres, compared with Alternative B (relative to the greater area and lesser area open to restricted vehicle use, respectively). About 29,930 acres where motorized vehicle use would be allowed on designated routes would overlap the PM<sub>10</sub> nonattainment area. Implementing management actions under the air quality program to control emissions would result in impacts similar to those under Alternative B.

The amount of PM<sub>10</sub> dust expected to be produced by passage of motor vehicles varies depending on the number of miles of roads designated for motorized use under each alternative. Under Alternative C, PM<sub>10</sub> dust emissions from passage of motor vehicles are estimated at 47 to 61 tons per year, based on vehicle speeds varying from 15 to 25 miles per hour. The method of analysis is based on EPA guidance (EPA 1995, updated 2006). Site-specific factors considered in this analysis are vehicle miles driven, vehicle speed, soil type, and soil moisture.

Under this alternative, the Roaded Natural and Semi-Primitive Motorized RMZs (18,380 and 36,230 acres, respectively) would total approximately 54,610 acres. Motor vehicle emissions could

## Impacts on Air Quality (cont.)

increase within these areas, with potential effects on the PM<sub>10</sub> nonattainment area, as 17,750 acres (59 percent), of the nonattainment area in the IFNM occurs in these RMZs. Compared with Alternative A, overall emissions from motorized vehicle use on paved and unpaved routes would likely decrease; compared with Alternative B, overall emissions likely would increase (resulting primarily from the differing miles of routes open for motorized vehicle uses). Wood campfires would be allowed, which would result in emissions of pollutants in localized areas.

Surface-disturbing activities could impact air quality depending on the magnitude of disturbance and type of activity. Management of soil and water resources, vegetation, wildlife and wildlife habitat, cultural resources, lands and realty, and livestock grazing under Alternative C would restrict or allow surface-disturbing activities. Management of soil and water resources would have the same types of impacts as those under Alternative B, but surface disturbance would be allowed in areas of sensitive or fragile soils, resulting in the potential for some disturbance in those areas and consequent increases in emissions of particulates (dust) compared to Alternative B. Management of vegetation and wildlife and wildlife habitat would have the same types of impacts and potential for impacts as those that would occur under Alternative B.

Management of livestock grazing under this alternative would have the same effect on air quality as management under Alternative A.

Under this alternative, the IFNM would be allocated as a right-of-way avoidance area, and two utility corridors for major utilities would be established. This would restrict the potential for development outside the corridors, reducing the potential for construction-related fugitive dust emissions within the IFNM compared to Alternative A, but increased from Alternative B. However, utilities could be routed around the IFNM, resulting in an increase in fugitive dust emissions in localized areas outside the IFNM. Decisions for and lands and realty related to the land use authorization process and acquisitions would have the same effects on air quality as those under Alternative B, except acquired lands would become avoidance areas rather than exclusion areas for future rights-of-way, which would provide more potential for ground-disturbing activities and subsequent localized degradation of air quality.

Provision of additional stock waters for livestock would have the same impacts as those under Alternative A; it could increase dust in small, highly localized areas because stock-watering areas generally are sparsely vegetated, creating conditions for the generation of wind-driven dust. Motor-vehicle emissions associated with the use of existing roads along fence lines could increase in localized areas, depending on traffic volumes.

Implementation decisions regarding soil and water are the same as those under Alternative B, and would have the same resulting impacts as described previously. Designating 124 miles of route for motorized vehicle travel versus the 346 miles that would remain open under Alternative A would reduce emissions from vehicle travel. However, compared with 63 miles under Alternative B, there would be nearly twice as many miles open for motorized vehicle travel, resulting in increased emissions from vehicle travel.

### **4.3.1.5 Alternative D**

Under Alternative D, management of travel, air quality, and recreation could affect air quality. To a lesser extent, management of soil and water resources, vegetation, wildlife and wildlife habitat, cultural resources, livestock grazing, and lands and realty would potentially impact air quality.

No BLM surface lands would be closed to vehicular traffic, and motor vehicle use would be limited to designated roads on 128,400 acres (see Map 2-22). The use of motorized vehicles on paved and unpaved roads would result in emissions similar to those that would occur under Alternative A. Implementing

## Impacts on Air Quality (cont.)

management actions under air quality to control emissions would result in impacts similar to those that would occur under Alternative B.

The amount of PM<sub>10</sub> dust expected to be produced by passage of motor vehicles varies depending on the number of miles of roads designated for motorized use under each alternative. Under Alternative D, PM<sub>10</sub> dust emissions from passage of motor vehicles are estimated at 80 to 104 tons per year, based on vehicle speeds varying from 15 to 25 miles per hour. The method of analysis is based on EPA guidance (EPA 1995, updated 2006). Site-specific factors considered in this analysis are vehicle miles driven, vehicle speed, soil type, and soil moisture.

Under this alternative, the Roaded Natural and Semi-Primitive Motorized RMZs (19,060 and 59,020 acres, respectively) would total approximately 78,080 acres. Motor vehicle emissions could increase within these areas, with localized impacts on air quality and potential effects on the PM<sub>10</sub> nonattainment area (which would overlap 21,560 acres of these RMZs). Compared with Alternative A, overall emissions from motorized vehicle use on paved and unpaved routes would likely decrease; compared to Alternatives B and C, overall emissions likely would be more (resulting primarily from the differing miles of routes open for motorized vehicle uses). Wood campfires would be allowed, which would result in emissions of pollutants in localized areas.

Management of soil and water resources, vegetation, wildlife and wildlife habitat, cultural resources, lands and realty, and livestock grazing, could affect air quality. Surface-disturbing activities could impact air quality depending on the magnitude and type of activities that occur. Management of soil and water resources would have the same effects on air quality as management under Alternative C. Management decisions regarding vegetation that would affect air quality would be similar to those under Alternative B, and would have the same impacts. The main difference would be that areas would be restored on a case-by-case basis, rather than from guidance developed in a restoration plan, which could result in reduced potential for windblown dust throughout the IFNM. Management of wildlife and wildlife habitat would have the same impact on air quality as management under Alternative B. Management of livestock grazing would have the same impacts on air quality as management under Alternative A. Management of cultural resources would have the same impacts on air quality as management under Alternative C.

Under this alternative, the IFNM would be designated as a right-of-way avoidance area, and three utility corridors would be established for future major utilities. This could reduce ground disturbance and dust generation from construction in rights-of-way compared to Alternative A given the reduced area of corridors. However, fugitive dust emissions could increase emissions in localized areas, such as the Sawtooth Mountains, where a new corridor would be designated. Decisions for and lands and realty related to the land use authorization process and acquisitions would have the same effects on air quality as those under Alternative C.

Under this alternative, 226 miles of route would be designated for motorized vehicle travel versus the 346 miles that would remain open under Alternative A; this would reduce emissions from vehicle travel relative to Alternative A. However, compared with Alternatives B and C, there would be an increase of 162 miles and 100 miles, respectively, open for motorized vehicle travel, resulting in increased emissions from vehicle travel.

### **4.3.2 Impacts on Geological and Cave Resources**

The analysis of potential effects on geological resources, including caves, from the decisions proposed under the alternatives focuses on those decisions that would maintain the integrity of geological resources—generally, these decisions would be established to protect other resources, such as scenic and visual resources, vegetation, or cultural resources.

The following assumptions were used when assessing the impacts on geological resources.

- During site-specific planning and authorization processes, the BLM would evaluate all proposed actions for site-specific effects on natural resources, including geological resources.
- No known caves are located on public lands within the IFNM. If and when such cave resources are discovered, the BLM will develop specific objectives and management actions for those resources.

The impact analyses and conclusions are based on the potential for ground-disturbing actions to occur in areas where geological resources have unique or unusual features of scenic value or interest, or that may display geologic characteristics of scientific or educational significance. The extent of ground-disturbing actions would vary for each alternative and depend on the acreage excluded from ground disturbance to protect or preserve other resources.

#### **4.3.2.1 Impacts Common to All Alternatives**

Maintaining and improving soil cover and productivity through erosion preventative measures and land treatments would indirectly help retain and protect existing geological resources.

As all Federal lands are appropriated and withdrawn from mineral sale or leasing, geological resources would be protected because leasing, permitting or sale of public lands or minerals within the boundaries of the IFNM for exploration and development of mineral and energy resources is prohibited. Mineral resources potentially could be developed on grandfathered mining claims that have established valid existing rights, resulting in localized degradation of geological resources. Surface use restrictions could reduce the area of mineral development on mining claims on a case-by-case basis.

Collection of paleontological resources on a limited basis could generate very localized disturbance to geological resources, potentially diminishing their values in those areas.

Authorizing land use permits and easements on a case-by-case basis could result in surface disturbance in or near areas of unique or sensitive geological resources. Acquisition of non-Federal lands would result in the protection of geological resources in those areas.

No impacts would be anticipated from management decisions for air quality, wildlife and wildlife habitat, special status species, fire ecology and management, special designations, or livestock grazing.

#### **4.3.2.2 Alternative A (No Action)**

Management decisions that potentially could affect geological resources include travel management, scenic and visual resources, areas managed to protect wilderness characteristics, recreation, vegetation, and lands and realty. No impacts would be anticipated from management of geology and caves, cultural resources, or special designations.

Closing 820 acres to motorized vehicles and limiting motorized vehicle travel to existing routes throughout the IFNM would prevent surface disturbance from vehicle travel at Ragged Top (800 acres) and 20 acres managed as a Special Management Area, resulting in the protection of geological resources, including geological objects of the monument (rugged mountains including Ragged Top). Management of all public land in the IFNM as Visual Resource Management (VRM) Class III would allow for surface-disturbing activities in many areas of the monument, which could cause localized erosion and potentially diminish values of geological resources in those areas.

Allowing recreational shooting outside of developed areas in accordance with Federal regulations could result in localized disturbance of geological resources, potentially diminishing their values, particularly in areas where recreational shooting occurs against hillsides or mountains, as these features provide a natural backstop for safety. Dispersed recreational shooting could contribute to localized damage to geological objects of the monument, particularly if features in rugged mountains are damaged or shooting debris is left behind. Developing an activity plan for the Cocoraque Butte-Waterman Mountains Multiple Resource Management Area could protect geological resources in this area if surface-disturbing activities were restricted in this area.

Establishing 8,240 acres as utility corridors and the Pan Quemado communication site, could result in the degradation of geological resources in localized areas due to ground-disturbing activities.

The implementation decision providing for 346 miles of existing roads for motorized travel would provide access to various areas, where erosion from such motorized access could increase as recreation use increases. This could potentially diminish geological resource values in localized areas.

Based on the impacts described above for Alternative A, the disturbance to geological objects of the monument (rugged mountains, including Ragged Top and the Silver Bell Mountains) resulting from management actions would be undetectable or measurable only in localized areas and would not reduce the availability of those resources for their contribution to the natural characteristics, processes, and scenic and wildlife values of the monument. The localized nature of impacts on geological objects of the monument would be consistent with “protection of the monument objects” as defined in Section 1.3.1.

#### **4.3.2.3 Alternative B**

Management decisions that potentially could affect geological resources include geology and caves, soil and water resources, vegetation, cultural resources, travel management, scenic and visual resources, lands managed to protect wilderness characteristics, recreation, and lands and realty.

Identifying appropriate management actions, allowable uses, and allocations for discovered geological resources could increase protection and preservation of geological resources and prohibiting the collection of geologic resources would retain existing geological resources for their contribution to the natural characteristics, processes, and scenic and wildlife values of the monument. Allowing collection and removal of geologic resources when officially authorized by permit for legitimate scientific research or educational uses could cause minimal surface disturbance to geological resources. Authorized collection would be limited, controlled, and contribute to the scientific knowledge of the resources.

Minimizing surface disturbance and adopting mitigation plans that minimize erosion would help retain existing geological resources. Prohibiting new surface disturbance and mitigating existing surface disturbance in areas with sensitive or fragile soils also would reduce erosion and help retain geologic resources. Minimizing surface disturbance that results in a loss of existing vegetation cover also could protect geological resources. However, the mechanical treatment of noxious weeds and invasive species could cause very localized disturbance to geological resources. Prohibiting surface disturbance for cultural resource studies would protect geological resource from degradation.

Managing all public lands consistent with the visual resource inventory classes could restrict surface disturbance in 125,110 acres (97 percent of public lands in the IFNM) managed as VRM Class I and II areas. Under Alternative B, managing areas to meet VRM Classes I and II objectives, would help preserve landscapes with unique geological resources, including those considered objects of the monument. In addition, rehabilitating existing disturbed areas for preservation of visual resources could assist in maintaining geological resources if rehabilitation efforts occur in areas of unique geology.

Geological resource disturbance from recreational shooting within the IFNM would be reduced compared to Alternative A; shooting would only be allowed for permitted hunting activities.

Allocating the IFNM as a right-of-way exclusion area would result in less surface disturbance than under Alternative A, resulting in less potential for degradation of geological resources. The decision requiring construction and maintenance activities to include protective measures to minimize soil erosion could indirectly protect geologic resources that are located in those areas.

Closing 38,040 acres to motorized vehicles and limiting motorized vehicle travel to designated routes on 90,360 acres would prevent surface disturbance from vehicle travel, resulting in the protection of geological resources. However, limited erosion could occur in areas where motorized uses would be allowed, resulting in localized degradation of geological resources, though these impacts would be negligible. Development of new routes as needed to provide legal public access to non-Federal inholdings, or if needed for administrative access to IFNM lands could result in the degradation of geological resources in localized areas.

Management of 36,990 acres to protect wilderness characteristics would preserve the existing character of the landscape in those areas, thus preserving geological resources and the geological objects of the monument within those areas.

Providing new access to geologic sites could cause minimal surface disturbance, which could affect geological resources. However, the action could be mitigated if restricted to peripheral areas.

The implementation-level decision designating 63 miles of existing roads for motorized travel within the IFNM could reduce access compared with 346 miles under Alternative A. This could decrease the amount of erosion from motorized access and would decrease potential degradation on geological values compared with Alternative A.

Based on the impacts described above for Alternative B, the disturbance to geological objects of the monument (rugged mountains, including Ragged Top and the Silver Bell Mountains) resulting from management actions would be undetectable or measurable only in localized areas and would not reduce the availability of those resources for their contribution to the natural characteristics, processes, and scenic and wildlife values of the monument. The localized nature of impacts on geological objects of the monument would be consistent with “protection of the monument objects” as defined in Section 1.3.1.

#### **4.3.2.4 Alternative C**

Management decisions that potentially could affect geological resources include geology and caves, soil and water resources, vegetation, cultural resources, travel management, scenic and visual resources, lands managed to protect wilderness characteristics, recreation, and lands and realty. Impacts from vegetation management actions would be the same as Alternative B.

The collection and removal of geological resources for scientific research would be allowed, which could cause minimal surface disturbance to geological resources. Surface disturbance would be allocated (and not prohibited) from areas of sensitive or fragile soils, which could cause disturbance to geological resources in localized areas.

Scientific studies for cultural resources, including excavation if needed in those studies, would be allowed, which could cause minimal surface disturbance resulting in the potential degradation of geological resources in localized areas.

Managing 124,900 acres (97 percent of public lands in the IFNM) to meet VRM Class II objectives would protect geological resources from disturbance, similar to Alternative B. However, designated

utility corridors would be VRM Classes III and IV, allowing for greater disturbance of geological resources within those corridors. Similar to Alternative B, rehabilitating existing disturbed areas for preservation of visual resources could assist in maintaining geological resources if rehabilitation efforts occur in areas of unique geology.

Geological resource disturbance from recreational shooting within the IFNM would be reduced compared to Alternative A; shooting would only be allowed for permitted hunting activities.

The IFNM would be designated a right-of-way avoidance area which would allow ground-disturbing activities that could result in the degradation of geological resources in localized areas, but to a lesser extent than under Alternative A, and a greater extent than Alternative B. The decision requiring construction and maintenance activities to include protective measures to minimize soil erosion could indirectly protect geologic resources that are located in those areas.

Closing 10,880 acres to motorized vehicle use, compared to 38,040 acres under Alternative B, would result in greater surface disturbance to geological resources from vehicle travel. Impacts from development of new routes would be similar to Alternative B.

Managing 9,510 acres to protect wilderness characteristics would preserve the existing character of the landscape, thus preserving geological resources, to a greater extent than Alternative A, but to a lesser extent than Alternative B.

Providing new access to geologic sites would result in the same impacts as those described under Alternative B.

The implementation-level decision designating 124 miles of existing roads for motorized travel would provide 61 more miles of existing roads for access than provided under Alternative B. Therefore, Alternative C would increase the amount of erosion from motorized access and could increase the disturbance of geological values compared to Alternative B, but that would be less than the 346 miles of existing road access provided under Alternative A.

Based on the impacts described above for Alternative C, the disturbance to geological objects of the monument (rugged mountains, including Ragged Top and the Silver Bell Mountains) resulting from management actions would be undetectable or measurable only in localized areas and would not reduce the availability of those resources for their contribution to the natural characteristics, processes, and scenic and wildlife values of the monument. The localized nature of impacts on geological objects of the monument would be greater than those described under Alternative B, but consistent with “protection of the monument objects” as defined in Section 1.3.1.

#### **4.3.2.5 Alternative D**

Management decisions that potentially could affect geological resources include geology and caves, soil and water resources, vegetation, cultural resources, travel management, scenic and visual resources, recreation, and lands and realty. Impacts from vegetation management actions would be the same as Alternative B.

Minimal disturbance of geological resources would be allowed during the collection and removal of geological resources for scientific or educational uses. Maintaining and improving soil cover and productivity by preventing erosion would indirectly help to retain existing geological resources, similar to Alternative A. Allowing ground-disturbing activities could result in disturbance to geological resources, similar to Alternative C.

Managing 122,580 acres (95 percent of public lands in the IFNM) to meet VRM Class II objectives would protect geological resources from disturbance, similar to Alternative C, though with slightly more potential for disturbance of geological resources as a result of slightly greater area designated to VRM Classes III and IV as a result of wider corridors for rights-of-way.

Recreational shooting would be limited to two designated areas known as Avra Hill and Cerrito Reproso. These areas would experience localized disturbance of geological resources, particularly to the geologic features on the hillsides that would serve as natural backstops for safety.

Limiting motorized vehicle use to designated routes on 128,400 acres could cause greater surface disturbance from vehicle travel resulting in more disturbances to geological resources compared to Alternatives B and C. Development of new routes would result in the same impacts as those described under Alternative B. To the extent that vehicular routes scar rugged mountains, including Ragged Top and Silver Bell Mountain, there could be some degradation of the geological objects of the monument.

The implementation-level decision designating 226 miles of existing roads for motorized travel would provide more access than Alternatives B and C, but to a lesser extent than 346 miles under Alternative A. Motorized use would cause erosion, which could increase the disturbance of geological values from 63 miles under Alternative B and 124 miles under Alternative C, but would be less than Alternative A.

Decisions for geologic resources and lands and realty would result in the same impacts as those described under Alternative C.

Based on the impacts described above for Alternative D, the disturbance to geological objects of the monument (rugged mountains, including Ragged Top and the Silver Bell Mountains) resulting from management actions would be undetectable or measurable only in localized areas and would not reduce the availability of those resources for their contribution to the natural characteristics, processes, and scenic and wildlife values of the monument. The localized nature of impacts on geological objects of the monument would be greater than those described under Alternative C, but consistent with “protection of the monument objects” as defined in Section 1.3.1.

#### **4.3.3 Impacts on Soil and Water Resources**

This section discusses potential impacts on soils from the proposed management decisions of other resources and resource uses. Soils, especially in fragile soil areas, are susceptible to impacts from compaction and surface disturbance, which can lead to accelerated erosion, soil loss, and reduced productivity. Management actions that involve ground-disturbing activities, reduction of vegetation cover, trampling, and use of vehicles and heavy machinery could result in soil compaction or surface disturbance. The discussion of impacts on 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, increase erosion, or otherwise alter land surface cover potentially would affect water quality and watershed health.

The analysis was based on the following assumptions:

- Soil resources would be managed to meet Standard 1 of the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration.
- Fragile soils would be managed to minimize erosion and maintain soil productivity.
- 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.

## Impacts on Soil and Water Resources (cont.)

- 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, wildlife, and/or drinking water supplies).
- Access roads 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 IFNM, 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.

### **4.3.3.1 Impacts Common to All Alternatives**

Management of soils, cultural resources, geology, fish and wildlife, special status species habitat, and special designations includes management decisions that restrict surface disturbance or protect other resources. Restricting surface disturbance helps retain existing soil and water resource conditions throughout the IFNM. Analyses of impacts on soil and water resources are based on achieving the resource objectives of managing surface land use and groundwater resources and maintenance of xeroriparian areas.

Management activities that disturb land surfaces, decrease vegetation cover, or otherwise alter land surface cover would potentially affect soil and water resources by altering erosion rates or water yield (quantity and timing). Increased erosion, compaction, displacement, and rutting of soils can affect soil productivity. Erosion affects soil productivity by carrying away soil particles and those nutrients normally tied to the soil, such as phosphorous. The ability of soil to recover productivity is affected by the removal of topsoil, since this layer has the most capacity to store nutrients readily available to nourish plants. In areas currently eroding, soil productivity would gradually increase when erosion is controlled. Erosion from disturbed sites could potentially reach streams with sediment affecting aquatic systems and water quality. The risk of water quality impacts decreases as the distance between a ground-disturbing activity and a stream or other water body increases.

Surface-disturbing activities would remove vegetative cover or physical and biological soil crusts, resulting in bare soil, potential compaction, mixing of soil horizons, increased susceptibility to water and wind erosion, loss of topsoil, decreased soil productivity, and site production. These impacts could increase the potential for accelerated erosion, runoff and off-site sedimentation, and a subsequent increase in the loss of soil resources and decrease in water quality. Accelerated soil erosion occurs when soil particles are detached and removed. Water erosion could occur during high intensity rainfall or runoff events. Soils are most susceptible to wind erosion when soil aggregates are broken up, dry conditions exist, and soils are bare.

Soil compaction occurs when soil particles are pressed together, which limits pore space for air and water, alters soil structure, and reduces infiltration/permeability rates and soil strength. Severity depends on soil type, soil moisture, vegetative cover, and the frequency and weight (lbs./sq. inch) of equipment passing over the soils. Soils are the most susceptible to compaction during moist conditions. Severe compaction inhibits natural revegetation by reducing root penetration, restricting water and air movement, severely limiting the rate of water infiltration/permeability, increasing surface runoff, and slowing seed emergence.

Implementing mitigation measures on a project-specific basis to protect vegetation would reduce erosion, helping maintain soil and watershed conditions. Erosion preventative measures, land treatments, and incorporation of salinity control measures into erosion prevention strategies along with rehabilitation treatments would help maintain or improve soil and watershed conditions by reducing salinity and sedimentation. Managing upland and xeroriparian areas to meet Standard 1 of the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration could increase the percentage of the cover of desired vegetation species, maintain or improve vegetation diversity and structure, and maintain or improve soil and watershed conditions by reducing erosion and sediment loads.

The presence and use of roads and trails could cause erosion from road surfaces and ditches, concentrate flows into channels, and transport and deliver sediment into stream channels. This could reduce soil stability and degrade overall watershed conditions. Actual erosion and sedimentation amounts would depend on road construction standards, frequency of maintenance, and the amount of use.

Areas where public recreation use would be concentrated, such as campgrounds, trails, and trailheads, would cause localized effects. In addition, areas where livestock or wildlife concentrate such as near water sources, would also compact soils in localized areas. These areas would experience the most soil compaction and loss or reduction of vegetation cover, as well as destruction of biological crusts and increased wind erosion.

Retaining all public lands and acquiring other lands could improve BLM's ability to manage soil and water resources. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads.

Managing the IFNM for full fire suppression and implementing programs to reduce ignitions, could improve the ecological health of vegetative communities. This would help maintain or improve soil and watershed conditions by reducing the potential for erosion and increased sediment loads. However, ground equipment associated with suppression of wildfires, such as equipment used to create fire lines, could disturb and compact soils in localized areas. Fuel treatments to maintain non-hazardous fuel levels using manual, biological, mechanical, or chemical treatments would result in the short-term loss of vegetation depending on the treatment applied. The loss of vegetation could result in an increase in erosion and sediment load in very localized areas.

The withdrawal of the IFNM from all forms of mineral entry (per the Proclamation) could reduce effects to soil and water resources from mineral exploration and development. However, mining-related activities at claims on 4,590 acres (about 4 percent) of public lands in the IFNM) could increase effects in localized areas.

Under all alternatives, impacts on soil and water resources are not anticipated from management of air quality and paleontological resources. Under all alternatives, there would be no impacts on soil and water resources from implementation-level decisions concerning management of air quality, geology, cultural, paleontological resources, and recreation.

#### **4.3.3.2 Alternative A (No Action)**

Under Alternative A, the following management actions would protect soil and water resources in the IFNM by restricting surface disturbance: managing 41,470 acres (32 percent of public lands in the IFNM) as a Silver Bell Desert Bighorn Sheep Management Area (including prohibition of surface occupancy on 800 acres), limiting motorized vehicles to existing roads and trails, and closing 820 acres to motorized vehicles. In addition, managing 2,240 acres (or 2 percent of public lands in the IFNM) as the Waterman Mountains ACEC to protect Nichol Turk's head cactus habitat also would reduce surface disturbance from human uses. Acquisition, through exchanges of non-Federal mineral estate underlying Federal

## Impacts on Soil and Water Resources (cont.)

surface holdings in the Silver Bell Resource Conservation Area (RCA) would further reduce potential effects from mining activities as this area would then be withdrawn from mineral entry.

Managing 820 acres (1 percent of public lands in the IFNM) as closed to off-highway vehicle (OHV) use and 127,580 acres (99 percent of public lands in the IFNM) as limited to existing routes and closing the Special Management Area (20 acres) to motorized vehicles could reduce surface disturbance. In addition, prohibiting land use authorizations except along designated routes within the Waterman Mountains ACEC could reduce surface disturbance and retain existing vegetation resources in localized areas.

Managing 128,400 acres to meet VRM Class III objectives, including 8,240 acres (6 percent of public lands in the IFNM) for utility corridors could result in surface disturbance from human uses and removal of existing vegetation resources. Issuing rights-of-way to maximize use of existing routes could reduce the potential for surface disturbance in other areas of the IFNM. Managing 160 acres as the Pan Quemado communication site could result in surface disturbance and removal of vegetation resources as the communication site is developed. This could increase erosion and sediment loads in localized areas of watersheds.

Limiting motorized vehicle use to 346 miles of existing roads and trails could help retain existing vegetation cover and reduce surface disturbance; this could help maintain or improve soil and watershed conditions in the IFNM by reducing erosion and sediment loads. Management of livestock grazing to protect desert tortoise habitat also would provide incidental protection of soil and water resources by allowing only new range improvements that would not conflict with tortoise populations. Allowing dispersed, vehicle-based camping could result in localized impacts from vehicle parking and maneuvering and from persons engaging in ancillary activities. Not restricting camping to designated locations could lead to increased soil disturbance and result in soil erosion and increased sedimentation of surface waters following storms.

Continuing opportunities for recreational shooting would contribute to ongoing exposure to lead in the environment. Lead shot could leach into the soil and groundwater, although concentrations would be expected to be negligible unless areas are repeatedly used.

Establishing or modifying wildlife waters and relocating livestock water sources could result in localized disturbance to soils and could result in increased potential for a short-term localized increase in erosion. Range improvements that improve or do not conflict with desert tortoise populations could increase vegetation diversity and vigor. However, provision of additional water sources and rangeland improvements could increase vegetation diversity and structure in localized areas. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads.

Management actions to establish or modify existing fences that would implement livestock grazing decisions or improve wildlife habitat could result in short-term localized surface disturbance. However, these actions would improve soil and watershed conditions in localized areas by reducing erosion and sedimentation.

An activity plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could improve soil and watershed conditions by reducing erosion and sediment load as a result of outlining specific measures and a timeline for implementation. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads. Implementing management actions for soil and water resources, special status species, livestock grazing, and travel management could decrease erosion by restricting surface disturbance to existing disturbed areas and improving vegetation resource conditions.

The implementation decision providing for 346 miles of existing roads for motorized travel would provide access to various areas, where erosion from such motorized access could increase as recreation use increases. This could potentially degrade soil and water resources in localized areas.

#### **4.3.3.3 Alternative B**

Minimizing surface disturbance that results in the loss of vegetation cover, minimizing surface disturbance during the construction of facilities, and managing 63,180 acres (49 percent of the public lands in the IFNM) that contain sensitive or fragile soils as prohibited from ground-disturbing activities would preserve the soil and watershed conditions by reducing erosion and sediment load. Managing 125,110 acres (97 percent of public lands in the IFNM) as VRM Class I and VRM Class II could maintain existing vegetation diversity and structure by reducing effects from human uses. Managing 38,040 acres (30 percent of public lands in the IFNM) as closed to OHV use, managing 90,360 acres (70 percent of public lands in the IFNM) as limited to designated routes, and managing areas as priority wildlife habitats would help retain existing vegetation resources by reducing surface disturbance. Compared with Alternative A, increasing the areas where these restrictions to surface-disturbing activities apply would provide greater protection to soil and water resources.

Managing 60,000 acres (47 percent of public land in the IFNM) as Semi-Primitive Non-Motorized, managing 36,990 acres (29 percent of public land in the IFNM) as a Primitive RMZ, including lands managed to protect wilderness characteristics, and prohibiting the removal of living or dead native plant material could maintain existing vegetation diversity and structure by emphasizing natural landscapes. However, this could restrict the type or extent of restoration projects. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads to a greater extent than Alternative A. Once grazing leases expire, making the IFNM unavailable to grazing could also improve soil and watershed conditions in very localized areas.

Prohibiting land use authorizations within 2,240 acres of the Nichol Turk's head cactus Vegetation Habitat Management Area (VHA) and 6,780 acres of the Ragged Top VHA except along designated routes could reduce the area where surface disturbance could occur and help retain existing vegetation. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads. This would reduce surface disturbance on 5,680 additional acres compared to Alternative A.

Developing a land restoration plan and using active restoration would maintain or improve soil and watershed conditions by reducing erosion and sediment load. Using native plants for all restoration projects and a variety of reclamation methods that emphasize passive restoration to improve hydrologic function also would improve overall soil and watershed conditions. This would help maintain or improve soil and watershed conditions by reducing erosion and sediment loads to a greater extent than Alternative A.

The elimination of livestock grazing from BLM-administered land as existing leases expire would eliminate a potential source for fecal contamination of surface water, and would eliminate the need for stock waters. Areas along cow paths and near stock waters may revegetate and provide ground cover with better soil stability.

Closing desert bighorn sheep lambing areas to human entry during a portion of the spring vegetative growing season could reduce surface disturbance in localized areas. In addition, special management, management decisions geologic resources also could reduce potential impacts on vegetation communities by restricting ground-disturbing or surface-disturbing activities. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads to a greater extent than Alternative A.

## Impacts on Soil and Water Resources (cont.)

Acquisition of lands to improve access for administrative purposes or where development/disturbance is foreseeable could improve BLM's ability to manage soil and water resources. This could help maintain or improve soil and watershed conditions by improving vegetation diversity and soil structure soil as compared with Alternative A. However, in areas where native plant species growth is slow, this could increase erosion and affect soil and watershed conditions.

The maintenance and protection of priority and special status species habitats and maintenance of existing surface water and groundwater resources would indirectly move vegetation communities toward desired conditions. This could improve soil and watershed conditions by reducing erosion and sediment loads. Allocating 29,820 acres as Desert Bighorn Sheep Wildlife Habitat Management Area (WHA) to protect habitat would reduce the potential for surface disturbance and help retain existing vegetation resources. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads to a greater extent than Alternative A.

Managing 3,290 acres (3 percent of public lands in the IFNM) to meet VRM Class III objectives could result in fewer restrictions on activities that lead to surface disturbance and removal of existing vegetation. This alternative decreases the areas where surface-disturbing activities from human uses would be likely to occur, as compared to Alternative A.

Managing 17,610 acres (14 percent of public lands in the IFNM) as Roaded Natural and 14,540 acres (11 percent of public lands in the IFNM) as Semi-Primitive Motorized could cause localized surface disturbance and remove vegetation resources from recreation use and access roads. Restricting vehicle-based overnight camping to areas identified as open and allowing large-group camping at two designated sites would cause surface disturbance in localized areas from vehicle parking and maneuvering and from persons engaging in ancillary activities. This could result in a minor to negligible amount of soil compaction, soil erosion, and the potential for increased sediment runoff following storms. However, there would be less surface disturbance from camping and its associated effects compared to Alternative A.

Restricting public and equestrian access to public or community sites that will be designated through the travel management planning process would help to retain existing vegetation resources by reducing surface disturbance in other areas. However, the identified sites would be subject to more intense use, resulting in increased localized compaction and/or erosion at those sites. In addition, managing 2 acres as the Pan Quemado communication site and 3 acres of the Confidence Peak site could restrict surface disturbance compared with Alternative A. This could decrease erosion and sediment loads in localized areas by reducing surface disturbance compared to Alternative A.

Developing new routes for public travel management when necessary would disturb surfaces in localized areas and could result in erosion and increased sediment loads. In addition, authorizing rights-of-way to provide legal public access to IFNM lands or to provide access to non-Federal land inholdings would be considered on a case-by-case basis. These authorized rights-of-ways could increase erosion and sediment loads in localized areas.

Prohibiting recreational shooting would reduce the amount of lead shot within the monument compared to Alternative A, as well as the localized potential for the lead to leach into soil.

Decisions for soil and water resources, vegetation, wildlife and wildlife habitat, special status species, and lands and realty could maintain or improve vegetation resource conditions by reducing erosion and sedimentation. Constructing or implementing specific erosion control measures could improve soil and watershed conditions by reducing erosion in the planning area. Maintenance or removal of existing non-functioning flood- and erosion-control structures could cause short-term erosion from surface disturbance.

Long-term, this could improve soil and watershed conditions in localized areas. Implementation of protective measures in authorized rights-of-way would reduce vegetation removal and subsequent erosion. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads to a greater extent than Alternative A.

Establishment or modification of wildlife waters and fences could result in localized disturbance to soils. In addition, removing fences, roads, facilities, and utility lines and fencing along designated routes to prevent damage to sensitive and unique vegetation would remove vegetation in the short-term. However, long-term, this action could help retain existing vegetation in localized areas. Rehabilitation of disturbed areas would help improve soil and watershed conditions by reducing the potential for erosion and sediment load. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads to a greater extent than Alternative A.

Not developing an activity-level plan for the Cocoraque Butte–Waterman Mountain Mountains Multiple Resource Management Area could result in slower improvements to soil and watershed conditions. Not relocating water sources away from rare plant populations could reduce surface disturbance in localized areas and would retain existing vegetation resources.

Improving ecological site conditions could reduce surface disturbance to soil and water resources. This could reduce erosion in the IFNM. In addition, reclaiming abandoned mines could increase cover of desired vegetation, which could improve soil and watershed conditions by reducing erosion and sediment loads. Soil and watershed conditions could improve compared to Alternative A by reducing surface disturbance, erosion, and improving ecological site conditions.

Impacts from route designation would be similar to Alternative A, except managing 266 miles of routes for non-motorized use could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads. Developing a transportation and travel plan could help retain existing vegetation resources by reducing surface disturbance through regulation of access points and routes.

#### **4.3.3.4 Alternative C**

Impacts on soil and water resources from livestock grazing would be the same as those that would occur under Alternative A, except locating range improvements to minimize additional disturbance would help retain a greater amount of existing vegetation. In addition, managing 241 acres for utility corridors and establishing the IFNM as an avoidance area could further reduce effects of surface disturbance. Impacts from management of scenic and visual resources and vegetation would be the same as Alternative B, except managing 124,900 acres as VRM Class II and 6,780 acres as a VHA also could reduce surface disturbance. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads, as compared with Alternative A.

Localized surface disturbance from collecting geological resources and excavation of cultural resources as authorized by a permit could degrade soil and water conditions if increased erosion and sedimentation occurs. Increasing the area managed as Semi-Primitive Motorized to 36,230 acres could increase surface disturbance in localized areas. Impacts from large-group campsites would be the same as those that would occur under Alternative B, except increasing the number of campsites to three would increase localized surface disturbance. However, Alternative C would allow equestrian in all areas of the IFNM, which could result in the proliferation of trails, compact soils and increase erosion in localized areas. This could increase surface disturbance as compared with Alternative B, and reduce impacts as compared with Alternative A.

Impacts from management of scenic and visual resources would be the same as those that would occur under Alternative B, except increasing the total area managed as VRM Class III and IV by 210 acres could increase surface disturbance from human uses. This would decrease the area where surface disturbance from human uses could occur, as compared with Alternative A.

Impacts from OHV use would be similar to those that would occur under Alternative A. However, managing 10,880 acres as closed to OHV use and 117,520 acres as limited to designated routes would decrease surface disturbance compared to Alternative A. Compared to Alternative B, there would be 27,170 fewer acres of BLM-administered lands closed to OHV use, and 27,170 more acres in the area managed as limited to designated routes. In addition, the development of additional new routes would be the same as Alternative B.

Prohibiting recreational shooting would reduce the amount of lead shot within the monument compared to Alternative A, as well as the potential for the lead to leach into soil or water.

Impacts from managing lands to protect wilderness characteristics would be the same as Alternative B, except over less area. Managing 9,510 acres to protect wilderness characteristics would restrict where ground and surface-disturbing activities could occur in an effort to maintain naturalness. However, compared to Alternative A, this increases the area where restrictions would be applied to restoration projects.

Providing additional livestock water sources could increase vegetation diversity and structure in localized areas; this could help or improve soil and watershed conditions by reducing erosion and sediment loads. However, modifying current livestock waters would disturb surfaces and remove vegetation in localized areas. Livestock watering areas could become areas of concentration for livestock, increasing localized surface disturbance, soil compaction and the removal of vegetation compared with Alternative B, where additional livestock waters would not be authorized. An increase in the number and variety of wildlife and livestock enclosures would minimize livestock impacts on priority plant species and habitats, which could increase vegetation diversity and structure in localized areas. However, wildlife and livestock waters in the enclosures also would become areas of concentration, resulting in increased localized soil compaction and erosion. Localized erosion of soils could occur from vehicle travel along existing fence line roads.

Management actions to establish or modify existing fences that would implement livestock grazing decisions or improve wildlife habitat could result in short-term localized surface disturbance. However, these actions would improve soil and watershed conditions in localized areas by reducing erosion and sedimentation.

Designating acquired lands as right-of-way avoidance areas, unless within a designated corridor, would result in impacts similar to Alternative B; however, this could increase short-term, localized surface disturbance.

Impacts from motorized and non-motorized use route designations would be the same as those under Alternative B, except managing 205 miles of routes as non-motorized could decrease impacts on soil and water resources, as compared with 346 miles under Alternative A.

#### **4.3.3.5 Alternative D**

Management of wildlife and wildlife habitat would have the same impacts as those that would occur under Alternative B, while impacts from livestock grazing would have the same impacts as those under Alternative C. Restoring areas on a case-by-case basis would improve soil and watershed conditions by

reducing erosion and sediment load; however, this could reduce the areas restored, as compared with Alternatives A, B, and C.

Management of visual resources, recreation, and travel management would have impacts similar to those that would occur under Alternative C, except the area managed as VRM Class II would be decreased to 122,580 acres, areas managed as Roded Natural would increase to 19,060 acres, and areas managed as Semi-Primitive Motorized would increase to 59,020 acres. In addition, managing 4,220 acres as VRM Class III and 1,600 acres as VRM Class IV would increase the area where effects from human uses would occur, as compared with 3,290 acres as Class III under Alternative B and 3,500 acres as Classes III and IV under Alternative C. This would decrease the area, as compared with 128,400 acres managed as Class III under Alternative A.

Impacts from vegetation and lands and realty management actions would be the same as those under Alternatives B and C, except using both native plants and non-native plants to prevent degradation of resources and acquiring inholdings could improve vegetation diversity and structure. This could improve soil and watershed conditions by reducing erosion and sediment load to a greater extent than under Alternative A, B, or C.

Impacts from recreational shooting would concentrate the direct effects on soil and waters within the vicinity of the two designed shooting areas in the monument. The hillsides within these areas, which would provide the natural backstops required for safety, would be exposed to high concentrations of lead shot. Physical abrasion from bullets going through soil and natural weathering processes can cause lead to leach into the soil and groundwater over time (Hardison et al. 2004). Transport of lead into groundwater is influenced by soil types, the amount of precipitation, topography of the firing range (stormwater runoff is greater in hilly terrain, thus slowing transport), and depth to groundwater (as greater distances will dilute the lead or it may not reach the groundwater) (Scott 2001). Lead contamination in IFNM is expected to be slow because of low normal precipitation (averaging less than 13 inches), hillside backdrops are expected to have highest concentrations of spent bullets, depth to groundwater in this region is generally greater than 200 feet, and there is a high evaporation rate.

Impacts from large-group camping sites would be similar to those that would occur under Alternative B, but allowing four designated sites would increase surface disturbance in localized areas, as compared with two large group sites under Alternative B and three large group sites under Alternative C.

Implementing management actions under Alternative D would have the same impacts as those that would occur under Alternative C. In addition, impacts from motorized and non-motorized use route designations would be the same as those under Alternative B, except managing 116 miles of routes as non-motorized could decrease impacts on soil and water resources, as compared with 0 miles under Alternative A (where 346 miles of motorized routes would occur).

#### **4.3.4 Impacts on Vegetation**

This analysis addresses potential impacts on vegetation, including xeroriparian and riparian areas. This analysis will focus on those management decisions that have the potential to cause physical disturbance of vegetation, and the loss or disturbance of vegetation, including xeroriparian areas on public lands within the IFNM. Particular focus was placed on vegetation communities with the greatest potential for changes in structure and species composition, and most at risk from severe mortality events from drought, insects, and disease.

The effects of management actions on vegetation, particularly in xeroriparian areas could vary widely, depending on a variety of factors such as the type of soils, soil moisture, topography, and plant

reproductive characteristics. Impacts on vegetation resources would vary depending on the structure and composition of the vegetation communities, which are described in Chapter 3. The composition of a plant community changes over time due to the interactions of many factors, such as climate, resource uses, and disturbance. In many cases, the potential composition of an area differs from the existing composition due to the area's disturbance history. Actions that cause surface disturbance remove existing vegetation and could increase the potential for establishment of noxious weeds and invasive species, which would reduce overall vegetation diversity, desirable plant cover and the ecological health of vegetation. Increasing surface disturbance also could increase erosion rates.

The following assumptions were used in the analysis of impacts on vegetation, including xeroriparian:

- Following surface disturbance, adequate vegetative ground cover and species composition for site stabilization would typically occur within 5 years in vegetative communities.
- Adequate forage would be available for wildlife population objectives.
- All plant communities would be managed toward achieving an appropriate 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.
- Incidental noxious and invasive weeds would continue to be introduced and spread as a result of ongoing vehicle traffic in and out of the IFNM, recreational activities, wildlife and livestock grazing and movements, and surface-disturbing activities.
- Weed and pest control would be carried out in coordination with the appropriate county weed and pest control district and owners of adjacent property.
- Climatic fluctuation would continue to influence the health and productivity of plant communities.

Impacts on vegetation communities and priority vegetation habitats include direct and indirect impacts on species composition and structure. Consequences to vegetation density and composition were based on likely changes relative to desired conditions. Particular focus was placed on vegetation with the greatest potential for changes in density and composition, and at most risk from severe mortality events from drought, or insects and disease. In the absence of quantitative data, best professional judgment was used, and impacts are described using ranges of potential impacts or in qualitative terms if appropriate.

#### **4.3.4.1 Impacts Common to All Alternatives**

The diversity of species within plant communities, the relative distribution of plant communities, and the relative occurrence of structural stages of those communities would be affected under all alternatives. However, implementation of any alternative would not result in the complete elimination of a plant species, plant community, or structural stage. Impacts resulting from management actions that are common to all the alternatives include surface disturbance from fire suppression, recreation use, and minerals management. These activities would result in the removal of existing vegetation and the conversion of areas to an earlier structural stage and could change vegetation community succession. Converting areas to an earlier structural stage could increase the primary productivity of the vegetation community and could reduce the diversity of scrubland and desert grassland vegetation and the overall ecological health of vegetation communities in those areas. In general, vegetation communities naturally recover from surface disturbance and gradually return to a composition and structure that existed prior to disturbance. Surface-disturbing activities could increase the potential for establishment of noxious weeds

## Impacts on Vegetation (cont.)

and invasive species. While disturbance does not always lead to plant invasion, it could provide a temporary location for invasive species to establish. Reclamation of disturbed areas reduces the effects of surface disturbance on vegetation communities and opportunities for establishment of noxious weeds and invasive species.

Reduction in vegetation structural diversity and ground cover often leads to increased soil erosion. Soil erosion rates on desert scrub and grassland communities are highly dependent on the proportion of soil surface protected by vegetation from raindrop impacts. Erosion rates increase exponentially as plant cover decreases (Meeuwig 1970).

Impacts from management actions common to all alternatives that restrict surface-disturbing activities or improve soil resources from soil and water, vegetation, wildlife and wildlife habitat, special status species, scenic and visual resources, energy and minerals, and recreation management actions would help retain existing vegetation diversity, species composition, and successional states and patterns. Withdrawal of the monument from all forms of mineral entry and closing or limiting areas where motorized vehicles would be allowed could reduce erosion rates by retaining existing vegetation resources. This would decrease the potential for establishment of noxious weeds and invasive species by reducing surface disturbance. However, mining activities at valid existing claims (approximately 4,590 acres) could cause localized surface disturbance and remove existing vegetation resources. This could locally increase opportunities for establishment of noxious weeds and invasive species.

Construction of facilities, water developments (such as wildlife waters), fences, roads, campsites, and interpretive sites would involve crushing and uprooting vegetation in the immediate vicinity and along vehicle access routes. Most impacts from construction would be direct, short term, and limited to the immediate project area. In the long term, facility development could have indirect impacts as a result of greater use by or for livestock, recreation, and administration at the site and along roads and fences. Increased use could compact soils, reduce vegetation cover in localized areas, cause plant mortality or reduction in vigor, and produce conditions favorable to the establishment and spread of noxious weeds and invasive species.

OHV and recreation use could remove vegetation and cause erosion. Concentrated OHV and recreation activities could remove native plants, increasing erosion and off-site sedimentation, and could introduce and spread noxious weeds or invasive species.

Depending on location and density, livestock and wildlife grazing could affect the density and composition of vegetation communities. If foraging activities were concentrated in small areas or along fence lines, soil disturbance and vegetation removal from trampling and grazing would be greater in those areas, increasing the potential for establishment of noxious weeds and invasive species. Concentrations of foraging activities in xeroriparian areas, where alternate water supplies are not available, could lead to destruction of stream and wash banks, removal of vegetation through trampling and grazing, and a long-term change in the vegetation community structure.

Eliminating or controlling the establishment and spread of noxious weeds would improve or maintain natural vegetation composition and structure by decreasing invasive and noxious weed reproduction and competition for limited resources. In the long term this could increase the percent cover of desirable plant species in and adjacent to treated areas. Controlling the establishment and spread of noxious weeds would improve the overall ecological health of vegetation communities through increases in habitat productivity, species diversity, and disease/pest resistance in treated areas.

Managing fire and fuels for full fire suppression and implementing programs to reduce ignitions would improve the ecological health of vegetation communities by decreasing impacts on native vegetation

## Impacts on Vegetation (cont.)

diversity. Maintaining and increasing native vegetation diversity could indirectly increase resistance to disease and insect pest infestations. Long term this could reduce opportunities for establishment of noxious weeds and invasive plant species. Fuel treatments to maintain non-hazardous fuel levels using manual, biological, mechanical, or chemical treatments would result in the short-term loss of vegetation depending on the treatment applied. Some losses of vegetation would be of undesirable plant species including exotic and invasive species, which are treated to reintroduce or promote desirable plant species. This would improve species diversity in treated areas.

Managing the uplands and xeroriparian areas to meet desired resource conditions and Arizona Standards for Rangeland Health and Guidelines for Grazing Administration would increase the percent cover of desired vegetation species, and improve vegetation diversity and structure. Improving areas of allotments that are not meeting rangeland health standards would improve vegetation diversity, riparian functioning condition, and the ecological health of vegetation communities. Improving vegetation health could reduce the potential for establishment of noxious weeds and invasive species, also improving the ecological health of desert grasslands and scrublands in areas not meeting rangeland health standards.

Land acquisitions that result in large contiguous blocks of public land could improve BLM's ability to manage vegetation and other resources. This could improve vegetation diversity and the ecological health of vegetation communities and increase riparian functioning conditions by improving management of areas to limit activities that could affect vegetation structure, density and species composition in these areas. This could help maintain or improve special status species habitat and could increase the protection of Nichol Turk's head cactus habitat.

Under all alternatives, impacts on vegetation and xeroriparian/riparian resources are not anticipated as a result of implementing management actions for air quality and paleontological resources. Under all alternatives, there would be no impacts on vegetation resources from implementation-level decisions for geology.

### **4.3.4.2 Alternative A (No Action)**

Developing an activity plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area, designating approximately 2,720 acres as the Avra Valley Cultural Resource Management Area (CRMA), and promoting the maximum utilization of existing right-of-way routes, including joint use whenever possible, could restrict surface-disturbing activities. Managing approximately 41,470 acres (32 percent of public lands in the IFNM) as the Desert Bighorn Sheep Management Area, which closes 800 acres to motorized vehicles, and managing 2,240 acres of public land to protect Nichol Turk's head cactus habitat, also could reduce surface disturbance.

Custodial management of recreation use, allowing camping except within ¼ mile of a natural water hole containing water, or a man-made watering facility containing water (which could both restrict access to water sources by livestock and wildlife), and allowing cross-county equestrian use would result in localized surface disturbance. This could increase opportunities for establishment of noxious weeds and invasive species in these areas. The surface disturbance also could potentially contribute to disturbance to vegetative objects of the monument (including drought-adapted vegetation and ironwood trees) on a very small and localized scale.

Continuing to allow recreational shooting within the IFNM may result in vegetation being damaged by bullets that miss the target, by targets propped against vegetation, or by persons who use vegetation as a target even though shooting natural objects and vegetation is a violation of 43 CFR 8365.1-5(a) (1) and (2). To the extent that bullets strike saguaro, ironwood, palo verde, or vegetation associated with ancient legume forests and ironwood-bursage habitat, there could be minor and localized disturbances to vegetative objects of the monument.

Limiting OHV use to existing routes on 127,580 acres (99 percent) of public lands in the IFNM, and closing 820 acres (less than 1 percent) of public lands in the IFNM to motorized vehicles use could help retain existing vegetation conditions and reduce the potential for establishment of noxious weeds and invasive species. Closing the Special Management Area (20 acres) to motorized vehicles and issuing rights-of-way to maximize use of existing routes could reduce the potential for establishment of noxious weeds and invasive species.

Managing 128,400 acres to meet VRM Class III objectives (Table 4-2) and 8,240 acres (6 percent of the public lands in the IFNM) for utility and right-of-way corridors including 2,480 acres of priority vegetation communities could result in surface disturbance. In addition, managing 160 acres as the Pan Quemado communication site also would result in localized surface disturbance, and also could increase the potential for the establishment of noxious weeds and invasive species. This localized disturbance could result in some disturbance of vegetative objects of the monument.

**Table 4-2: Alternative A–Vegetative Communities Within VRM Class III**

Vegetative Community	VRM Class III	
	Acres	% of Public Lands in the IFNM
Arizona Upland Sonoran Desertscrub	87,550	68
Lower Colorado River Sonoran Desertscrub	29,590	23
Xeroriparian	10,960	9

Managing rangeland improvements to not allow activities that conflict with desert tortoise populations and acquiring lands could improve vegetation resources by decreasing the potential for activities that would decrease vegetation diversity and structure. In addition, developing and implementing an activity plan for Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could improve vegetation diversity and structure in that area by limiting actions that could increase the potential for establishment of noxious weeds and invasive species.

Implementation-level management actions would limit surface disturbance to existing disturbed areas and improve the ecological health of vegetative communities. Limiting motorized vehicle use to 346 miles of existing routes (Table 4-3: and Map 2-17) would help maintain existing vegetation diversity and structure by reducing surface disturbance and the potential for establishment of noxious weeds and invasive species.

**Table 4-3: Alternative A–Miles of Routes Within Each Vegetative Community**

Vegetative Community	Miles
Arizona Upland Sonoran Desertscrub	255
Lower Colorado River Sonoran Desertscrub	66
Xeroriparian	25
Total	346

Providing water sources away from rare plant populations could indirectly improve vegetation diversity by improving livestock or wildlife distribution and forage utilization. Relocating water sources would cause localized surface disturbance and remove vegetation resources; however, it would allow for reclamation of the former sites. In addition, providing additional livestock water sources in the Twin Tanks and Cocoraque Pastures could increase vegetation diversity and structure in localized areas by improving forage utilization and distribution.

## Impacts on Vegetation (cont.)

Implementing an activity plan for the Agua Blanca Ranch Multiple Resource Management Area and the Nichol Turk's head cactus recovery plan, and improving ecological site conditions to a "good" status could reduce surface disturbance, increase the percent cover of desirable vegetation species, and increase vegetation species diversity. In addition, requiring the implementation of mitigation measures for maintenance of established rights-of-way could reduce the effects of surface-disturbing activities. Reducing the effects of surface-disturbing activities could help retain existing vegetation resources and reduce the potential for noxious weed and invasive species establishment.

Developing communication facilities at designated sites would remove vegetation in localized areas and could increase the potential for establishment of noxious weeds and invasive species. Designating 346 miles of routes as motorized could result in localized surface disturbance from route proliferation.

Based on the impacts described above for Alternative A, the disturbance to objects of the monument (including drought-adapted vegetation and ironwood trees) resulting from management actions would range from undetectable to measurable at a broad scale (i.e., 2,480 acres of priority vegetation type within utility corridors would be subject to potential disturbance and recreational opportunities could result in some vegetative disturbance). In contrast, management actions that reduce surface disturbance (such as designating approximately 2,720 acres as the Avra Valley CRMA and promoting the maximum utilization of existing right-of-way routes) would help to protect these objects of the monument. Overall, the anticipated impacts would not reduce the viability or result in the loss of a population of these species or the natural range of variation in vegetative communities. However, the extent and dispersed nature of impacts on vegetative objects of the monument would require the implementation of mitigation measures for BLM's management of the IFNM to comply with the Proclamation. The implementation of mitigation measures, including avoidance of specific vegetative resources (e.g., saguaros, ironwood, palo verde and other drought-adapted vegetation) and revegetation of disturbed areas, would reduce impacts on those objects to the extent that they would be measurable only in small localized areas, and vegetative communities would be conserved for future generations. BLM's implementation of mitigation measures would provide for "protection of the monument objects" as defined in Section 1.3.1.

### **4.3.4.3 Alternative B**

Impacts from management actions that restrict surface disturbance would be similar to those under Alternative A, except additional restrictions would apply. Managing 60,000 acres as Semi-Primitive Non-Motorized and managing 29,420 acres as Primitive (Table 4-4), and prohibiting ground-disturbing activities on 63,180 acres (49 percent of public lands in the IFNM) with sensitive or fragile soils could reduce surface disturbance, compared with Alternative A. In addition, prohibiting surface disturbance on the 14,340 acres of priority vegetation communities with sensitive or fragile soils would help retain existing conditions, compared with Alternative A. Increasing the motorized vehicle closure areas to 38,040 acres would further increase restrictions on surface-disturbing activities, compared with Alternative A. Each of these actions that minimize ground disturbance would better protect the vegetative objects of the monument compared with Alternative A.

**Table 4-4: Alternative B–Vegetative Communities Within Each Recreation Management Zone**

Vegetative Community	Roaded <sup>1</sup>		Semi-Primitive Motorized		Semi-Primitive Non-Motorized <sup>2</sup>		Primitive	
	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM
Arizona Upland Sonoran Desertscrub	11,950	9	11,170	9	32,640	25	25,490	20
Lower Colorado River Sonoran Desertscrub	3,950	3	2,080	1	20,780	17	2,780	2
Xeroriparian	1,320	1	1,290	1	6,570	5	1,140	1

NOTES: <sup>1</sup> Roaded includes categories Roaded Natural, Rural Industrial, Rural Residential, and Rural Agricultural.

<sup>2</sup> Semi-Primitive Non-Motorized includes Ragged Top.

Managing 36,990 acres to protect wilderness characteristics and 125,110 acres as VRM Class I and II (Table 4-5), could reduce the effects to vegetation by emphasizing natural landscapes compared, with Alternative A (where 128,400 acres would be VRM Class III). However, this also could restrict the type or extent of restoration projects in these areas, compared with Alternative A.

Managing 3,290 acres to meet VRM Class III objectives decreases surface disturbance compared to Alternative A. This could decrease opportunities for noxious weeds and invasive species establishment. Managing 17,610 acres as Roaded Natural and 14,540 acres as Semi-Primitive Motorized would emphasize public recreation use. This use could cause localized surface disturbance in and near recreation use areas and access roads, removing vegetation resources and increasing the potential in these areas for noxious weeds and invasive species establishment.

**Table 4-5: Alternative B–Vegetative Communities Within Each VRM Class**

Vegetative Community	VRM Class					
	I		II		III	
	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM
Arizona Upland Sonoran Desertscrub	32,820	26	53,290	41	1,730	1
Lower Colorado River Sonoran Desertscrub	2,790	2	25,560	20	1,250	1
Xeroriparian	1,380	1	9,270	7	310	<1

Managing 38,040 acres (Map 2-18) as closed to OHV use and limiting use on 90,360 acres to designated routes would help retain designated vegetation diversity and structure, and would promote protection of the vegetative objects of the monument. Closing areas and limiting use to existing routes could reduce the spread of noxious weeds and invasive species in areas adjacent to routes.

Restricting camping to designated areas could result in localized surface disturbance, but could reduce surface disturbance overall. Localized surface disturbance would occur as a result of allowing large-group camping at two designated sites, public and equestrian access (see Map 2-18), and managing 2 acres as the Pan Quemado communication site and 3 acres as the Confidence Peak site. However, compared to Alternative A, localized surface disturbance and associated damage to vegetation would be reduced.

## Impacts on Vegetation (cont.)

Prohibiting recreational shooting within the monument would reduce the risk of bullet strike damage to vegetation and could reduce trampling of vegetation in localized areas. This could help retain a greater amount of existing vegetation condition compared to Alternative A and as a result better protect the vegetative objects of the monument compared to Alternative A.

Management actions for soil and water, vegetation, livestock grazing, and lands and realty could retain a greater amount of vegetation than Alternative A by minimizing grazing disturbance and maintaining existing surface water and groundwater resources. In addition, prohibiting the removal of living or dead native plant material would help retain existing vegetation and seed sources. Removing livestock grazing as leases expire could move vegetation communities toward desired conditions. Managing the entire IFNM as a right-of-way exclusion area and not establishing utility corridors would also reduce surface disturbance and help maintain existing vegetation diversity, structure, and health of the vegetative objects of the monument.

Management actions for wildlife, vegetation, and lands and realty could improve the ecological health of vegetative communities, compared with Alternative A. Managing priority wildlife and special status species and their habitats, including 29,820 acres as the Desert Bighorn Sheep WHA and 2,240 acres for Nichol Turk's head cactus, could indirectly move vegetation communities toward desired conditions by improving the ecological health of vegetative communities. Closing desert bighorn lambing areas to human entry could reduce surface disturbance during a portion of the vegetative growing season. In addition, pursuing an integrated weed management approach and priority control of noxious weeds and invasive species would improve vegetation diversity and structure by removing competition for limited resources. Acquiring lands that improve access for administrative purposes or where development and/or disturbance is foreseeable and inholdings within VHAs could improve BLM's ability to manage vegetation resources. This could improve vegetation diversity and structure and reduce opportunities for establishment of noxious weeds and invasive species, compared with Alternative A.

Using native plants in active restoration and utilizing a variety of reclamation methods would improve vegetation diversity, structure, and composition over the long term. However, in areas where native plant species growth is slow, passive restoration could require a greater period of time to achieve restoration goals, which could increase the potential for establishment of noxious weeds and invasive species. Developing a land restoration plan would facilitate restoring disturbed areas within IFNM, improve vegetation diversity and structure, and reduce opportunities for establishment of noxious weeds and invasive species over a larger area than under Alternative A.

Implementation management actions for soil resources would be the same as those under Alternative A, except implementing specific erosion control measures could increase vegetation cover over a greater area. Impacts from route designations would be similar to those under Alternative A, except Alternative B would designate 63 miles of existing travel routes for motorized access/use. In addition, identifying 266 miles for non-motorized use and identifying 17 miles of existing routes for reclamation could decrease surface disturbance to vegetation, compared with Alternative A (Table 4-6), and thus better protect the vegetative objects of the monument compared with Alternative A. In addition, developing a transportation and travel plan also could help retain existing vegetation resources by reducing the amount of surface disturbance and the potential for establishment of noxious weeds and invasive species, compared with Alternative A.

**Table 4-6: Alternative B–Miles of Routes Within Vegetative Communities**

Vegetative Community	Miles of Routes		
	Motorized	Non-Motorized	Reclamation
Arizona Upland Sonoran Desertscrub	46	202	8
Lower Colorado River Sonoran Desertscrub	11	47	9
Xeroriparian	6	17	1
Total	63	266	17

Not developing an activity level plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could result in longer time periods for realized improvements to vegetation diversity and structure in a local area. In the short term, this could increase opportunities for establishment of noxious weeds and invasive species, compared with Alternative A.

Based on the impacts described above for Alternative B, the disturbance to objects of the monument (including drought-adapted vegetation and ironwood trees) resulting from management actions would be undetectable or measurable only in localized areas and would not reduce the viability or result in the loss of a population of object indicators, a vegetative community, or the natural range of variation in vegetation communities. Many of the management actions would reduce surface disturbance compared to existing conditions and consequently further protect the vegetative objects of the monument. The localized nature of impacts on vegetative objects of the monument would be consistent with “protection of the monument objects” as defined in Section 1.3.1.

**4.3.4.4 Alternative C**

Impacts from management actions that restrict surface disturbance and minimize damage to vegetation would be the same as those under Alternative B. Decreasing the area managed as Semi-Primitive Non-Motorized to 57,450 acres (49 percent of public lands in the IFNM) (see Table 4-7), and managing 3,420 acres as VRM Class III and 80 acres as VRM Class IV (Table 4-8) would decrease surface-disturbance restrictions, compared with Alternative A, and reduce restrictions, compared with Alternative B. These adjustments in the amount of surface disturbance would result in similar adjustments to the potential to affect the vegetative objects of the monument.

**Table 4-7: Alternative C–Vegetative Communities Within Each Recreation Management Zone**

Vegetative Community	Roaded <sup>1</sup>		Semi Primitive Motorized		Semi Primitive Non-Motorized <sup>2</sup>		Primitive	
	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM
Arizona Upland Sonoran Desertscrub	12,700	10	23,290	17	37,010	29	14,860	12
Lower Colorado River Sonoran Desertscrub	4,360	3	9,320	6	15,890	12	0	0
Xeroriparian	1,890	1	3,580	3	4,550	4	920	1

NOTES: <sup>1</sup> Roaded includes categories Roaded Natural, Rural Industrial, Rural Residential and Rural Agricultural.

<sup>2</sup> Semi-Primitive Non-Motorized includes Ragged Top.

Managing 9,510 acres as Primitive (7 percent of public land in the IFNM) including lands managed to protect wilderness characteristics, would decrease the amount of surface disturbance compared with Alternative A (Table 4-8). However, this would increase the area where surface disturbance could occur,

by 27,480 acres, compared with Alternative B. This could restrict the type or extent of restoration projects, compared with Alternative A and reduces restrictions, compared with Alternative B.

**Table 4-8: Alternative C–Vegetative Communities Within Each VRM Class**

Vegetative Community	VRM Class							
	I		II		III		IV	
	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM
Arizona Upland Sonoran Desertscrub	8,752	7	77,220	60	1,860	1	20	<1
Lower Colorado River Sonoran Desertscrub	0	0	28,300	22	1,250	1	30	<1
Xeroriparian	790	1	9,840	8	310	0	20	<1

Impacts from RMZs would be the same as those under Alternative B, except that 18,380 acres (14 percent of public lands in the IFNM) would be managed as Roaded Natural, 36,230 acres (28 percent of public lands in the IFNM) as Semi-Primitive Motorized, and 57,450 acres (45 percent) as Semi-Primitive Non-Motorized (see Table 4-7). In addition, impacts from OHV management would be the same as Alternative B, except 10,880 acres (8 percent of the public lands in the IFNM) would be closed to OHV travel and travel would be limited to designated routes on 117,520 acres (91 percent of public lands in the IFNM). This could reduce the amount of surface disturbance, compared with Alternative A and increase surface disturbance, compared with Alternative B.

Impacts from managing priority wildlife, special status species habitat, and public access (see Map 2-19) would be the same as those under Alternative B, except allowing camping in VHAs could increase localized surface disturbance. In addition, increasing the number of large-group camping sites to three and allowing the collection of geologic resources as authorized by a permit would increase surface disturbance in localized areas. Alternative C would allow equestrian use in all areas of the IFNM. With repeated use in an area this could result in the proliferation of trails and the degradation of special status species habitat. This would increase localized effects, compared with Alternative B, but decrease effects, compared with Alternative A.

Impacts from surface disturbance associated with utility corridors and rights-of-way would be similar to Alternative A, except reducing the area managed as utility corridors to 241 acres (including 87 acres of priority vegetation habitats), and considering rights-of-way on a case-by-case basis could reduce surface disturbance (Map 2-17). In addition, managing public lands in the IFNM as an avoidance area except for designated corridors could reduce surface disturbance in areas outside designated corridors. This could decrease surface disturbance, compared with Alternative A, and increase effects, compared with Alternative B.

Impacts from management activities to reduce erosion or restore areas would be similar to those under Alternative B. Over the long term, vegetation diversity and structure would improve due to restoration efforts, compared with Alternative A and would be similar to Alternative B. In addition, restricting or requiring mitigation for ground-disturbing activities in areas with sensitive or fragile soils (63,180 acres) would have the same impacts as Alternative B.

Impacts from management actions for vegetation and livestock grazing would be the same as those under Alternative A, except locating range improvements to minimize disturbance, and minimizing livestock

## Impacts on Vegetation (cont.)

impacts on priority plant species and habitats would retain a greater amount of existing vegetation than Alternative A. In addition, retaining livestock grazing on 11 allotments (approximately 128,400 acres) would have the same impact as Alternative A; however, vegetative communities could attain desired conditions more slowly than under Alternative B since BLM-administered lands would be unavailable for livestock grazing as leases expire.

Managing acquired lands as right-of-way avoidance areas, unless in a designated corridor, could reduce the amount of surface disturbance in other areas of the IFNM, compared with Alternative A. Providing additional wildlife and livestock water sources could improve vegetation diversity and structure in localized areas, compared with Alternatives A and B. However, modifying current livestock waters would result in short-term localized areas of surface disturbance.

Implementing management actions to designate routes would have the same impacts as Alternative B, except designating 124 miles as motorized (including 37 miles in priority vegetation habitats) could decrease surface disturbance (Table 4-9). Designating 205 miles of routes as non-motorized and reclamation on 17 miles also could reduce opportunities for establishment of noxious weeds and invasive species, compared with 346 miles under Alternative A.

**Table 4-9: Alternative C—Miles of Routes Within Vegetative Communities**

Vegetative Community	Miles of Routes		
	Motorized	Non-Motorized	Reclamation
Arizona Upland Sonoran Desertscrub	91	159	8
Lower Colorado River Sonoran Desertscrub	25	32	8
Xeroriparian	9	14	1
Total	125	205	17

Based on the impacts described above for Alternative C, the disturbance to objects of the monument (including drought-adapted vegetation and ironwood trees) resulting from management actions would be undetectable or measurable only in localized areas and would not reduce the viability or result in the loss of a population of object indicators, a vegetative community, or the natural range of variation in vegetation communities. The localized nature of impacts on vegetative objects of the monument would be greater than those described under Alternative B, less than those described under Alternative A, and consistent with “protection of the monument objects” as defined in Section 1.3.1.

### **4.3.4.5 Alternative D**

Impacts from management actions that restrict surface disturbance would be the same as those under Alternative C, except using non-native plants in areas to protect resources could reduce vegetation diversity in the short term, compared with Alternatives B and C. However, over the long term, vegetation diversity and structure would improve due to restoration efforts, compared with Alternative A, and would be similar to Alternatives B and C. Decreasing the area managed as Semi-Primitive Non-Motorized to 43,770 acres (34 percent of public lands in the IFNM) the increasing the area managed as Semi-Primitive Motorized to 59,020 (46 percent of public lands in the IFNM) would decrease surface disturbance restrictions, compared with Alternative C (Table 4-10). Managing 122,580 acres (95 percent of public lands in the IFNM) to meet VRM Class II objectives (Table 4-11) reduces the areas where surface disturbance restrictions apply, compared with Alternatives B and C, and increases surface disturbance restrictions, compared with Alternative A. In addition, this could restrict the location or extent of restoration projects in these areas, compared with Alternative A, and would reduce restrictions compared with Alternative B or C. As noted in the discussions of Alternatives A, B, and C, increases in surface

disturbance increase the potential for disturbance to the vegetative objects of the monument and actions that help to minimize surface disturbance help to protect the vegetative objects of the monument.

**Table 4-10: Alternative D–Vegetative Communities Within Each Recreation Management Zone**

Vegetative Community	Roaded <sup>1</sup>		Semi-Primitive Motorized		Semi-Primitive Non-Motorized <sup>2</sup>		Primitive	
	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM
Arizona Upland Sonoran Desertscrub	12,840	10	40,350	31	34,670	27	0	0
Lower Colorado River Sonoran Desertscrub	4,370	3	12,760	10	12,450	10	0	0
Xeroriparian	1,900	1	5,900	5	3,150	3	0	0

NOTES: <sup>1</sup> Roaded includes categories Roaded Natural, Rural Industrial, Rural Residential, and Rural Agricultural.

<sup>2</sup> Semi-Primitive Non-Motorized includes Ragged Top.

**Table 4-11: Alternative D–Vegetative Communities Within Each VRM Class**

Vegetative Community	VRM Class					
	II		III		IV	
	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM	Acres	% of Public Lands in the IFNM
Arizona Upland Sonoran Desertscrub	84,310	66	2,740	2	800	<1
Lower Colorado River Sonoran Desertscrub	27,800	22	1,160	1	640	<1
Xeroriparian	10,470	8	320	0	160	<1

Impacts from OHV management actions would be the same as those Alternative A, except managing 128,400 acres as limited to designated routes for OHV use could reduce the amount of surface disturbance, compared with Alternative A, and would increase the areas where effects would occur, compared with Alternatives B and C.

Impacts from management actions that cause surface disturbance would be the same as those under Alternative B, except managing 4,220 acres as VRM Class III, and 1,600 acres as VRM Class IV, and 43,770 acres (34 percent) as Semi-Primitive Non-Motorized would decrease the areas with restrictions, compared with Alternative A, and increases the area where surface disturbance could occur, compared with Alternatives B and C.

Managing 2,660 acres as designated for utility corridors could result in the disturbance or removal of vegetation, which could increase the potential for establishment of noxious weeds and invasive species by disturbing surfaces and the potential for damage to the vegetative objects of the monument as compared to Alternative C. Managing Corridors 1 and 3 to allow for additional above ground major rights-of way also could increase surface disturbance (see Map 2-18) compared to Alternatives B and C. However, this could retain a greater amount of existing vegetation, compared with Alternative A.

## Impacts on Vegetation (cont.)

Impacts from management of recreation and public access would generally be the same as those under Alternative B, although Alternative D would allow large-group camping at four designated sites (versus two under Alternative B and three under Alternative C). The provision of large campsites would have a direct effect of increasing, localized surface disturbance in those areas, but in a larger context it may have an indirect effect in reducing the amount of surface disturbance that would otherwise be caused by large groups using backcountry resources for camping. This would have the added beneficial effect of reducing the potential of establishing noxious weeds and invasive species that would or could be spread into backcountry areas by the larger groups as well as the potential for disturbance to the vegetative objects of the monument from recreational activities.

In addition to the difference in the number of designated camp sites, Alternative D would allow the collection of dead and downed wood by persons camping within IFNM; this use could affect the replenishment of soil nutrients for new plant growth and reduce the availability of dead wood that may be used as habitat for various species of wildlife.

Alternative D also differs from Alternative B in that recreational shooting on public lands would be allowed in designated shooting areas located at Avra Hill and Cerrito Represo. While prohibiting dispersed recreational shooting would minimize the potential for vegetation damage throughout much of IFNM, long-term, significant vegetation damage in the two designated shooting areas would be expected from the concentrated shooting activity. As documented in the photographs included in Appendix I, historical recreational shooting in these area has already resulted in vegetative damage associated with bullets that miss the target, targets propped against vegetation, and vegetation being used as a target despite the fact that shooting at natural objects and vegetation is a violation of the rules of conduct on public land codified in 43 CFR 8365.1-5(a) (1) and (2). While the designated shooting areas would be limited to approximately 629 acres, damage from errant bullets hitting vegetation beyond the shooting area boundaries would be likely. This would increase disturbance to vegetation resources compared to Alternatives B and C. However, this could increase the localized loss of vegetation resources compared to Alternative A. Similarly, to the extent that saguaro, ironwood, palo verde, or vegetation associated with ancient legume forests and ironwood-bursage habitat occur within or near the designate shooting areas, there would be potential for localized damage to these vegetative objects of the monument.

Increasing the number by allowing up to two additional facilities at the Pan Quemado and Confidence Peak communication sites could increase the amount of surface disturbance, compared with Alternative B and C. This would decrease the amount of surface disturbance compared with Alternative A.

Impacts from implementation management actions would be similar to Alternative C, except that 226 miles of routes would be managed as motorized (Table 4-12), including 55 miles in sensitive vegetation habitats. This would decrease the amount of surface disturbance from routes compared to 346 miles under Alternative A, and increase surface disturbance, compared with 63 miles under Alternative B and 124 miles under Alternative C. In addition, reclamation of 4 miles of routes would be greater than Alternative A, and less than of the 17 miles under Alternatives B and C.

**Table 4-12: Alternative D–Miles of Routes Within Vegetative Communities**

Vegetative Community	Miles of Routes		
	Motorized	Non-Motorized	Reclamation
Arizona Upland Sonoran Desertscrub	174	80	3
Lower Colorado River Sonoran Desertscrub	35	29	<1
Xeroriparian	17	7	<1
Total	226	116	4

Based on the impacts described above for Alternative D, the disturbance to objects of the monument (including drought-adapted vegetation and ironwood trees) resulting from management actions would range from undetectable to measurable at a localized scale (including almost 630 acres where recreational target shooting would be allowed) and would not reduce the viability or result in the loss of a population of object indicators, a vegetative community, or the natural range of variation in vegetation communities. The localized nature of impacts on vegetative objects of the monument would be greater than those described under Alternatives B or C, but consistent with “protection of the monument objects” as defined in Section 1.3.1.

#### **4.3.5 Impacts on Wildlife and Wildlife Habitat**

This section presents potential impacts on wildlife and wildlife habitat from management actions. Impacts on wildlife and wildlife habitat would occur from the following: (1) disturbance and/or loss of plant communities, food supplies, cover, breeding sites, and other habitat components necessary for population maintenance used by any species to a degree considered vital to the population, and (2) interference with a species movement patterns that decreases a species’ ability to breed successfully, to a degree considered vital to the population.

Surface disturbance and disruptive activities cause habitat fragmentation or loss and wildlife displacement depending on the type, amount, and location of activity. Surface disturbance can alter vegetative composition and cover resulting in habitat fragmentation and changes to the type and quality of wildlife habitat. Habitat fragmentation can reduce usable ranges; disrupt movements between crucial habitats (e.g., crucial breeding ranges), transitional areas, and breeding areas; and isolate populations and species, which lead to decreased genetic diversity and increased potential for extirpation of localized populations or even extinction. Further, habitat fragmentation changes microclimates by altering temperature and moisture regimes, changes nutrient and energy flows, and increases opportunities for predation and exploitation by humans. Disturbed areas could change wildlife species composition, favoring generalist native species and some exotic and naturalized exotic wildlife species.

Displacement from surface disturbance or disruptive activities moves animals into less desirable habitat and could increase competition for available resources with other species and uses. Surface disturbance could result in mortality to individuals of a species from collision with construction equipment and entombment in underground burrows. Noise disturbance during surface disturbance activities could temporarily cause wildlife to avoid the area during important life-history cycles, such as breeding. Indirect impacts on wildlife occur from displacement and physiological stress with human presence and activity during sensitive life stages. Disturbance of wildlife incurs a physiological cost either through excitement (preparation for exertion) or locomotion. A fleeing or displaced animal incurs additional costs through loss of food intake and potential displacement to poorer (lower) quality habitat. Chronic or continuous disturbance can result in reduced animal fitness and reproductive potential.

Invasive species also have the ability to displace native plant and animal species, disrupt nutrient and fire cycles, and alter the character of the community by enhancing additional invasions. The integrity of wildlife populations and habitats is affected by invasion through resource competition, predation, hybridization, habitat alteration, and through the introduction of diseases and toxins.

Direct impacts on wildlife and wildlife habitat from fire or fire management activities typically result from mortality or displacement of individuals, disturbance from reduced air or water quality from smoke and ash, and alteration of immediate post-fire or post-treatment environments through loss of or changes to key habitat components. These direct impacts may affect wildlife populations or habitats for several years after a fire or a vegetation treatment activity, depending on the ability of wildlife species to recolonize burned or altered habitats. Indirect impacts on fish and wildlife resources from fire or fire

## Impacts on Wildlife and Wildlife Habitat (cont.)

management activities typically result from influences of post-fire succession, recovery, or rehabilitation of the habitat. These impacts tend to be long term, depending on the severity of the habitat alteration, and can change species assemblages (relative abundances or species composition), species behaviors, or overall population trends, benefiting some species and adversely affecting others.

Fuel wood collection can reduce the abundance of large-diameter snags and dead-and-down logs. Large-diameter snags function as important nesting structures for cavity-nesting birds and as roost sites for bat species. Dead-and-down logs provide important wildlife habitat and ecosystem functions. Roads created for access to fuel wood can further fragment woodlands and adversely affect important habitats, such as xeroriparian and riparian habitat, by transporting non-native organisms and altering wildlife habitat structure.

It is difficult to separate individual causal factors that influence habitats or wildlife species. Multiple factors are closely linked in cause-and-effect relationships across spatial and temporal scales. Adverse effects from multiple ecosystem stressors can have cumulative effects that are much more significant than the additive effects alone, with one or more stressors predisposing wildlife and habitats to additional stressors.

The abundance of individuals within a wildlife population, the distribution of wildlife species within a community, and the ecological condition of wildlife habitats would be affected under all alternatives. However, implementation of any alternative would not result in the complete elimination of a wildlife species, wildlife community, or wildlife habitat from IFNM. Impacts at a local scale would generally be greater than those for the entire IFNM.

Assumptions for analysis include:

- The loss of any wildlife habitat would cause a reduction in wildlife populations.
- If monitoring reveals unsuccessful mitigation, immediate measures to prevent further impacts would be implemented as appropriate to the species affected.
- Disturbance of any component of a species habitat could be detrimental in the short term, with the degree of detriment dependent on the importance of the habitat component to the maintenance of the population.
- Impacts to non-native wildlife species are not considered unless they provide an important component for native species that would otherwise not be adequately available.
- Sufficient habitat exists to maintain current AGFD objectives.
- Disruptive activities would displace wildlife; but some wildlife adaptation would occur.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources and the project area, review of existing literature, and information provided by other agencies. Effects are quantified where possible. Spatial analyses were conducted using GIS data and analyses. In the absence of quantitative data, best professional judgment was used. Impacts are described using ranges of potential impacts or in qualitative terms, if appropriate. Analyses of impacts on wildlife and wildlife habitat would be based on achieving the wildlife and wildlife habitat objectives of managing resources to maintain or improve habitat quality and long-term viability of wildlife populations.

#### **4.3.5.1 Impacts Common to All Alternatives**

Because the IFNM is withdrawn from all forms of mineral entry and only valid mining claims existing at the time of the Proclamation and continuously maintained since that time may be developed, surface disturbance would be substantially reduced which would help maintain wildlife habitat conditions by retaining existing vegetation, and could reduce erosion rates. Restricting surface disturbance would also reduce opportunities for establishment of noxious weeds and invasive species.

As of 2004, 4,590 acres in the IFNM were encumbered by mining claims. A majority of these claims buffer the Silver Bell Mine complex (found to the north, northeast and east of the mine situated in T12S R8E). Before the claims located in the IFNM can be developed they must undergo a determination to establish claim validity. While it is unlikely that the entire 4,590 acres would be disturbed, surface disturbance from mining activities in areas encumbered by mining claims could result in habitat fragmentation and loss through associated land clearing, road building, and disturbance from traffic, hauling, and maintenance activities, if valid. This could reduce the quality of wildlife habitat and wildlife populations. Mitigation would reduce the loss of wildlife habitat and individuals.

Soil and water resource alternatives that maintain and improve soil cover and productivity would maintain and improve wildlife habitat by maintaining existing vegetation structure and composition, or improving establishment or reestablishment of vegetative resources utilized by wildlife for food supplies, cover, breeding sites, and other habitat components necessary for population maintenance.

Fence lines retained or added to limit livestock grazing areas or to manage recreational use patterns could affect individual wildlife species that could become entangled in the fences. Fences also fragment wildlife habitat and may interfere with wildlife movement corridors.

Managing fire and fuels for full fire suppression and implementing programs to reduce ignitions, would improve the ecological health of wildlife habitats by maintaining native vegetation diversity, and would protect wildlife habitats from wildfires that alter native vegetation communities. Fuel treatments to maintain non-hazardous fuel levels using manual, biological, mechanical, or chemical treatments would result in the short-term loss of vegetation depending on the treatment applied. Some losses of vegetation would be of undesirable plant species including exotic and invasive species, which are treated to reintroduce or promote desirable plant species. This would improve wildlife habitat in treated areas.

OHV travel and recreation activities can alter characteristics of soil, vegetation, and xeroriparian or riparian systems. By directly altering these components of wildlife habitat from surface disturbance or disruption, recreation and OHV recreation use can reduce wildlife habitat quality. The significance and magnitude of recreation and OHV recreation use are related to the extensiveness, intensity, and timing of the activity.

During the evaluation of existing routes to assess whether they should be retained or closed, wildlife habitat was considered under several route evaluation criteria (see criteria listed in Appendix G under "Route Evaluation Criteria"). Because little information exists on the specific effects of roads on wildlife and wildlife habitat in the Sonoran Desert, the BLM Tucson Field Office has partnered with AGFD to conduct a study to determine the effects of road density and intensity of road traffic on Sonoran Desert wildlife in various ecological settings. Field study sites will be located in the IFNM and the White Canyon Resource Conservation Area. The information from this study will be used by BLM to enhance management of the Sonoran Desert through better travel management planning, rangeland health evaluations, wildlife habitat management plans, and other relevant planning efforts.

#### **4.3.5.2 Alternative A (No Action)**

Managing public lands within the IFNM to meet VRM Class III objectives could result in soil erosion and reduced vegetation cover (Map 2-6) from surface disturbance. In addition, 1-mile-wide utility corridors within the Silver Bell RCA (Map 2-13), promotion of maximum utilization of existing right-of-way routes, and designation of the 160 acre Pan Quemado communication site within the Silver Bell RCA would all contribute to increased surface disturbance. Short-term construction activities in utility corridors impact wildlife and wildlife habitat from surface disturbance, and disruption to and the potential mortality of wildlife individuals. Long-term impacts to wildlife and wildlife habitat could include increased edge effect, reduced habitat connectivity, and disruption of wildlife movement corridors.

Custodial management of recreation and allowing recreational shooting within the IFNM outside developed areas would also increase surface disturbance and disruptive impacts on wildlife, including objects of the monument such as habitat for threatened, endangered, and rare wildlife species. Displacement from surface disturbance or disruptive recreational activities would move wildlife into less desirable habitat and increase competition for available resources with other species and uses. Allowing dispersed camping throughout the entire IFNM also could increase surface disturbance and disruptive impacts to wildlife in localized areas. The removal and/or use of living or dead and downed native plant material could reduce food supplies, cover, breeding sites, cavity holes, and other habitat components necessary for population maintenance in localized areas.

The impact of livestock grazing on wildlife is largely dependent on the grazing management practices used. Grazing management variables that affect wildlife habitat include stocking rates, stocking density, the age and physiological condition of cattle, grazing season, forage selection, and cattle distribution. In addition, factors such as range condition, soil type, temperature, and precipitation also greatly influence the relationships between grazing and habitat quality for rangeland wildlife. Managing livestock grazing allotments to meet the Standards for Rangeland Health (BLM 1997) would enhance wildlife habitat by increasing the amount of desirable vegetation cover, structure, and wildlife species diversity.

Managing 41,470 acres (38 percent of public lands in the IFNM) as the Desert Bighorn Sheep WHA would prohibit surface occupancy for oil/gas on 800 acres and close 800 acres to motorized vehicles on Ragged Top (Map 2-1), which would help to protect desert bighorn sheep. Approximately 3,340 acres managed as the Waterman ACEC (including 2,240 acres of public land) to protect Nichol Turk's head cactus habitat (an object of the monument) would result in prohibition of land use authorizations, except along existing roads, acquisition of 1,140 acres of non-Federal land, and implement the 1986 Habitat Management Plan (HMP) (Map 2-3). Together, these actions would limit or prohibit surface disturbance, maintain or improve wildlife habitat conditions, and contribute to protection of the objects of the monument.

Retention of public lands, acquisition of approximately 40,110 acres of State and private land, and acquisition of non-Federal mineral estates in the Silver Bell RCA would reduce surface disturbance, bring additional acres under BLM management, and reduce impacts to wildlife and wildlife habitat from mining activities. Furthermore, limiting vehicular travel on public land to existing roads and trails would reduce impacts on wildlife and wildlife habitat by reducing surface disturbance and disruption to areas adjacent to routes.

Allowing only those new range improvements for livestock in desert tortoise Category I and II habitat areas (approximately 45,420 acres) that would not create conflicts with tortoise populations would help retain existing habitat conditions and could reduce changes in the ecological condition of tortoise habitat.

Implementing activity plans for the Agua Blanca Ranch Multiple Resource Management Area and the Cocoraque Butte-Waterman Mountain Management Area improve watershed condition, increase soil cover, and reduce sediment which would improve wildlife habitat by improving vegetation diversity, density, and structural complexity; improving water quantity and quality; improving food supplies, cover, and breeding sites; and enhancing the function of movement corridors and habitat connectivity. These factors would contribute to maintaining or improving high biodiversity, which is an object of the monument.

Restriction of surface disturbance would occur by implementing (1) the Nichol Turk's head cactus recovery plan to improve ecological site condition to good, (2) conservation measures that reduce the effects of fire management actions on threatened and endangered species, (3) mitigation measures to ensure that maintenance of established rights-of-way does not conflict with the natural resource goals, and (4) issuing land use authorizations (permits, leases, easements, and rights-of-way) only when compatible with the natural and cultural resource goals for the monument. Implementing these actions could help maintain or improve wildlife habitat throughout the IFNM and contribute to the health of biological objects of the monument (including habitat for threatened, endangered, and rare wildlife and vegetative species).

Management actions for livestock grazing would provide additional water sources in the Twin Tanks and Cocoraque Pastures. All additional waters would be constructed to accommodate deer, javelina, and quail. Greater availability of water for wildlife populations could improve habitat conditions and wildlife population health. Improved safety of new waters could reduce mortality of wildlife populations from drowning and improve survivorship of wildlife populations. Modification of fences could improve movement of wildlife species including priority species by eliminating barriers to wildlife movement.

Designating 346 miles of routes for motorized use could disturb surfaces and disrupt wildlife in localized areas. Route proliferation could result in the localized degradation of wildlife habitat, including some habitat for cactus ferruginous pygmy owl, desert bighorn sheep, lesser long-nosed bat, and Sonoran desert tortoise.

Based on the impacts described above for Alternative A, the disturbance to wildlife habitat (including habitat for threatened, endangered, and rare wildlife species) resulting from management actions would be undetectable to measurable at a broad scale (i.e., mile-wide utility corridors). The anticipated impacts would not change the types, nor relative distributions, of wildlife habitats present within the monument. However, the extent of potential impacts on wildlife habitat would require the implementation of mitigation measures for BLM's management of the IFNM to comply with the Proclamation. The implementation of mitigation measures, including avoidance of specific habitats (for threatened, endangered, and rare wildlife species) and restoration or reclamation actions in disturbed areas (e.g., revegetation, if appropriate) would reduce impacts on wildlife habitat to the extent that they would be measurable only in small localized areas and the natural variation in wildlife habitats present within the IFNM would continue to exist. BLM's implementation of mitigation measures would provide for "protection of the monument objects" as defined in Section 1.3.1.

#### **4.3.5.3 Alternative B**

Minimizing surface disturbance during construction, reconstruction, or maintenance of facilities, and developing mitigation plans to restore and stabilize soils in disturbed areas would reduce surface disturbance and disruption. This could reduce mortality of individuals. The Pan Quemado communications site could cause surface disturbance to 2 acres of the Desert Bighorn Sheep WHA, while the Confidence Peak communications site could cause surface disturbance to 3 acres of desert bighorn sheep habitat, thereby having minor and localized effects on an object of the monument. The Pan Quemado and Confidence Peak communications sites would disturb 155 fewer acres under Alternative B.

## Impacts on Wildlife and Wildlife Habitat (cont.)

Not developing an activity-level plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could result in fewer improvements to watershed conditions and soil cover and sediment reductions, compared with Alternative A. This could result in slower improvements to wildlife habitat, including the habitat for threatened, endangered, and rare wildlife species, which is considered to be an object of the monument.

Prohibiting surface water diversions and groundwater pumping that removes water from the monument would maintain wildlife habitat by allowing available surface and groundwater to support existing vegetation structure and composition. In addition, minimizing or restricting disturbance to vegetation and prohibiting the removal of live, dead, or downed native plant material would reduce impacts to wildlife and wildlife habitat, and reduce disturbance to wildlife from surface-disturbing activities. An integrated weed management approach would reduce spread of invasive weeds and help maintain the existing vegetation composition and structure, fire regime, and other habitat components necessary for wildlife population maintenance. Implementation of land restoration strategies could improve wildlife habitat by increasing food supplies; improving cover vegetation; improving vegetation condition in movement corridors; reducing habitat fragmentation and edge effect; and improving habitat connectivity. This would contribute to the maintenance or improvement of the monument's high biodiversity. Use of native plants for all restoration projects would improve wildlife habitat by using wildlife species that are evolutionarily adapted for most advantageous utilization. However, native plants tend to have lower germination rates, decreasing the amount of revegetation occurring. This could result in an increase in erosion and may reduce habitat quality until restoration goals are met. Alternative B for vegetation resources would result in greater improvements to wildlife habitat, compared with Alternative A.

Managing 29,820 acres as the Desert Bighorn Sheep WHA would have the same types of impacts as management of the Silver Bell Desert Bighorn Sheep Management Area would (refer to Map 2-2) except Alternative B is 11,650 fewer acres than Alternative A. This could decrease wildlife habitat quality and desert bighorn sheep populations, compared with Alternative A. However, closing lambing areas within the BLM-administered portions of the WHA to human entry from January 1 through April 30 would reduce human disturbance during lambing season and potentially improve breeding success. In addition, closing the WHA to sheep and goats would reduce the risk of disease transmission from sheep and goats to desert bighorn sheep, and could improve the survivorship of desert bighorn sheep populations. Reintroductions, transplants, and supplement stockings could improve the survivorship of wildlife populations, improve the breeding success of wildlife populations, promote genetic interchange between wildlife populations, and improve genetic diversity within wildlife populations. However, reintroductions, transplants, and supplemental stockings could disrupt natural systems and increase exposure and transmission of wildlife diseases. Prohibiting dogs on public land within the monument would eliminate disturbance from dogs (not including feral dogs) on wildlife. This could improve wildlife habitat and reduce disruptive activities, compared with Alternative A.

Prohibiting land use authorizations except along designated routes, and prohibiting camping on 2,240 acres managed as a VHA for Nichol Turk's head cactus could reduce surface disturbance effects on habitat and minimize the potential for human disturbance of wildlife within the VHA and contribute to protection of the biological objects of the monument. Management actions for Nichol Turk's head cactus could improve habitat quality for wildlife species that share the same ecological range as Nichol Turk's head cactus. Prohibition of land use authorizations except along existing roads could reduce or eliminate impacts such as soil compaction, soil erosion, surface disturbance, and physical damage to Nichol Turk's head cactus. This could increase protection of Nichol Turk's head cactus populations, compared with Alternative A.

Prohibiting land use authorizations except along designated routes, prohibiting camping on BLM-administered lands managed as the Ragged Top Mountain VHA (6,780 acres, see Map 2-4), and prohibiting recreational shooting could improve wildlife habitat by reducing surface disturbance and disruptions that could cause wildlife to move into less desirable habitat. Increasing the area managed as a VHA could increase protection of wildlife habitat and populations, compared with Alternative A.

In addition, managing 125,110 acres as VRM Class I and II could reduce surface disturbance and maintain wildlife habitat by emphasizing natural landscapes, compared to no VRM Class I or Class II designations under Alternative A.

Making all allotments within IFNM unavailable for grazing as leases expire could eliminate livestock grazing on public land within IFNM. However, this could result in additional fencing of the Federal lands within the IFNM as this alternative would not affect grazing leases on State Trust land or grazing on private land; fences could reduce movement of large wildlife species such as bighorn sheep and mule deer, compared with Alternative A. As existing leases expire and are made unavailable to grazing, existing livestock waters would cease to be maintained. Loss of livestock waters would reduce the availability of water for wildlife and could result in degradation of wildlife habitat, altered wildlife movement patterns, increased utilization of remaining wildlife waters, and reduction in wildlife populations; this could result in some degradation of the biological objects of the monument.

Designation of RMZs (Map 2-10) could reduce surface disturbance and impacts on wildlife and wildlife habitat compared to custodial management actions in Alternative A. Managing 60,000 acres as Semi-Primitive Non-Motorized and 14,540 acres as Semi-Primitive Motorized could decrease disruption to wildlife and wildlife habitat, compared with Alternative A, and have fewer effects on the biological objects of the monument. Managing 13,320 acres of bighorn sheep habitat and 26,130 acres of desert tortoise habitat as Primitive RMZ also could decrease surface disturbance and disruption compared with Alternative A (Table 4-13).

**Table 4-13: Alternative B–Desert Tortoise and Desert Bighorn Sheep Habitat Within Each Recreation Management Zone**

<b>Recreation Management Zones</b>	<b>Tortoise Habitat 1</b>	<b>Tortoise Habitat 2</b>	<b>Tortoise Habitat 3</b>	<b>Tortoise Totals</b>	<b>Desert Bighorn Sheep</b>
Primitive (P)	8,700	13,890	3,540	<b>26,130</b>	13,320
Roaded Natural	650	2,580	8,390	<b>11,620</b>	2,990
Semi-Primitive Non-Motorized	690	8,780	16,610	<b>26,080</b>	4,810
Semi-Primitive Motorized	760	5,070	4,100	<b>9,940</b>	3,020

Prohibiting wood campfires within the IFNM could reduce wildfire ignitions. Furthermore, limiting overnight camping to open areas would reduce localized surface disturbance and disruption of wildlife habitat and populations. This could improve wildlife habitat, compared with Alternative A. Limiting areas of camping and group size would reduce impacts on wildlife and wildlife habitat, compared with Alternative A.

Alternative B would allow access into the IFNM from areas of urban interface only via public or community access points to be designated through the travel management planning process. Impacts on wildlife and wildlife habitat from access into the IFNM would depend on the location of access points and the level of recreational activity at an access point. Access points tend to concentrate recreation activity and could result in localized impacts on soils and vegetation, which could reduce available food supply and shelter for wildlife. Equestrian access/staging locations within the WHA could cause local deterioration of wildlife habitat, disturb bighorn sheep and other wildlife, and disturb lambing ranges for

Impacts on Wildlife and Wildlife Habitat (cont.)

desert bighorn sheep and breeding habitat for other wildlife species. In addition, allowing equestrian uses on routes designated as open or closed to motorized vehicles could promote the spread of invasive plant species that could reduce quality of wildlife habitat and change fire regimes. Limiting access to designated areas would reduce impacts on wildlife and wildlife habitat, compared with Alternative A, by reducing surface disturbance and disruption to localized areas.

The entire monument would be designated as an exclusion area for rights-of-way. Furthermore, no utility corridors would occur in the monument, reducing impacts on wildlife and wildlife habitat from surface disturbance and disruption (Map 2-14).

Livestock grazing would be eliminated as leases expire, and livestock waters would cease to be maintained, which would eventually eliminate the potential for livestock to impact special status plant species or to disrupt desert tortoise burrows. However, if stock waters become non-functional, these would eliminate a water source that could be used by special status wildlife species. Both results could have minor effects on the biological objects of the monument.

Impacts from OHV recreation use would be the same as those under Alternative A; however managing 90,360 acres (Map 2-18) as limited to designated routes and 38,040 acres as closed to OHV recreation use could reduce surface disturbance and disruption compared with Alternative A. Alternative B would result in the least impacts to wildlife and wildlife habitat by closing the largest areas of all alternatives to OHV use. Closing 19,730 acres of bighorn sheep habitat and 34,120 acres (Table 4-14) of desert tortoise habitat to OHV use would reduce surface disturbance and disruption, compared with Alternative A, and thus better protect the habitat for threatened, endangered, and rare wildlife species, which is an object of the monument.

**Table 4-14: Alternative B–Desert Tortoise and Desert Bighorn Sheep Habitat Within Each OHV Designation**

<b>OHV Designation</b>	<b>Tortoise Habitat 1</b>	<b>Tortoise Habitat 2</b>	<b>Tortoise Habitat 3</b>	<b>Tortoise Totals</b>	<b>Desert Bighorn Sheep</b>
Closed (to all motor vehicle use year round)	12,720	15,330	6,070	<b>34,120</b>	19,730
Limited (to designated routes)	1,820	15,560	29,280	<b>46,650</b>	10,090
Miles of Routes (that would be designated for motorized use)	8	14	26	<b>48</b>	16

Management of 36,990 acres of the IFNM to protect wilderness characteristics would minimize changes to landscapes and vegetation resources from human uses. This could decrease surface disturbance and help retain existing wildlife habitat quality, compared with Alternative A.

Not developing an activity-level plan for the Cocoraque Butte–Waterman Mountains and the Agua Blanca Multiple Resource Management Areas could result in fewer improvements to watershed conditions, soil cover, and sediment reductions. This could result in slower improvements to wildlife habitat, compared with Alternative A.

Impacts from route designations would be similar to those under Alternative A except, Alternative B would designate 63 miles of existing travel route for motorized access/use, designate 266 miles for non-motorized use, and identify 17 miles of existing routes for reclamation. These actions could decrease the effects to wildlife habitat and objects of the monument, as compared with Alternative A, by reducing long-term surface disturbance and disruption along routes.

Improved safety of wildlife waters would reduce mortality of wildlife populations and improve survivorship of wildlife populations. In addition, construction of new wildlife waters would improve access to water sources for wildlife populations where natural sources of water no longer exist, or where access to natural sources is impaired. However, new wildlife waters could expose wildlife populations to greater rates of predation than exists without the wildlife waters. Construction, modification, or removal of fences could improve movement of wildlife species including priority species by eliminating barriers to wildlife movement. Survey of abandoned mines could provide greater understanding of existing bat populations and could improve adaptive management for wildlife and wildlife habitat. This could improve wildlife habitat, compared with Alternative A, by decreasing hazards for wildlife populations and individuals.

Monitoring and mitigation programs for invasive species, special status species, and visual resources would avoid and minimize impacts on wildlife, wildlife habitat, and the associated objects of the monument. Likewise, avoidance of projects or activities that disturb species and habitat would eliminate impacts on wildlife and wildlife habitat resources. Designation of acquired land as exclusion areas for rights-of-way would eliminate surface disturbance and disruption to wildlife from utility construction and other allowable rights-of-way.

Based on the impacts described above for Alternative B, the disturbance to wildlife habitat (including habitat for threatened, endangered, and rare wildlife species) resulting from management actions would be undetectable to measurable at a local scale and would not change the types, nor relative distributions, of wildlife habitats present within the monument. The localized nature of impacts on wildlife habitat (for threatened, endangered, and rare wildlife species) would be consistent with “protection of the monument objects” as defined in Section 1.3.1.

#### **4.3.5.4 Alternative C**

Impacts on wildlife and wildlife habitat would be the same as those under Alternative B, except designating utility corridors (Map 2-15), allowing new rights-of-way, and exercise of existing rights-of-way would be allowed for access and utilities. This could increase surface disturbance and disruption and direct mortality to wildlife individuals. In addition, the construction of new trail connections and new equestrian trails could increase habitat fragmentation, and increase disruption of wildlife compared to Alternative B in localized areas. Compared with Alternative A, these management actions would reduce surface disturbance and disruption of wildlife, wildlife habitat, and the associated objects of the monument.

Impacts from VRM would be the same as those under Alternative B, except the area managed as VRM Class II would increase to 124,900 acres, while the area managed as VRM Class III would increase to 3,420 acres. Managing 80 acres to meet VRM Class IV objectives could increase surface disturbance. This could improve wildlife habitat, compared with Alternative A, but increase surface disturbance, compared with Alternative B.

Increasing the area managed as Semi-Primitive Motorized to 36,230 acres and decreasing the area managed as Semi-Primitive Non-Motorized to 57,450 acres would be less restrictive than Alternative B and could increase disruption of wildlife and degradation of wildlife habitat. Decreasing the amount of tortoise habitat and bighorn sheep habitat managed as Primitive to 8,990 acres and 6,760 acres, respectively (Table 4-15), could allow an increase in surface-disturbing activities compared with Alternative B.

**Table 4-15: Alternative C–Desert Tortoise and Desert Bighorn Sheep Habitat Within Each Recreation Management Zone**

Recreation Management Zone	Tortoise Habitat 1	Tortoise Habitat 2	Tortoise Habitat 3	Tortoise Totals	Desert Bighorn Sheep
Primitive	6,230	1,130	1,630	<b>8,990</b>	6,760
Roaded Nature	650	2,900	8,970	<b>12,520</b>	2,880
Semi-Primitive Non-Motorized	2,210	17,850	12,400	<b>32,460</b>	7,970
Semi-Primitive Motorized	1,700	8,480	9,830	<b>20,010</b>	6,440

Compared to Alternative B, allowing overnight camping within the Nichol Turk’s head cactus VHA and Ragged Top VHA, and increasing the number of large-group sites to three could increase surface disturbance and disruption to wildlife and objects of the monument (including habitat for threatened, endangered, and rare wildlife species) in localized areas. In addition, allowing campfires would increase the potential for wildfire, which could increase surface disturbance in localized areas. Camping within the VHA could degrade wildlife habitat, disturb bighorn sheep and other wildlife, and disturb lambing ranges for desert bighorn sheep, and breeding habitat for other wildlife species. In addition, Alternative C would allow equestrian use in all areas of the IFNM. With repeated use in an area this could result in the proliferation of trails and the degradation of objects of the monument (special status species habitat) in localized areas. These management actions would increase impacts on wildlife (particularly desert bighorn sheep) compared with Alternative B and reduce impacts, compared with Alternative A.

Alternative C would close 10,880 acres to OHV use, which is less than the 38,040 acres closed under Alternative B, which could increase surface disturbance and impacts on wildlife and wildlife habitat. However, this could decrease impacts on wildlife and wildlife habitat, compared with Alternative A, by reducing surface disturbance. The acres of tortoise habitat and desert bighorn sheep habitat within each OHV designation are shown in Table 4-16.

**Table 4-16: Alternative C–Desert Tortoise and Desert Bighorn Sheep Habitat Within Each OHV Designation**

OHV Designation	Tortoise Habitat 1	Tortoise Habitat 2	Tortoise Habitat 3	Tortoise Totals	Desert Bighorn Sheep
Closed (to all motor vehicle use year round)	6,880	1,600	1,750	<b>10,230</b>	7,650
Limited (to designated routes)	7,660	29,280	33,600	<b>70,540</b>	22,170
Miles of Routes (that would be designated for motorized use)	13	23	50	<b>86</b>	31

Impacts from managing 124,900 acres as VRM Class II and lands managed to protect wilderness characteristics would be the same as those under Alternative B. However, decreasing the area managed to protect wilderness characteristics to 9,510 acres and not managing areas as VRM Class I could increase surface-disturbing activities. This could decrease surface disturbance from human uses, compared with Alternative A.

Implementing vegetation resource decisions would result in impacts similar to those under Alternative B, except that allowing for the consumption of live, dead, or downed plants by livestock would further degrade the resources, and could result in the establishment of unintended species. This could decrease wildlife habitat quality, compared with Alternative B.

Impacts from management of livestock grazing would be the same as those under Alternative A, except locating range improvements to minimize disturbance to wildlife and minimizing livestock impacts on priority plant species and habitats would retain a greater amount of existing vegetation relative to Alternative A. In addition, retaining livestock grazing on 11 allotments would have the same impacts as those under Alternative A; however, vegetative communities could attain desired conditions slower than under Alternative B.

Impacts from implementation-level decisions would be the same as those under Alternative B, except designating 124 miles as routes for motorized vehicle use could increase the scope of effects. Designating 205 miles of routes as non-motorized and identifying 17 miles for reclamation could reduce disruption to wildlife, wildlife habitat, and the associated objects of the monument compared with Alternative A.

Based on the impacts described above for Alternative C, the disturbance to wildlife habitat (including habitat for threatened, endangered, and rare wildlife species) resulting from management actions would be undetectable to measurable at a local scale and would not change the types, nor relative distributions, of wildlife habitats or biodiversity present within the monument. The localized nature of impacts on wildlife habitat (for threatened, endangered, and rare wildlife species) would be consistent with “protection of the monument objects” as defined in Section 1.3.1.

#### **4.3.5.5 Alternative D**

Impacts would be similar to those under Alternative C, with a few exceptions. Using non-intrusive, non-native plants in limited emergency situations where they may be necessary to protect the resources and increasing the area managed as utility corridors to 2,660 acres could increase surface disturbance, compared with Alternatives B and C. This would decrease surface disturbance relative to the 8,240 acres of utility corridors under Alternative A.

Decreasing the area managed as the Ragged Top VHA to approximately 6,500 acres (Map 2-5) and managing 122,580 acres (95 percent of public lands in the IFNM) to meet VRM Class II objectives and 1,600 acres as VRM Class IV (a 1,520-acre increase from Alternative C) would reduce the areas where surface disturbance restrictions apply, compared with Alternative B and C. This would increase surface disturbance restrictions, compared with Alternative A.

Alternative D would established designated recreational shooting areas at Avra Hill and Cerrito Represo, but would prohibit dispersed recreational shooting within IFNM other than permitted or authorized hunting conducted in accordance with AGFD hunting regulations. Prohibiting dispersed recreational target shooting would minimize potential disruptive impacts on wildlife that could cause wildlife to move into less desirable habitat. However, because the localized concentration of shooting activity and human use, wildlife could be displaced from these areas when actively used by shooters or even permanently as a result of the repeated disruptions and potential loss of vegetation or other habitat features such as nests and burrows. Impacts to wildlife could occur in areas beyond the approximately 629 acres of designated shooting sites if there is a loss of vegetation or increased disruption to wildlife.

Impacts from managing areas for RMZs would be the same as those under Alternative B, except increasing areas managed as Roded Natural could increase the potential for disruption of wildlife and degradation of wildlife habitat, compared with Alternative B and C. Table 4-17 shows tortoise and desert bighorn sheep habitat within each RMZ.

**Table 4-17: Alternative D–Desert Tortoise and Desert Bighorn Sheep Habitat Within Each Recreation Management Zone**

Recreation Management Zone	Tortoise Habitat 1	Tortoise Habitat 2	Tortoise Habitat 3	Tortoise Totals	Desert Bighorn Sheep
Primitive	0	0	0	0	0
Roaded Nature	700	2,760	9,180	12,640	2,950
Semi-Primitive Non-Motorized	5,320	14,390	5,640	25,350	10,670
Semi-Primitive Primitive Motorized	4,830	13,180	18,220	36,230	10,530

In addition, increasing the number of large group campsites to four would increase localized surface disturbance, compared with three under Alternative C. This could increase impacts to wildlife, particularly bighorn sheep (an object of the monument), compared with Alternatives B and C, but would reduce impacts, compared with Alternative A.

Alternative D would not close any areas to OHV use. This would result in somewhat greater potential for surface disturbance compared to the current conditions represented by Alternative A, which restricts OHV within the 20-acre Santa Ana de Cuiquiburitac Special Management Area and 800 acres surrounding Ragged Top. Alternative D could increase surface disturbance of and impacts on wildlife, wildlife habitat, and the associated biological objects of the monument (including habitat for threatened, endangered, and rare wildlife species). The acres of tortoise habitat and desert bighorn sheep habitat within each OHV designation are listed in Table 4-18.

**Table 4-18: Alternative D–Desert Tortoise and Desert Bighorn Sheep Habitat Within Each OHV Designation**

OHV Designation	Tortoise Habitat 1	Tortoise Habitat 2	Tortoise Habitat 3	Tortoise Totals	Desert Bighorn Sheep
Closed (to all motor vehicle use year round)	0	0	0	0	0
Limited (to designated routes)	13,426	29,685	35,918	79,029	30,116
Miles of Routes (that would be designated for motorized use)	23	54	80	157	53

Impacts from implementation actions under Alternative D would be similar to those under Alternative C, except 226 miles of routes would be managed as motorized. This would decrease the effects from routes, as compared with Alternative A, and increase the effects, as compared with Alternatives B and C. In addition, the reclamation of 4 miles of routes would be greater than Alternative A, but less than the 17 miles that would be reclaimed under Alternatives B and C.

Based on the impacts described above for Alternative D, the disturbance to wildlife habitat (including habitat for threatened, endangered, and rare wildlife species) resulting from management actions would be undetectable to measurable at a broad scale (i.e., along utility corridors and in the designated recreational shooting area). The anticipated impacts would not change the types, nor relative distributions, of wildlife habitats present within the monument. However, the extent of potential impacts on wildlife habitat would require the implementation of mitigation measures for BLM’s management of the IFNM to comply with the Proclamation. The implementation of mitigation measures, including avoidance of specific habitats and restoration or reclamation actions in disturbed areas (e.g., revegetation, if

appropriate) would reduce impacts on wildlife habitat (for threatened, endangered, and rare wildlife species) to the extent that they would be measurable only in small localized areas and the natural variation in wildlife habitats present within the IFNM would continue to exist. BLM's implementation of mitigation measures would provide for "protection of the monument objects" as defined in Section 1.3.1.

#### **4.3.6 Impacts on Special Status Species**

This section presents potential impacts on special status species including federally listed species as well as BLM sensitive and State listed species, as a result of disturbances from management actions and resulting effects to species or their populations and changes to the condition of their habitats. Federal protections and BLM policy protecting threatened, endangered, and sensitive species were considered as an outlet to reduce the potential for impacts from permitted activities. While data are available on known locations and habitats within the IFNM, the data are neither complete nor comprehensive of all special status species known to occur or potential habitat that may 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.

Management actions that would cause or reduce surface disturbance would tend to have the greatest impacts on special status species. Management of energy and minerals, lands and realty, and recreation could result in surface disturbance and disruptive activities. Management of special status species, wildlife habitat management areas, vegetation habitat management areas and vegetation would have potential to enhance conditions for special status species. Where possible in the plan, impacts on the Nichol Turk's head cactus, lesser long-nosed bat, and Sonoran desert tortoise are specifically noted because these three species have been identified by BLM under all action alternatives for management as priority species.

The analysis is based on the following assumptions:

- Compliance with Section 7 of the Endangered Species Act of 1973 (ESA) would be completed before implementing specific projects resulting from RMP decisions.
- Ground-disturbing activities could lead to modification (positive or negative) 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.
- Changes in air, water, and habitat quality could lead to direct impacts, and could have cumulative impacts on species survival.
- Sufficient habitat exists to maintain current U.S. Fish and Wildlife Service and Arizona Game and Fish Department objectives.

Since special status species have specific habitat requirements, disturbance to the species or their habitat could result in population declines, which could affect survivability of local populations. Specific habitat requirements, population trends in the IFNM, and factors affecting population trends in the IFNM are detailed in Chapter 3 (Section 3.1.6), relevant recovery plans or conservation strategies, and the biological assessment prepared for this RMP under ESA Section 7 requirements. The abundance of individuals within a special status species population, the distribution of special status species within a community, and the ecological condition of special status species habitats could be affected under all alternatives. However, no special status species or habitat would be completely eliminated from the IFNM under any of the alternatives. Impacts at a local scale would generally be greater than those for the entire IFNM.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources and the project area, review of existing literature, and information provided by other agencies. Effects are quantified where possible. Spatial analyses were conducted using GIS data and analyses. In the absence of quantitative data, best professional judgment was used. Impacts are described using ranges of potential impacts or in qualitative terms, if appropriate. Analyses of impacts on special status species are based on achieving the special status species objectives of managing resources to maintain or improve habitat quality and long-term viability of special status species populations.

#### **4.3.6.1 Impacts Common to All Alternatives**

Displacement due to surface disturbance or disruptive activities moves animals into less desirable habitat and increases competition for available resources with other species and uses. Surface disturbance could result in mortality to individuals of a species from collision with construction equipment and entombment in underground burrows. Noise disturbance during surface-disturbing activities could temporarily cause wildlife to avoid the area during important life-history cycles, such as breeding. Indirect impacts on wildlife occur from displacement and physiological stress, with human presence. A fleeing or displaced animal incurs additional costs through loss of food intake and potential displacement to poorer (lower) quality habitat. Chronic or continuous disturbance can result in reduced fitness and reproductive potential, thereby contributing to minor degradation of objects of the monument (including special status species and their habitats).

Surface disturbance and disruptive activities cause habitat fragmentation or loss and wildlife displacement, depending on the type, amount, and location of activity. Habitat fragmentation occurs when a contiguous habitat is divided by surface-disturbing activities, causing a reduction in usable ranges; disruption of movements between crucial habitats; and the isolation of populations and species, which leads to decreased genetic diversity and increased potential for extirpation of localized populations or even extinction. Habitat fragmentation alters vegetative composition and cover and the type and quality of the food base. Further, habitat fragmentation changes microclimates by altering temperature and moisture regimes, changes nutrient and energy flows, and increases opportunities for predation and exploitation by humans. In contrast, management to maintain or improve soil cover and to restrict authorization of land uses to area along roads would help maintain special status species habitat conditions.

Extractive resource uses such as mining development can influence ecosystem function, resilience, and sustainability. Extractive resource uses may result in habitat fragmentation and loss through associated land clearing, road building, and disturbance from traffic, hauling, and maintenance activities. Associated point-source pollution may over time cause heavy-metal and highly acidic water pollution, air pollution, noise, and habitat conversion. Any of these activities and their adverse outcomes may ultimately lead to the reduction of special status species populations or habitat. Mitigation to minimize the loss of habitat could be implemented; however mining could result in the long-term loss of suitable habitat for special status species. Continuation of mining activity on valid mining claims could influence ecosystem function, resilience, and sustainability. Existing mining could lead to habitat destruction and fragmentation, habitat degradation through associated point-source pollution, and reduced population. There are no existing mining claims within the Waterman Mountains ACEC, therefore, mining activities would not impact the Nichol Turk's head cactus in that area.

The impact of livestock grazing on rangeland and terrestrial special status species is largely dependent on the grazing management practices used. Broad generalizations regarding the impact of livestock grazing on special status species are typically incorrect because different grazing practices are unique, and special status species have different habitat requirements. Grazing management variables that affect special status species habitat include stocking rates, stocking density, the age and physiological condition of livestock, grazing season, forage selection, and livestock distribution. In addition, factors such as range condition,

## Impacts on Special Status Species (cont.)

soil type, temperature, and precipitation also greatly influence the relationships between grazing and habitat quality for terrestrial special status species. Grazing plans, therefore, need to be site-specific and based on the habitat needs of the wildlife species of interest. Impacts of grazing practices on special status species include increased competition for limited water, forage, and space, alteration of vegetation composition and structure, impacts on stream hydrology and water quality, and reduced soil permeability and potential to support plants due to soil compaction.

Fuel wood collection can reduce the abundance of snags and dead-and-down logs. Snags function as important nesting structures for cavity-nesting birds. Dead-and-down logs provide important special status species habitat and ecosystem functions. Routes created for access to fuel wood can further fragment and adversely affect important habitats. Fuel wood collection may also introduce disturbances from noise, OHV use, or accidental fire ignition.

OHV travel can cause damage to soils and vegetation and impact wildlife by destroying and fragmenting habitat, causing direct mortality of wildlife or plants, or alter behavior and reproduction through stress and disturbance. OHV travel can imperil local populations of desert tortoises from collisions and cause loss or damage to habitat.

Recreation activities can alter some characteristics of soil, vegetation, or drainage systems. By directly impacting these components, recreation affects an animal's food supply and availability as well as shelter, or living space. In turn, impacts on food and living space influence behavior, survival, reproduction, and distribution. The significance and magnitude of any effect are related to the extent, intensity, and timing of the activity. The vulnerability and rarity of the habitat, and its importance to wildlife, should also be considered. Recreation management alternatives that reduce the size, duration, and timing, and that prohibit recreational activities in sensitive habitats would tend to reduce impacts on special status species.

Invasive species have the ability to displace native plant and animal species, disrupt nutrient and fire cycles, and alter the character of the community by enhancing additional invasions. The integrity of native fauna populations is adversely affected by non-native species through resource competition, predation, hybridization, habitat alteration, and through the introduction of diseases. The increase in groundcover caused by invasive species may, in some cases, provide the dried vegetative fuel to carry wildfire into habitats that normally would not burn because the ground would be bare between shrubs or succulents in these habitats when in a native-state. Invasive plant species usually are unpalatable to the desert tortoise and can out-compete native plants that are necessary dietary components.

Direct impacts on special status species from fire or fire management activities typically result from mortality or displacement of individuals, disturbance from reduced air or water quality from smoke and ash, and alteration of immediate post-fire or post-treatment environments through loss of or changes to key habitat components. These direct impacts may affect wildlife and plant populations including Nichol Turk's head cactus or habitats for several years after a fire or a vegetation treatment activity, depending on the ability of wildlife species to recolonize burned or altered habitats. According to the Biological Opinion on the BLM Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management (USDI, USFWS 2004), the likelihood of wildfire occurring within habitat for Nichol Turk's head cactus is infinitely small (with a return interval of 112 years). However, invasive species such as buffelgrass have encroached upon Nichol Turk's head cactus habitat in the IFNM and currently pose a threat to the cactus through increased likelihood of fire. If efforts to eradicate buffelgrass within Nichol Turks' head cactus habitat are successful, the fire risk would diminish. Indirect impacts on wildlife and vegetation resources from fire or fire management activities typically result from influences of post-fire succession, recovery, or rehabilitation of the habitat. These impacts could be long term, depending on the severity of the habitat alteration, and can change species assemblages (relative abundances or species composition), species behaviors, or overall population trends, benefiting some species and adversely

affecting others. Fuel treatments to maintain non-hazardous fuel levels using manual, biological, mechanical, or chemical treatments would result in the short-term loss of vegetation depending on the treatment applied. Some losses of vegetation would be of undesirable plant species including exotic and invasive species, which are treated to reintroduce or promote desirable plant species. This would improve special status species habitat in treated areas. Mitigation for fire management activities would be implemented under the Arizona Statewide Land Use Plan Amendment for Fire, Fuels and Air Quality Management (2004) (refer also to Appendix E, Conservation Measures).

Roads and utility corridors and the use of routes have the potential to be detrimental to special status species, including those that are considered objects of the monument. These fragment habitats and landscapes, dividing large landscapes into smaller patches and converting interior habitat into edge habitat. In addition, collisions with vehicles can constitute a major source of wildlife and plant mortality. Roads and utility corridors can serve as a means of dispersal for many non-native and invasive plant species. Ground disturbance associated with the construction and maintenance of these facilities provides additional opportunities for establishment of non-native species. The establishment of non-native species can reduce the quality of habitat for special status wildlife and plant species. Areas with many access roads and surface disturbances could disrupt migration corridors that link crucial habitats. Migration routes could be altered or eliminated, changing some traditional wildlife use patterns on a regional level. Utility corridors through desert tortoise habitat can degrade and fragment feeding and denning areas or block migration corridors that connect mountainous, highland areas.

It is difficult to separate individual causal factors that influence habitats or species. Multiple factors are closely linked in cause and effect relationships across spatial and temporal scales. Adverse effects from multiple ecosystem stressors can have cumulative effects that are much more significant than the additive effects alone, with one or more stressors predisposing wildlife, plant species and habitats to additional stressors.

#### **4.3.6.2 Alternative A (No Action)**

Managing all public land, including the Waterman Mountain ACEC, as a VRM Class III area would increase surface disturbance, which could result in increased soil erosion and reduced vegetation cover (Map 2-6). Altered vegetative composition and cover could increase habitat fragmentation and change the type and quality of the food base for special status species or could alter habitat and reduce reproduction of plant species, including those considered to be objects of the monument (like the endangered Nichol Turk's head cactus). Changes to the vegetation community could reduce the forage plants available to lesser long-nosed bat and desert tortoise. Soil erosion could degrade the habitat quality of Nichol Turk's head cactus. In addition, 1-mile-wide utility corridors within the Silver Bell RCA (Map 2-13), promotion of maximum utilization of existing right-of-way routes, and designation of the 160-acre Pan Quemado communication site within the Silver Bell RCA would all contribute to increased surface disturbance. Construction activities in utility corridors could have short-term impacts on wildlife such as disturbance and direct mortality to individuals. Less mobile species, such as the desert tortoise, or non-mobile species, such as plants, could be injured or destroyed by construction equipment or buried in underground burrows. Long-term impacts on special status species could include an increased edge effect, reduced habitat connectivity, and disruption of wildlife movement corridors. Permanent localized changes to the habitat could lead to displacement of desert tortoise. All impacts would be localized and would not lead to a deleterious reduction in population size or available habitat for special status species.

Custodial management of recreation resources also could increase surface disturbance and disruptive impacts on special status species and their habitat. Displacement from surface disturbance or disruptive recreational activities moves animals into less desirable habitat and increases competition for available resources with other species and uses. Furthermore, dispersed vehicle-based and non-motorized camping

## Impacts on Special Status Species (cont.)

allowed throughout BLM-administered lands in the IFNM would also increase localized surface disturbance impacts from vehicle parking and maneuvering and from persons engaging in ancillary activities and result in disruptive impacts to wildlife, particularly the desert tortoise, and plants.

Surface disturbance would be restricted by soil and water resource actions that maintain and improve soil cover and productivity. Improved soil condition would enhance wildlife habitat by maintaining existing vegetation structure and composition, or improving establishment or reestablishment of plant resources utilized by wildlife for food supplies, cover, breeding sites, and other habitat components necessary for population maintenance. These activities would improve habitat conditions for threatened, endangered and rare wildlife and vegetative species, habitat which is considered to be an object of the monument.

Implementing activity plans for the Agua Blanca Ranch Multiple Resource Management Area and the Cocoraque Butte–Waterman Mountain Multiple Resource Management Area would improve watershed condition, increase soil cover, and reduce sediment, which would improve special status species habitat by improving vegetation diversity, density, and structural complexity; improve water quantity and quality; improve food supplies, cover, and breeding sites; and enhance the function of movement corridors and habitat connectivity. This would support high biodiversity.

Managing 41,470 acres of public land (38 percent of public lands in the IFNM) as the Desert Bighorn Sheep Management Area would prohibit surface occupancy for oil/gas on 800 acres, close 800 acres to motorized vehicles on Ragged Top (Map 2-1), and restrict surface disturbance. Managing approximately 2,240 acres of public land as the Waterman Mountains ACEC to protect Nichol Turk’s head cactus habitat would result in prohibiting land use authorizations except along existing roads, acquiring 1,140 acres of non-Federal land, and implementing the 1986 HMP (Map 2-3). Together, these actions would limit or prohibit surface disturbance, maintain or improve special status species habitat conditions, and contribute to protections of the objects of the monument.

Retention of public lands, acquisition of lands in the Waterman Mountains, acquisition of approximately 40,110 acres of State and private land, and acquisition of non-Federal mineral estate in the Silver Bell RCA could reduce surface disturbance and may help protect Nichol Turk’s head cactus, the desert tortoise, and other special status species habitat. These management actions could bring additional acres under BLM management, and reduce impacts on special status species from mining activities. Furthermore, limiting vehicular travel on public land to existing roads and trails would reduce impacts on special status species, particularly slow-moving animals like the desert tortoise. Transportation management actions to limit OHV use in sensitive areas would reduce impacts on special status species.

Managing fire and fuels for full fire suppression and implementing programs to reduce ignitions would protect special status species habitat from wildfires that alter native vegetation communities. In addition, allowing only those new range improvements for livestock in desert tortoise Category I and II habitat areas (approximately 45,420 acres) that would not be in conflict with tortoise populations would eliminate impacts and changes to the ecological condition of tortoise habitat. Furthermore, removal or use of living, dead and downed native plant material could reduce food supplies, cover, breeding sites, cavity holes, and other habitat components necessary for special status species in localized areas. Finally, this alternative would allow recreational shooting within the monument outside developed areas, which could disturb wildlife including the accidental shooting of desert tortoises.

Restriction of surface disturbance would occur by implementing (1) the Nichol Turk’s head cactus recovery plan, (2) conservation measures that reduce the effects of fire management actions on threatened and endangered species, (3) mitigation measures to ensure that maintenance of established rights-of-way does not conflict with the natural resource goals, and (4) issuing land use authorizations (permits, leases, easements, and rights-of-way) only when compatible with the natural and cultural resource goals for the

monument. Reduction of surface disturbance would enhance protection of the objects of the monument and indirectly improve habitat conditions for other special status species like the desert tortoise.

Management actions for livestock grazing would provide additional water sources in the Twin Tanks and Cocoraque Pastures. All additional waters would be constructed to accommodate deer, javelina, and quail. Greater availability of water for wildlife populations could improve habitat conditions and special status species population health. Improved safety of new waters would reduce mortality of special status species populations from drowning and improve survivorship of wildlife populations. Modification of fences could improve movement of special status species by eliminating barriers to wildlife movement. Providing for the continuation of livestock grazing within the 11 existing allotments (approximately 128,400 acres) would continue the potential for some degradation of habitat that may be suitable to special status species, although such effects would be expected to be minor and not affect the viability of any special status species. If evaluations of grazing allotments identify unacceptable degradation of habitat, adaptive management policies would allow for mitigation measures, such as fencing or changes in the number of animal units allowed, to protect the special status species.

Designating 346 miles of routes for motorized use could disturb surfaces in localized areas. Route proliferation could result in the localized degradation of special status species habitat and may result in the mortality of special status plant species and slow-moving animals like the desert tortoise. Managing the Waterman Mountain ACEC with 10 miles of routes open to motorized use could disturb areas adjacent to roads and subsequently degrade Nichol Turk's head cactus habitat and habitat for the desert tortoise. Recreation use in areas away from routes could cause increased disruption of objects of the monument (including habitat for threatened, endangered, and rare wildlife and vegetative species).

Based on the impacts described above for Alternative A, the disturbance to objects of the monument (including special status species and their habitats) resulting from management actions would range from undetectable to measurable at a broad scale (i.e., disturbance in mile-wide utility corridors). The anticipated impacts would not result in the loss of a population of the special status species. However, BLM's implementation of management actions for vegetation, including control of invasive species, would mitigate the potential for broad-scale impacts on special status species. In addition, mitigation measures would be implemented, including avoidance of or temporary flagging or fencing for specific vegetative resources (e.g., Nichol Turk's head cactus or habitat for lesser long-nosed bat or cactus ferruginous pygmy owl) to reduce impacts on special status species and limit impacts to small and localized areas. BLM's management actions under this plan, together with implementation of mitigation measures, would provide for "protection of the monument objects" for special status species as defined in Section 1.3.1.

#### **4.3.6.3 Alternative B**

Alternative B has fewer actions that would contribute to surface disturbance, compared with Alternative A. The Pan Quemado communications site could cause surface disturbance to 2 acres of Desert Bighorn Sheep Wildlife Habitat Management Area (WHA), while the Confidence Peak communications site could cause surface disturbance to 3 acres of desert bighorn sheep habitat. The Pan Quemado and Confidence Peak communications sites would disturb 155 fewer acres than under Alternative A. Not developing an activity level plan for the Cocoraque Butte-Waterman Mountains Multiple Resource Management Area could result in fewer improvements to watershed conditions, soil cover, and sediment reductions than Alternative A. This could result in slower improvements to special status species habitat.

Compared with Alternative A, management actions to limit surface-disturbing activities would be more restrictive, which would provide the most protection to special status species and their habitats. Impacts

## Impacts on Special Status Species (cont.)

from management actions that restrict surface disturbance would be the same as those under Alternative A, except management actions would increase the area where restrictions apply.

Although 11,650 fewer acres than Alternative A, allocation of 29,820 acres for the Desert Bighorn Sheep WHA (Map 2-2) would protect habitat, lambing areas, and movement corridors, thereby contributing to the projection of an object of the monument (desert bighorn sheep). Closure of the WHA to sheep and goats would reduce the risk of disease transmission from sheep and goats to desert bighorn sheep, and could improve the survivorship of desert bighorn sheep populations. Closure of lambing sites within the WHA to human entry from January 1 through April 30 would reduce human disturbance during lambing cycles and could potentially improve breeding success. Prohibiting dogs on public land within the monument would eliminate disturbance from dogs (not including feral dogs) on wildlife, which would decrease dog attacks on desert tortoise. Reintroductions, transplants, and supplement stockings could improve the survivorship of wildlife populations, improve the breeding success of wildlife populations, promote genetic interchange between wildlife populations, and improve genetic diversity within wildlife populations. However, reintroductions, transplants, and supplement stockings could disrupt natural systems and increase exposure and transmission of wildlife diseases.

Alternative B would manage approximately 2,240 acres of Nichol Turk's head cactus habitat as a VHA in the Waterman Mountains (Map 2-4). Management actions within the VHA would (1) prohibit land use authorizations except along designated open routes, (2) acquire non-Federal land, which upon acquisition would be managed as part of the VHA, (3) revise and implement the 1986 HMP, and (4) prohibit camping (on BLM-administered land) in the VHA. Management of Nichol Turk's head cactus habitat as a VHA could reduce or eliminate impacts such as soil erosion on Nichol Turk's head cactus habitat by limiting or prohibiting activities, such as recreational use, and contribute to the long-term health of Nichol Turk's head cactus, an object of the monument. Management actions for Nichol Turk's head cactus also could improve habitat quality for special status species that have a similar ecological range as the cactus, like the desert tortoise or Arizona chuckwalla. Prohibition of land use authorizations except along existing roads could reduce or eliminate impacts such as soil compaction, soil erosion, surface disturbance, and physical damage to the cactus. Adding lands to the VHA could protect populations of Nichol Turk's head cactus not currently within the boundary of the VHA. Prohibition of camping in the VHA could reduce soil erosion and compaction, and eliminate physical damage to Nichol Turk's head cactus from campers. These management actions could maintain or improve Nichol Turk's head cactus habitat compared with Alternative A.

Designation of 6,780 acres as a VHA at Ragged Top Mountain (see Map 2-4) could improve special status species habitat by improving cover vegetation; improving vegetation condition in movement corridors; reducing habitat fragmentation and edge effect; and improving habitat connectivity for many special status species. Management actions would (1) acquire non-Federal land, which upon acquisition would be managed as part of the VHA and (2) prohibit camping (on BLM-administered land) in the VHA. Adding lands to the VHA could protect populations of special status species not currently within the boundary of the VHA. Prohibition of camping in the VHA could reduce soil erosion and compaction, and eliminate physical damage to special status species habitat, including desert tortoises, from campers.

Management of soil and water resources under Alternative B would minimize surface disturbance during construction, reconstruction, or maintenance of facilities, and develop mitigation plans to restore and stabilize soils in disturbed areas, which would minimize and mitigate habitat fragmentation and loss, displacement of special status species, and mortality to individuals. Likewise, actions that prohibit surface water diversions and groundwater pumping that removes water from the IFNM would maintain special status species habitat by maintaining sufficient available surface and groundwater to support existing vegetation structure and composition. These reductions in surface disturbance would improve habitat

## Impacts on Special Status Species (cont.)

conditions for threatened, endangered and rare wildlife and vegetative species, habitat which is considered to be an object of the monument, as compared to Alternative A.

Management of vegetation resources would (1) minimize or restrict disturbance to vegetation resources under this alternative, (2) prohibit removal of live, dead, or downed native plant material (except where specifically authorized), (3) pursue an integrated weed management approach, (4) develop a land restoration plan, and (5) require the use of native plants for restoration projects. Minimizing or restricting disturbance to vegetation would reduce impacts on special status plant species and reduce disturbance to special status wildlife from surface-disturbing activities, thereby contributing to the protection of objects of the monument. Prohibiting removal of live, dead, or downed native plant material would reduce impacts on food supplies, cover, breeding sites, cavity holes, and other habitat components. An integrated weed management approach would reduce spread of invasive weeds and help maintain the existing vegetation composition and structure, fire regime, and other habitat components necessary for wildlife population maintenance. Implementation of land restoration strategies could improve special status wildlife habitat by increasing food supplies, improving cover vegetation, improving vegetation condition in movement corridors, reducing habitat fragmentation and edge effect, and improving habitat connectivity. Use of native plants for all restoration projects would improve and optimize wildlife habitat restoration by using native plants for which native wildlife species are evolutionarily adapted for most advantageous utilization. However, native plants tend to have lower germination rates slowing the rate of revegetation. This could result in an increase in soils loss and degrade special status species habitat in localized areas. Management of vegetation resources under Alternative B would result in greater improvements to wildlife habitat, as compared with Alternative A, which would improve all special status wildlife habitat, including that of the desert tortoise and lesser long-nosed bat.

Impact from managing 3,290 acres as VRM Class III could allow surface disturbance similar to Alternative A, but to a much lesser extent. Managing 125,110 acres as VRM Class I and II could reduce surface disturbance and maintain wildlife habitat by emphasizing natural landscapes as compared with Alternative A (which has no VRM Class I or Class II designations), which would help to maintain or improve habitat for special status plants and animals like the desert tortoise, lesser long-nosed bat, and Nichol Turk's head cactus.

Allocation of RMZs would reduce surface disturbance and impacts on special status species compared with custodial management actions in Alternative A. Managing 32,150 acres as Roded Natural and Semi-Primitive Motorized including 1,820 acres of the VHA, could cause more disruption to special status species if these areas were used more often. Managing 60,000 acres as Semi-Primitive Non-Motorized including 390 acres within the VHA, could reduce surface disturbance and disruption (Map 2-10), particularly from motorized uses. This could reduce surface disturbance to special status species habitats and better support the viability of objects of the monument compared with Alternative A.

Prohibiting wood campfires would eliminate localized impacts on special status species from wood collection (such as removal of vegetation, food supplies, destruction of habitat, and disruption of ecosystem cycles), reducing impacts on special status species, relative to Alternative A. Furthermore, prohibiting camping on 2,240 acres of public land in the IFNM could limit impacts on special status species and their habitat compared with Alternative A.

Management under Alternative B would prohibit the use of firearms within the IFNM, except for permitted or authorized hunting. Prohibition of recreational shooting would reduce impacts on special status species relative to Alternative A, which also would eliminate accidental shooting of desert tortoises.

The phasing out of livestock grazing as existing leases expire associated with Alternative B may contribute to the natural rehabilitation of habitat suitable for special status species.

## Impacts on Special Status Species (cont.)

Alternative B would allow access into the IFNM from areas of urban interface only via public or community access points that would be determined through the travel management planning process. Impacts on special status species from access into the IFNM would depend on the location of access points and the level of recreational activity at an access point. Access points tend to concentrate recreation activity and could result in localized impacts on soils and vegetation which could reduce available food supply and shelter for wildlife. Limiting public or community access points would reduce impacts on special status species, compared with Alternative A.

Alternative B identifies six areas within Semi-Primitive Motorized and Roaded Natural RMZs for access/staging locations for equestrian uses. These are located at Manville Road, Avra Valley Road, Reservation Road, Silverbell Road, near the West Silver Bell Mountains, and Aries Drive to the power line. In addition, Alternative B would allow equestrian uses on routes open or closed to motorized vehicles; however, no new trails would be constructed. Equestrian access/staging locations at West Silver Bell Mountains would be located within the Desert Bighorn Sheep WHA. Equestrian access/staging locations within the WHA could cause local deterioration of objects of the monument as a result of deterioration of special status species wildlife habitat, disturbance of bighorn sheep and other special status wildlife, and disturbance of lambing ranges for desert bighorn sheep and breeding habitat for other special status wildlife species. Equestrian use could promote the spread of invasive plant species that could reduce quality of special status species habitats and change fire regimes. Alternative B could restrict equestrian access and use to designated routes; Alternative A has no decisions for equestrian use, which could result in greater impacts on special status species, relative to Alternative B.

Non-motorized and mechanized recreation could alter some characteristics of soil, vegetation, or aquatic systems. Recreation could affect an animal's food supply and availability of living space. In turn, impacts on food and living space influence behavior, survival, reproduction, and/or distribution. The significance and magnitude of any effect are related to the extensiveness, intensity, and timing of the activity. The vulnerability and rarity of the habitat and its importance to special status species should also be considered. Alternative B would impose the greatest restriction on non-motorized and mechanized recreation uses; therefore, Alternative B would have the least impact on special status species, including the desert tortoise, from altered habitats and collisions with mechanized vehicles.

The entire monument would be designated as a right-of-way exclusion area; however, existing rights-of-way would be recognized. As a result, impacts resulting from lands and realty decisions would be limited to areas with existing rights-of-way. In addition, no decisions exist for specific acquisition of parcels; however, acquisition of non-Federal land would be based on special status species concerns including ecologically important areas and habitat corridors. Furthermore, no utility corridors would be designated and rights-of-way would occur only where required by law; therefore, few impacts on special status species would take place as a result of utility construction and maintenance (Map 2-14).

Alternative B would limit OHV use to designated routes on 90,360 acres and close 38,040 acres to OHV use (Map 2-18), which would protect special status species, particularly in closed areas.

Management of 36,990 acres to protect wilderness characteristics would minimize changes to landscapes and vegetation resources. In addition, managing areas as a Primitive RMZ could minimize impacts on special status species from recreation.

Allowing surface disturbance for scientific and historical research related to cultural resource management could degrade special status species habitat (an object of the monument), including areas suitable for Nichol Turk's head cactus and the desert tortoise.

## Impacts on Special Status Species (cont.)

Not developing and implementing an activity-level plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could result in fewer improvements to watershed conditions, soil cover, and sediment reductions as compared with Alternative A, and therefore could result in slower improvements to special status species habitats.

Decisions to improve the safety of wildlife waters would reduce mortality and improve survivorship of some special status wildlife populations. In addition, construction of new wildlife waters would improve access to water sources for those same special status wildlife populations where natural sources of water no longer exist, or where access to natural sources is impaired. However, new wildlife waters could expose these special status wildlife populations to greater rates of predation.

Construction, modification, or removal of fences could improve movement of wildlife species including priority species by reducing barriers to wildlife movement. Implementing the removal of roads or facilities that are no longer necessary could reduce disturbance to special status species. Short-term, the removal of structures would disturb surfaces in localized areas and could temporarily degrade habitat conditions.

Implementation of monitoring and mitigation programs for special status species and visual resources and to control invasive species would avoid and minimize impacts on special status species. Likewise, avoidance of projects or activities that disturb species and habitat would reduce impacts on special status species resources. Furthermore, designation of acquired land as right-of-way exclusion areas would eliminate surface disturbance and disruption to wildlife from utility construction and other allowable uses of rights-of-way.

Mineral resource actions would include reclaiming abandoned mines posing the greatest and immediate risk to human health, or convert mines to another use protective of other resources. Mines could provide roosting habitat for bats, including the lesser long-nosed bat. Survey of abandoned mines could provide greater understanding of existing bat populations and could improve adaptive management for special status species. If the entrances of abandoned mines were to be seal during reclamation, then this could reduce or eliminate access to roost sites for bats that occupy those mines.

Implementation-level decisions designating 63 miles of existing travel routes for motorized access/use, 266 miles for non-motorized use, and identifying 17 miles of existing routes for reclamation could decrease the effects to special status species habitat, as compared with 346 miles under Alternative A. In addition, restricting motor vehicle use to 3 miles the VHAs could reduce surface disturbance in these areas. These decisions would also decrease the potential for vehicle collisions with special status wildlife, especially the slow-moving desert tortoise.

Based on the impacts described above for Alternative B, the disturbance to objects of the monument (including special status species and their habitats) resulting from management actions would range from undetectable to measurable at a local scale and would not cause the loss of special status species from the monument. Despite the localized nature of anticipated impacts, BLM may implement mitigation measures, including avoidance of or temporary flagging or fencing for specific vegetative resources (e.g., Nichol Turk’s head cactus or habitat for lesser long-nosed bat or cactus ferruginous pygmy owl) to further reduce impacts on special status species to provide for “protection of the monument objects” as defined in Section 1.3.1.

### **4.3.6.4 Alternative C**

Impacts from management of soil and water resources, and special status species would be similar to those under Alternative B. Management actions that contribute to surface disturbance would be similar to actions under Alternative B, with a few exceptions. Alternative C would designate approximately

## Impacts on Special Status Species (cont.)

241 acres as utility corridors as shown on Map 2-15. Two utility corridors would be designated: Corridor 1 (200 feet wide) and Corridor 2 (300 feet wide). Development and use of utility corridors and rights-of-way could have short-term impacts on special status wildlife such as disturbance and direct mortality to individuals. Long-term impacts on special status species could include increased edge effect, reduced habitat connectivity, and disruption of wildlife movement corridors. Disturbed areas in the utility corridor could change wildlife species composition, favoring generalist native species, and some exotic and naturalized exotic wildlife species. Furthermore, new rights-of-way and exercise of existing rights-of-way would be allowed for access and utilities.

Managing the area as an avoidance area for rights-of-way including the VHA could increase surface disturbance. However, within the VHA rights-of-way and land use authorizations would be restricted to areas along routes. Travel-management actions would allow for the construction of new routes. Construction of new routes could increase habitat fragmentation, degrade existing habitat, and amplify disruptive impacts on wildlife. Movement corridors for the desert tortoise could be restricted while the potential for more vehicle collisions with desert tortoises and other wildlife could increase with new routes.

Under Alternative C, no public lands within the IFNM would be designated as VRM Class I area (versus 36,990 acres of Class I under Alternative B). VRM Class II area would increase to 124,900 acres, while VRM Class III would increase to 3,420 acres. Alternative C also would classify 80 acres as VRM Class IV. Together, these VRM designations would be less restrictive than those under Alternative B, which could increase surface disturbance and impacts on special status species and their habitat.

Increasing the area managed as motorized to 54,610 acres including 1,280 acres of the VHA and decreasing the area managed as non-motorized to 73,740 acres, including 80 fewer acres within the VHA could increase the potential for disruption of special status species and habitat degradation (including species and habitat considered objects of the monument) compared with Alternative B.

Compared with Alternative B, management under Alternative C would allow (1) campfires when firewood is from non-monument sources, (2) overnight non-vehicle-based camping within Semi-Primitive Motorized RMZs, (3) large-group camping near the West Silver Bell Mountains, and (4) camping within the Nichol Turk's head cactus VHA and Ragged Top VHA. Allowing campfires would increase the potential for wildfire. A large group campsite at West Silver Bell Mountains would be located within the Desert Bighorn Sheep WHA. Camping within the VHA could deteriorate wildlife habitat and disturb bighorn sheep and other wildlife. However, this large group campsite would be closed during bighorn lambing season. This would reduce disruption to special status species during a portion of the year. In addition, Alternative C would allow equestrian use in all areas of the IFNM. With repeated use in an area this could result in the proliferation of trails and localized degradation of special status species habitat. This alternative would allow greater impacts on wildlife, particularly bighorn sheep, relative to Alternative B.

Alternative C would close 10,880 acres to OHV use (Map 2-19). Compared with Alternative B, reducing the area closed to OHV by 27,160 acres could result in increased surface disturbance and impacts on special status species and their habitats, which would increase the potential of collisions with the slow-moving desert tortoise.

Under Alternative C, 9,510 acres of IFNM would be managed to protect wilderness characteristics—27,480 acres fewer than Alternative B. Furthermore, managing these areas as VRM Class II, versus as VRM Class I under Alternative B, special status species habitat in these areas would allow for less restrictive uses and greater potential for disturbance to habitat compared with Alternative B.

Management of vegetation resources under Alternative C would result in impacts similar to those under Alternative B, with the exception of the consumption of live, dead, or downed plants by livestock. Impacts from management of livestock grazing would be the same as those under Alternative A, except locating range improvements to minimize disturbance, minimizing livestock impacts on priority plant species and habitats would retain a greater amount of existing vegetation relative to Alternative A. In addition, retaining livestock grazing on 11 allotments would have the same impact relative to Alternative A; however, vegetative communities could attain desired conditions slower than under Alternative B, which has public lands within the IFNM unavailable for livestock grazing after existing leases expire. Also, the potential of livestock to crush desert tortoises is the same as for Alternative A, an impact that was eliminated in Alternative B.

Implementing measures to improve the safety of wildlife waters would reduce mortality and improve survivorship of some special status wildlife populations. In addition, construction of new wildlife waters would improve access to water sources for some special status wildlife species where natural sources of water no longer exist or where access to natural sources is impaired. However, new wildlife waters could expose these same special status species wildlife to greater rates of predation.

Implementation-level decisions designating 124 miles as motorized, including 10 miles in the VHAs, would have the same type of impacts but could increase the extent of effects, compared with 63 miles under Alternative B. Designating 205 miles of routes as non-motorized, including 12 miles in the VHAs, and reclaiming 17 miles could reduce disruption to special status species relative to Alternative A.

Based on the impacts described above for Alternative C, the disturbance to objects of the monument (including special status species and their habitats) resulting from management actions would range from undetectable to measurable at a local scale and would not cause the loss of special status species from the monument. Despite the localized nature of anticipated impacts, BLM may implement mitigation measures, including avoidance of or temporary flagging or fencing for specific vegetative resources (e.g., Nichol Turk's head cactus or habitat for lesser long-nosed bat or cactus ferruginous pygmy owl) to further reduce impacts on special status species to provide for "protection of the monument objects" as defined in Section 1.3.1.

#### **4.3.6.5 Alternative D**

Impacts from decisions for soil and water resources, special status species and livestock grazing would be similar to Alternative C, except for the use of non-intrusive, non-native plants in limited emergency situations where they may be necessary to protect resources or when taking no action would further degrade the resources. Non-intrusive non-native plants could provide habitat for wildlife in emergency situations where no action would result in greater impacts on special status species. Use of non-intrusive non-native plants in emergency situations, such as use for soil stabilization following wildfire, could result in the establishment of noxious weed species. Once established, some exotic species have the ability to displace or replace native plant species, disrupt nutrient and fire cycles, and cause changes in the pattern of plant succession resulting in disturbance and/or loss of plant communities, food supplies, cover, breeding sites, and other habitat components necessary to maintain the special status species population. For example, intentionally introduced non-native plants could reduce the available food resources for the desert tortoise in treated areas.

Management actions that contribute to surface disturbance would be similar to actions under Alternative C, with a few exceptions. Management of lands and realty under Alternative D would designate 2,660 acres in three 0.25-mile-wide utility corridors (as shown on Map 2-16) located in the Sawtooth Mountains and West Silver Bell Mountains could increase surface disturbance compared to 241 acres under Alternative C. However, this would reduce the area where surface disturbance associated with utility corridors could occur compared with 8,240 acres under Alternative A.

## Impacts on Special Status Species (cont.)

Managing 6,500 acres as the Ragged Top VHA (Map 2-5) would reduce the size of the VHA by 280 acres, relative to Alternatives B and C. Furthermore, managing 122,580 acres (95 percent of public lands in the IFNM) to meet VRM Class II objectives (a 2,320-acre decrease relative to Alternative C) would reduce the area where surface disturbance restrictions apply and would increase surface disturbance restrictions compared with Alternative A, which could potentially degrade habitat for desert tortoises and other special status wildlife species.

Increasing the area managed as Roaded Natural and Semi-Primitive Motorized to 78,080 acres and decreasing the area managed as non-motorized to 50,270 acres could increase the potential for disruption of special status species, increase collisions with special status wildlife like desert tortoise, and escalate degradation of habitat, relative to Alternatives B and C.

Compared with Alternative C, Alternative D would allow (1) campfires using dead, downed, and detached wood, (2) overnight, non-vehicle-based dispersed camping throughout the monument unless camping in an area is specifically prohibited for protection of resource values, (3) large-group camping near the Sawtooth Mountains, and (4) equestrian uses on routes designated as motorized or non-motorized and cross-country equestrian travel in all areas open to public use. Firewood collection could affect an animal's food supply and availability of living space. In turn, impacts on food and living space influence behavior, survival, reproduction, and/or distribution. The significance and magnitude of any effects are related to the extensiveness, intensity, and timing of the activity. Large-group campsites at Sawtooth Mountains would be located within the Desert Bighorn Sheep WHA. Camping within the WHA could degrade wildlife habitat, disturb bighorn sheep and other wildlife, and disturb lambing ranges for desert bighorn sheep and breeding habitat for other wildlife species. However, this large group campsite would be closed during bighorn lambing season. This would reduce disruption to special status species during a portion of the year. This alternative could result in greater impacts on special status species, particularly desert bighorn sheep and desert tortoises, relative to Alternatives B and C, but would reduce impacts relative to Alternative A.

Concentrating recreational shooting to two designated areas would reduce the potential for disturbance to special status species from shooting activities throughout most of the IFNM, but would intensify the potential for disturbance in the Avra Hill and Cerrito Represo area. However, because the potential for special status species were considered in the selection of these sites, disturbance would likely be limited to startling individual animals that may be passing through or near the proposed designated shooting areas.

Implementation-level decisions designating 226 miles of routes as motorized, including 15 miles in the VHAs, would decrease impacts from motorized routes, compared with 346 miles under Alternative A, and increase impacts relative to 63 miles under Alternative B and 124 miles under Alternative C. In addition, designating 116 miles of routes as non-motorized, including 6 miles in the VHAs, and identifying 1 mile of route in the VHAs for reclamation would be greater than that under Alternative A.

Based on the impacts described above for Alternative D, the disturbance to objects of the monument (including special status species and their habitats) resulting from management actions would range from undetectable to measurable at a broad scale (i.e., disturbance in utility corridors). The anticipated impacts would not result in the loss of a population of the special status species. However, BLM's implementation of management actions for vegetation, including control of invasive species, would mitigate the potential for broad-scale impacts on special status species. In addition, mitigation measures would be implemented, including avoidance of or temporary flagging or fencing for specific vegetative resources (e.g., Nichol Turk's head cactus or habitat for lesser long-nosed bat or cactus ferruginous pygmy owl) to reduce impacts on special status species and limit impacts to small and localized areas. BLM's management

actions under this plan, together with implementation of mitigation measures, would provide for “protection of the monument objects” for special status species as defined in Section 1.3.1.

#### **4.3.7 Impacts on Fire Ecology and Management**

This section describes potential impacts on fire ecology and management that could occur from the implementation of management actions for other resource programs. Management actions can affect the frequency and intensity of wildland fires, the cost of fire suppression efforts, and the safety of firefighters and the public. Relative impacts are evaluated in terms of fire ignition (fire frequency), spread (fire size), and intensity (amount of heat released).

The following assumptions were used when assessing the impacts on fire ecology and management.

- Fire is an important functional, natural disturbance in many of the ecological systems found in the planning area.
- A direct relationship exists between the density of use of public land within the planning area and the frequency of human-caused fires.
- A direct relationship exists between fuel loading and potential fire size and intensity.
- Livestock and wildlife water developments could be used for fire suppression.
- Restoration projects would be successful over the long term.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources and the project area, review of existing literature, and information provided by BLM resource specialists. Effects are quantified where possible or are described in qualitative terms in the absence of quantitative data.

##### **4.3.7.1 Impacts Common to All Alternatives**

On the IFNM, wildfire would be suppressed in all instances, and the average cost (per acre) of suppressing fire would be the same under all alternatives. Priority suppression areas would be outlined in implementation-level documents (i.e., Fire Management Plan), which would be tiered to a long-term land use plan (RMP). Under all alternatives, implementation of programs that create greater public awareness of fire dangers could prevent ignitions. Programs that emphasize fire detection and techniques for rapid fire suppression could reduce the size of burned areas (wildfires are easier to suppress when caught early).

Continuing management in compliance with the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration would prevent deterioration of plant communities in the IFNM, with potential to alter the fire regime on a landscape level. This would promote retention of the current Fire Regime Condition Class (FRCC) I throughout the IFNM, resulting in a fire-return interval of 35 to 100 years and fires of mixed severity.

Improvement of ecological site conditions in Nichol Turk’s head cactus areas could improve the resiliency of plant communities against invasive plants. Improved ecological site conditions could reduce the percentage of invasive grass species cover lending the plant community greater ability to slow the spread of fire.

Fire size could increase in localized areas where invasive plant material accumulates. Using biological mechanical or chemical treatments to maintain non-hazardous levels of fuels would reduce the risk of ignitions.

Designated areas within the IFNM that harbor specific priority resources such as special status species habitat may affect fire size in those areas. For example, minimum impact suppression techniques (MIST) might be necessary during wildfire suppression to protect areas of sensitive natural resources. The intent of MIST is to suppress wildfires, with the least impact to the land. Use of MIST would be at the discretion of a resource advisor who could be deployed along with other fire suppression personnel during fire suppression activities in the IFNM. In some cases, MIST could result in larger fires. For example, MIST could include letting a fire burn to a natural barrier rather than creating a fuel break with heavy equipment.

Acquisitions of land in the IFNM could increase the acres where the BLM would have primary fire suppression responsibilities. Acquisition of additional lands would not likely increase the average cost of wildfire suppression (in dollars per acre), but it would increase the probability that wildfire suppression activities would take place in the IFNM during any given year. Land acquisitions could improve BLM's ability to manage resources to reduce the potential for ignitions by increasing the opportunities for implementing the fuels management/fuel break program over a larger area.

Existing transmission lines and pipelines would continue to present hazards to firefighters during suppression operations in site-specific areas. Suspended transmission lines pose an overhead hazard to hand crews, engine crews, and aviation crews. Aviation crews would be unaffected by underground pipelines, but heavy equipment may be inappropriate in the vicinity of pipelines. Firefighter-safety concerns associated with transmission lines and pipelines could alter fire-suppression tactics from direct, to indirect. The use of indirect suppression tactics could result in larger fires where utility corridors exist. The use of indirect suppression tactics because of safety concerns could lead to larger fires in site-specific areas. For example, firefighters might let fires burn in the vicinity of safety hazards until the fire spreads outside the hazard's area of influence, where direct suppression is possible without the threat of safety hazards. These transmission lines and pipelines could provide linear fuel breaks to the extent that they require removal of vegetative cover.

Under all alternatives, impacts on wildfire and fuels management are not anticipated as a result of implementing management actions for the following resource programs: air quality, geological resources, energy and minerals, and scenic and visual resources.

#### **4.3.7.2 Alternative A (No Action)**

Controlling erosion in site-specific areas would reduce opportunities for invasive grasses and weeds (e.g., buffelgrass and red brome) that can carry wildfire beyond its historic range of variation. Improvement of ecological site conditions in the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area would improve the resiliency of existing plant communities against the establishment of invasive plants. As a result, plant communities in the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area would possess a greater ability to slow the spread of fire. Managing 41,470 acres (32 percent of public lands in the IFNM) as the Silver Bell Desert Bighorn Sheep Management Area could minimize surface disturbance and reduce opportunities for the establishment of noxious weeds and invasive species. These areas would be less prone to the types of invasive plants that tend to carry fires beyond their natural range of variation. These decisions would indirectly help retain FRCC I and maintain the current fire regime.

Livestock grazing in the IFNM would reduce fine fuels indirectly reducing the potential for wildfire to spread (fire size) in site-specific areas where invasive annual grasses would otherwise accumulate. Furthermore, it could reduce the potential for ignition (fire frequency) if invasive annual grasses become established landscape-wide in the future, rather than just in site-specific areas, as they are now. Meanwhile, the selection of herbaceous species by livestock could, over time, result in an indirect increase in the amount of heat released during fires (heat intensity) if the amount of woody vegetation

increased. Managing two allotments as ephemeral could reduce the amount of fine fuels in years when production was sufficient. This could reduce the severity and frequency of wildfire on 28,020 acres (22 percent of public lands in the IFNM) during years of high vegetation productivity. The provision of additional livestock water sources in the Twin Tanks and Cocoraque Pastures would provide additional waters for wildfire suppression in site-specific locations.

The closure of 820 acres (<1 percent of public lands in the IFNM) to motorized vehicle use would continue to reduce potential for ignition on those acres. Campfires would continue to be potential sources of ignitions throughout the IFNM. Fire frequency could increase if campfires escape into surrounding vegetation.

One-mile-wide right-of-way corridors could act as fuel breaks if vegetation is cleared in those areas, and could help prevent the spread of wildland fires in site-specific areas. If new transmission lines and pipelines were constructed in those corridors, safety hazards to firefighters could increase on 8,240 acres (6 percent of public lands in the IFNM).

Implementation-level decision travel management also has potential to affect fire and fuels management. Designating 346 miles of routes for motorized use could increase the risk of ignition along routes from vehicles.

#### **4.3.7.3 Alternative B**

Minimizing surface disturbance, along with an integrated noxious weed management approach throughout the IFNM, would reduce opportunities for the establishment of noxious weeds and invasive species. These decisions would indirectly help maintain current FRCC I ratings in site-specific areas, which would help to promote establishment of diverse vegetation communities that are more capable of stopping or slowing the spread of fire than communities with active populations of noxious weeds and other invasive plants. Prohibiting the removal of living and dead native plant material would help maintain the existing surface fuel conditions by maintaining FRCC I conditions in the IFNM. Restoration of disturbed areas in the IFNM would reduce fuels by replacing non-native invasive species with native vegetation. Fire frequency could be reduced in restoration areas where projects succeed in keeping invasive grasses out and maintaining the current FRCC. Short-term restrictions on surface disturbance that preclude certain types of fire suppression and fuels treatment activities could indirectly increase the overall size of wildfires throughout the IFNM.

Prohibiting the removal of plant material except when fuel loading is high could allow the buildup of living and dead invasive herbs in localized areas in the IFNM. WUI areas would be particularly sensitive. Invasive herbs are fine fuels that may carry a fire but would not increase the intensity of a fire. Therefore, while the majority of the IFNM would continue to display the historic fire regime, there could be isolated areas—generally where invasive species establish—where the historic fire regime would move outside the historic range of variability.

Management of the Desert Bighorn Sheep WHA would have similar impacts to those described for the Silver Bell Desert Bighorn Sheep Management Area under Alternative A, where surface disturbance and the potential for the spread of invasive species would be reduced. However, these effects would occur over a smaller area under this alternative: the WHA would be approximately 29,820 acres (23 percent of public lands in the IFNM), a decrease of approximately 11,650 acres as compared with Alternative A. Human entry into this area would be restricted from January 1 to April 30, which would reduce the potential for human-caused ignitions in the WHA during this period. Implementing measures to conserve desert tortoise habitat also could reduce surface disturbance and opportunities for establishment of noxious weeds and invasive species in the IFNM. This could indirectly promote retention of the current FRCC I by maintaining plant community resiliency against colonization from invasive plant species, over

the short term. Maintaining annual grasses in tortoise habitat areas could increase fine fuels in localized areas where invasive grasses are present, resulting in a higher potential for wildfire ignition and spread, if annual grasses were not utilized as forage.

Suppression methods may be altered on 36,990 acres (29 percent of IFNM) managed to protect wilderness characteristics. For example, certain types of heavy equipment used for suppression efforts may be inappropriate. This could increase response time and result in larger fires on these acres. In other areas outside those managed to protect wilderness characteristics, installation of new wildlife waters could enhance fire suppression efforts by increasing the availability of water for wildfire suppression in site-specific areas.

New right-of-way development would not occur under this alternative unless mandated by law; only existing right-of-way would be recognized and no utility corridors would be designated. This would decrease potential for development of rights-of-way that would act as fuel breaks, as compared with Alternative A. However, reduced potential for construction of new utility lines relative to Alternative A would reduce the potential for introduction of new safety hazards to firefighters. Existing transmission lines would continue to compromise firefighter safety.

Making 11 allotments unavailable for livestock grazing after existing grazing leases expire could increase the amount of fine fuels available for ignition compared to Alternative A. Fire could spread in localized areas if the unused forage were not consumed by wildlife. The potential for increased ignitions and larger fires could increase in localized areas, as compared with Alternative A, because the entire monument would be unavailable for livestock grazing after existing leases expire under that alternative. In addition, livestock waters would no longer be needed once the leases expire and would not be maintained, thus potentially eliminating possible water sources for wildfire suppression.

Recreation management decisions regarding campfires and OHV designations would reduce the likelihood of ignitions in the IFNM, relative to Alternative A. The potential for ignitions from campfires would be reduced because only camp stoves and charcoal fires—which tend to produce fewer firebrands and are easier to control than traditional wood campfires—would be allowed. Fire frequency would be reduced to the extent that escaped campfires are reduced in the IFNM. Prohibiting the use of firearms within the IFNM—an activity that could cause an accidental ignition—also would reduce the potential for human-caused ignitions. Discharge of firearms for permitted hunting would continue to be a potential source of ignitions in localized areas of the IFNM.

Impacts on management of fire and fuels from closure of areas to vehicle use would be the same as Alternative A, except vehicles would cease to be a source of human-caused ignitions over a much larger portion of the IFNM. Under this alternative, the potential for ignitions that originate from motorized vehicles would be reduced on approximately 38,040 (30 percent of public lands in the IFNM) of the IFNM—this potential would be reduced on 37,220 more acres, as compared with Alternative A. Most of the vehicle closure areas coincide with areas managed to protect wilderness characteristics under this alternative. The potential for human-caused ignitions would be reduced on 36,990 acres (29 percent of public lands in the IFNM) of lands managed to protect wilderness characteristics due to the absence of motorized equipment and authorized land uses in those areas.

Removal of any utility lines would remove potential overhead safety hazards for firefighters in site-specific areas. However, removal of roads no longer needed for access could increase the size of fires in site-specific areas because the roads would be reclaimed with vegetation and would not provide effective fuel breaks.

Designating only 63 miles of road for motorized travel could result in the reduced risk of ignitions from motorized vehicles, as compared with 346 miles under Alternative A.

#### **4.3.7.4 Alternative C**

Minimizing surface disturbance throughout the IFNM, along with an integrated noxious weed management approach, would have the same impacts on the current FRCC, fire suppression efforts, and hazardous fuels treatments as those that would occur under Alternative B. Management decisions would include the following: maintain and improve soil cover and productivity through erosion preventative measures and land treatments, restore disturbed areas to the natural range of native plant associations, and select appropriate plants for restoration.

Management of wildlife habitat would have the same impacts to current FRCC and potential sources of wildfire ignition as those that would occur under Alternative B. Management decisions would include the following: establish the Desert Bighorn Sheep WHA, install additional wildlife waters, and implement measures to conserve desert tortoise habitat.

Prohibiting the removal of living and dead plant material would have similar impacts on the current fire regime condition class ratings and fuels as those that would occur under Alternative B. However, more fine vegetative material would be removed from plant communities under this alternative due to livestock grazing operations. Prohibitions on the removal of plant material under this alternative would result in a reduction of fine surface fuels (herbaceous), as compared with Alternative B and an increase in woody surface fuels as compared with Alternative A. Current FRCC ratings would be unchanged, across all alternatives.

Under Alternative C, the risk of ignition from campfires would remain the same as that under Alternative A, but would be limited to localized areas. This would increase risk compared with Alternative B because natural wood campfires would be allowed, and these types of campfires have a higher potential for escape due to firebrands than the types of fires that would be permitted under Alternative B.

Livestock grazing would have the same impacts on fine fuels, fire ignition potential, and fire size as those under Alternative A. However, fine fuels would decrease slightly in grazed areas where livestock favor herbaceous vegetation. This would reduce fuel loading in localized, site-specific areas and could reduce fire frequency in livestock grazing allotments relative to Alternative B because the entire monument would be unavailable for livestock grazing under that alternative. Managing livestock to allow adequate and suitable native forage would have the same impacts on fire frequency, intensity, and severity as those that would occur under Alternative A. Provision of additional livestock watering areas would have the same impacts on wildfire suppression efforts as those that would occur under Alternative A.

Existing rights-of-way would have similar but less widespread impacts as those that would occur under Alternative A. Corridors under this alternative would be 200 to 300 feet wide, compared with one-mile wide under Alternative A. As a result, there would be less potential for the rights-of-way to act as fuel breaks under this alternative. Any additional rights-of-way granted by the BLM where additional transmission lines or pipelines are constructed could increase the number of safety hazards to firefighters in site-specific areas.

Closing 10,880 acres (8 percent of public lands in the IFNM) to motorized vehicle use would reduce the area where vehicle-related ignition could occur, relative to 820 acres closed under Alternative A and increase the area where it could occur, relative to Alternative B (where 38,040 acres would be closed).

Management of lands to protect wilderness characteristics under this alternative would have the same potential to increase fire size as management under Alternative B if fire suppression methods were restricted in these areas; however 9,510 acres (13 percent of public lands in the IFNM) would be managed to protect wilderness characteristics, which is less than Alternative B.

Implementation-level decisions for travel management would have similar impacts on those described under Alternative B, except motorized travel would be allowed on 124 miles of road; the risk for ignitions from motorized vehicles in the IFNM would be much reduced compared with 346 miles under Alternative A and increased compared with 63 miles under Alternative B.

#### **4.3.7.5 Alternative D**

Minimizing surface disturbance throughout the IFNM, along with an integrated noxious weed management approach, would have the same impacts on current FRCC, fire suppression efforts, and hazardous fuels treatments as those that would occur under Alternative B. These decisions would include: maintain and improve soil cover and productivity through erosion preventative measures and land treatments, restore disturbed areas to the natural range of native plant associations, and select suitable plants for restoration activities.

Establishing the Desert Bighorn Sheep WHA, installing additional wildlife waters, and implementing measures to conserve desert tortoise habitat would have the same impacts on current FRCC and potential sources of wildfire ignition as those that would occur under Alternative B.

Prohibiting the removal of living, dead, and downed native plant material would have similar impacts on those that would occur under Alternative B. However, allowing the removal of vegetation for consumption by livestock and the collection of dead and downed wood for firewood use in the IFNM reduces restrictions compared with Alternatives B and C. There would be less accumulation of surface fuels under this alternative compared with Alternatives B and C since collection of firewood would be permitted in addition to livestock grazing.

Maintaining livestock grazing would have the same impacts regarding ignition potential, fire size, and fire intensity as those that would occur under Alternative A. Any provision of new livestock water sources would have the same impacts on fire suppression efforts as those that would occur under Alternative A.

Campfires would pose the same potential for ignitions as that under Alternative C. The restrictions on the use of firearms for recreational target shooting would minimize the potential for ignitions in most areas of IFNM, but firearm-related ignition could occur within the two designated shooting areas.

Utility corridors and rights-of-way would be ¼ mile wide under this alternative—wider than those under Alternative B, but narrower than those under Alternative A. This could increase fire size, relative to Alternative A, because narrower corridors would not be as effective as fuel breaks under this alternative. Corridors would occupy approximately 2,660 acres (about 2 percent of public lands in the IFNM).

No acres would be closed to motorized vehicle use under this alternative, but travel would be limited to designated roads and trails. The 820 acres closed to vehicle use under Alternative A would be effectively closed under this alternative also, as none of the existing roads and trails in that area would be designated for motorized vehicle use.

An implementation-level decision would designate 226 miles of routes (versus 346 miles under Alternative A) for motor-vehicle travel. This would reduce the risk of vehicle related ignition compared with Alternative A and increase risk compared with 63 miles under Alternative B or 124 miles under Alternative C.

#### **4.3.8 Impacts on Cultural Resources**

This section discusses impacts on cultural resources from the proposed management decisions for other resources and resource uses. Impacts on cultural resources from most management decisions are difficult to quantify because the locations of most cultural resource sites in the IFNM are not known and the alternatives do not identify specific areas for ground-disturbing activities. The extent of impacts on cultural resources among the alternatives varies in regard to two primary factors: (1) the potential adverse effects of different types and intensities of authorized uses of public land, especially the extent of ground-disturbing activities, and (2) the potential effects due to targeted management of cultural resources in specific areas.

The following assumptions were used when assessing the impacts on cultural resources.

- The cultural resource program would continue to be implemented in accordance with BLM policies, which implement numerous Federal laws and regulations. The four major elements of the cultural program include (1) inventory and evaluation, (2) protection and preservation, (3) resource use in accordance with resource allocations, and (4) planning. BLM reviews activities and other authorized uses of the public lands pursuant to Section 106 of the National Historic Preservation Act (NHPA), NEPA, and the American Indian Religious Freedom Act. As funding becomes available, BLM will prepare a cultural resource management plan to implement this program for the IFNM.
- Any actions proposed on public land administered by BLM land would include an evaluation of (1) the potential for the presence of important cultural resources, (2) potential impacts on resources due to the type of project action that may allow for surface disturbance or easier access to the resource, and (3) appropriate mitigating actions to protect those cultural resources, including project avoidance, redesign, and if necessary, data recovery.
- Access or surface disturbance associated with a specific future action could result in damage or loss of the resource; however, important resources also may be discovered and would need to be properly evaluated and curated.
- The number of sites that could be impacted by various actions would be directly correlated with the degree, nature, and quantity of surface-disturbing activities within the IFNM and the cultural sensitivity of the area. Planned surface-disturbing activities can be mitigated through an inventory process, which may involve modeling, and provide data that could contribute to a management plan specifically written for cultural resources.
- Scientific excavation of identified sites could occur (if not restricted by the RMP).
- As each alternative would comply with Federal laws and agency guidelines governing the identification, evaluation, and protection of cultural resources and Native American sacred/traditional sites, cultural resources would continue to be considered, identified, and evaluated in association with all Federal Undertakings (see Glossary). The cultural resources data acquired through these inventories and evaluations would increase knowledge of cultural resources in the region.

All Federal agencies are required to comply with Section 106 of the NHPA. Section 106 requires Federal agencies to take into account the effects of their undertakings on properties eligible for or included in the National Register of Historic Places (NRHP). Compliance with Section 106 also requires the appropriate levels of consultation and interaction with Native American tribes and the public to assure that the concerns of indigenous peoples are addressed. Compliance with Section 106 and other laws and policies ensures that the effects on cultural resources of all federal undertakings within the IFNM would be taken

into account during planning and implementation, wherein BLM could ensure that there would be no significant impacts to cultural resources.

#### **4.3.8.1 Impacts Common to All Alternatives**

Under all alternatives, cultural resources would continue to be affected by natural weathering and erosion processes, and some resources, including objects of the monument with cultural value (such as rock art, archaeological sites, and prehistoric Hohokam sites), may be degraded by uses of the IFNM or vandalism if no protective or preventative action is taken. More cultural resources will be found on public land administered by the BLM within the IFNM, but quantity and quality of uninventoried resources are not known until they are discovered and properly evaluated. The cultural resources that have been inventoried provide a basis for modeling the types and distribution of unrecorded archaeological and historical resources within the IFNM.

Without sufficient law enforcement associated with recreational activities, actions such as off-road travel, inadvertent damage, vandalism, and pot hunting would result in a loss of cultural resource information. As most recreation activities are dispersed in nature and do not require permitting, these impacts would be mitigated on a case-by-case basis as they are discovered. Areas that are not designated for public use serve to protect cultural sites from intentional and inadvertent damage from human activities.

The emergency nature of wildfire can lessen management ability and priority to conserve cultural resources. Surface-disturbing impacts on cultural resources from wildfires are largely associated with fire suppression activities. Wildfire suppression activities have a considerable potential to damage prehistoric and historic sites (including those considered to be objects of the monument) through fire line construction (hand line and bulldozer line), establishment of helicopter bases, fire camps, and related activities. Fire camps and staging areas in or near known or unidentified prehistoric or historic sites may subject the associated surface artifacts to removal or displacement.

The dispersed nature of livestock grazing creates difficulties in applying Section 106 to all areas of potential disturbance due to livestock. Areas where livestock congregate and livestock trailing occurs at or crosses cultural resource sites could impact cultural resources by altering their context. Cattle congregating and rubbing could damage standing structures and abrade rock art panels. Trampling at water sources and along stream banks, as well as trailing, could remove protective vegetation cover and increase compaction, creating indirect impacts on cultural resources by accelerating natural erosion and exposing artifacts to illegal surface collection and vandalism. These types of impacts would be localized to individual sites. Impacts on specific areas would be identified and mitigated through the leasing process on a case-by-case basis.

Activities and projects associated with the management of natural resources include air quality improvements, range improvements, erosion control structures, habitat improvement projects, and vegetation treatments, which may include herbicide applications or mechanical removal. When the proposed projects have the potential to affect cultural resources, they are evaluated on a case-by-case basis so that effects on cultural resources can be avoided, reduced, or mitigated. Some resource management projects can help protect cultural resources by reducing erosion, reducing heavy fuel loads, or improving livestock distribution. Effects from these land management activities would be similar across all alternatives.

Retention of Federal land within the IFNM would provide regulatory protection for cultural resources, and acquisition of non-Federal land would provide regulatory protection to cultural resources within those lands, as well as further the protective natural and cultural resource goals of the monument.

## Impacts on Cultural Resources (cont.)

Because of review procedures and flexibility of potential action, adverse effects on cultural resources are not anticipated as a result of implementing management actions for the following resources and resource uses: air quality, paleontological resources, special designations, or scenic and visual resources management.

Since there has been no comprehensive inventory of traditional cultural properties within the IFNM, it is not possible to determine what types of future impacts may occur, given the often intangible nature of this type of cultural resource. The presence, type, significance, and possible effects to TCPs will have to be addressed on a case-by-case basis until such time as all concerned tribes have provided TCP inventory information to the BLM. The BLM also recognizes that TCPs may have traditional spiritual and religious importance; consequently many tribes are reluctant to disclose location or attribute information without an imminent threat. This negates the usefulness of many broad-scale, planning stage, inventory efforts.

### **4.3.8.2 Alternative A (No Action)**

Management of cultural resources is usually a non-disturbing activity that involves inventory, site monitoring, and occasionally placement of site protection signs. Some cultural resource management activities, such as installation of protective fencing to exclude livestock, motorized vehicles, or the public; research involving excavation; and development of interpretive projects or facilities, such as signs, kiosks, and public events could affect cultural resources, as well as other resources. Such projects rarely involve disturbance of more than 1 acre in any given year.

Within the IFNM, the Waterman Mountains ACEC is the only special designation, which was primarily established to manage vegetation. Because special designations tend to limit or carefully manage ground-disturbing activities, the Waterman Mountains ACEC also provides some coincidental protection of cultural resources, including cultural objects of the monument, within its approximately 2,240 acres of public land.

The closure of the 20-acre Special Management Area to motorized vehicles would continue under Alternative A. Closures and restrictions of vehicle uses reduce the potential for effects to the integrity of the site, but could cause limitations to opportunities for public interpretation and education. Protection for cultural resources also would be provided through the continued management of the 2,720-acre Avra Valley CRMA.

Management actions for special status species, wildlife and wildlife habitat, vegetation, and soil and water resources could coincidentally protect cultural resources by minimizing impacts from livestock, installing fencing to protect vegetation, and through soil erosion reduction efforts. Decisions associated with natural resources could disturb cultural resources and associated objects of the monument during ground-disturbing activities.

Uses of public lands would include mineral extraction, continued livestock grazing activities, construction within and use of various types of rights-of-way, recreation, and research projects. Ground-disturbing mining or construction activities can disturb cultural resources. Livestock grazing can result in trampling, breakage, and dispersal of artifacts and increased erosion, and damage also can be caused by cattle rubbing or bumping into historical features such as buildings and cairns. Dispersed recreational uses also can result in inadvertent damage and lead to vandalism, which could damage objects of the monument (archaeological objects of scientific interest). When these uses require Federal authorization they would be reviewed to ensure that potential effects on cultural resources are considered. Some uses, including issuance of rights-of-way, livestock facilities, and mineral development, would have secondary effects because they could create new motorized vehicle access, which could lead to inadvertent damage and vandalism of fragile cultural resources. By altering the local environment, these developments also could

degrade the integrity of some types of nearby cultural resources if their settings or sense of feeling are important aspects of their historical values.

Activities that are not subject to the permitting process, such as dispersed recreation, recreational shooting, and OHV use in unrestricted areas, also would have the potential to disturb cultural resources, including objects of the monument with cultural value. Alternative A provides the least protection for cultural resources from these uses because it would impose very few restrictions on recreation management, recreational shooting, and OHV use.

Cultural resources would be protected by implementation of mitigation measures to ensure that maintenance of established rights-of-way do not conflict with the natural and cultural resource goals of IFNM, and by consideration of new land use authorizations on a case-by-case basis specifically to assess compatibility with natural and cultural resource goals. Ongoing management activities, such as installing protective fencing, planting vegetative to control erosion, erecting signs to guide public use, having a law enforcement presence, and conducting data recovery operations contribute to the mitigation measures that protect cultural resources. Implementing conservation measures during fire suppression operations to reduce the effects of fire management actions on threatened and endangered species also could coincidentally protect cultural resources.

Limiting motorized vehicle use to existing routes could protect cultural resources and associated objects of the monument, but continued motorized use of the 346 miles of existing routes could disturb the 112 archaeological and historical sites recorded along the approximately 165 miles of those roadways on public land that have been surveyed for cultural resources, as well as other unrecorded sites along the approximately 181 miles that have not been surveyed for cultural resources.

The disturbance to objects of the monument (including archaeological objects of scientific interest such as rock art, archaeological sites, prehistoric Hohokam sites, archaeological districts, and Mission Santa Ana) resulting from management actions would range from undetectable to measurable at a local scale (for example, potentially in heavily used recreational shooting areas). On a case-by-case basis, BLM would evaluate resources as they are discovered, and implement mitigation measures (such as closing access to sites, establishing barriers that restrict access to sites, recovering data through excavation and documentation of the site) to reduce threats or conflicts from natural- or human-caused deterioration of those resources. Such measures would provide for “protection of the monument objects” for cultural resources as defined in Section 1.3.1.

#### **4.3.8.3 Alternative B**

The potential impacts of activities and projects associated with the proposed management decisions for special status species, wildlife and wildlife habitat, vegetation, and soil and water resources under Alternative B would be similar to Alternative A and would have the same impacts as those described under Alternative A.

Cultural resources would be provided some coincidental protection within the Waterman Mountain VHA. In contrast to Alternative A, Alternative B specifically provides for the allocation and reallocation of cultural resources into one of the five use categories according to the BLM Cultural Resource Manual 8100: (1) scientific use, (2) conservation for future use, (3) traditional use, (4) public use, and (5) experimental use. Site allocation and reallocation would protect and promote appropriate uses of cultural resources. Allocation of sites to scientific use and allowing non-ground-disturbing scientific and historical studies of these sites would promote appropriate management of the informational values of these sites and increase understanding of the cultural history of the region. Under Alternative B, no sites would be allocated to public use, which would protect and preserve cultural resources, but eliminate

## Impacts on Cultural Resources (cont.)

opportunities for public interpretation. Allocation of sites to traditional use under Alternative B would promote the preservation of cultural traditions.

Closure of the Santa Ana de Cuiquiburitac area to motorized vehicles would continue under Alternative B, but would be enlarged to encompass 640 acres (620 acres more than under Alternative A), and the historic site would be allocated to conservation for future use. The expansion and allocation would increase the protection of the site and objects of the monument (remnants of the Mission Santa Ana, the last mission constructed in the Pimeria Alta), but allocation to conservation for future use would restrict opportunities for types of research and public interpretation and education. The Avra Valley CRMA would be eliminated under Alternative B, but this action would have no effect on cultural resources because the area is provided the same level of protection through the designation of the monument.

Federal minerals in the IFNM are withdrawn from entry under the mining laws. Acquisition of non-Federal mineral estate underlying Federal surface holdings throughout the IFNM could coincidentally protect cultural resources and associated objects of the monument by eliminating ground-disturbing activities associated with exploitation of minerals.

Managing the IFNM as an exclusion area with no utility corridors identified which limits the potential for new rights-of-way to be authorized, could coincidentally protect cultural resources by reducing surface disturbance. Managing 125,110 acres (about 97 percent of the public lands within the IFNM) as VRM Class I and II and making public lands within the IFNM unavailable for livestock grazing as leases expire would reduce surface disturbance, providing more protection to cultural resources than Alternative A. In addition, the decision to rehabilitate disturbed areas could coincidentally restore or maintain the settings for cultural resources.

Impacts on cultural resources from recreation activities requiring a permit, such as commercial and competitive events, are addressed through NEPA and Section 106 processes. Dispersed recreation does not require a permit and has the greatest potential to affect cultural resources, particularly when it involves the use of OHVs. Recreational use of public lands is increasing greatly due to population growth in metropolitan areas, proliferation of urban interface areas associated with subdivisions, and the increasing popularity of outdoor recreation activities, particularly recreational OHV use and geocaching activity. Alternative B would increase protection of cultural resources and the cultural resource related objects of the monument over Alternative A by closing 38,040 acres to OHV use and limiting OHV use to designated routes in an area of 90,360 acres (compared to 820 acres closed and 127,580 acres limited to designated or existing routes in Alternative A). Motorized use is prohibited year-round within Cocoraque Butte, as well as within a 640-acre area surrounding Santa Ana de Cuiquiburitac, further protecting this object of the monument.

In addition, overnight vehicle-based camping would be limited to 30 identified sites, which would decrease potential disturbance to cultural resources caused by vehicle parking and maneuvering and from persons engaging in ancillary activities. Dispersed non-motorized camping also would be limited to specified camping areas, further minimizing the potential for inadvertent resource damage from campsites. Prohibiting recreational shooting would eliminate a source of potential damage to cultural resources, including objects of the monument (such as rock art, archaeological sites, prehistoric Hohokam sites, and other archaeological objects of scientific interest). Limitation of the development of new routes could help protect cultural resources within IFNM as well.

Decisions for special status species, wildlife and wildlife habitat, vegetation, and soil and water resources could coincidentally protect cultural resources by reducing soil erosion, decreasing public access by removing roads and facilities, and installing fences to protect vegetation. Similarly, decisions associated

with natural resources could disturb cultural resources during associated ground-disturbing activities, and management of some special status species and native vegetation could affect species and vegetation that have traditional cultural significance.

Alternative B would limit motorized vehicle use to 63 miles of routes. The 33 archaeological and historical sites recorded along the 55 miles of those roads that have been surveyed for cultural resources, as well as sites that might be unrecorded along the 8 miles that have not been inventoried, would be managed to avoid adverse impacts or mitigate impacts of continued use and maintenance of those roads. The 79 archaeological and historical sites recorded along the 266 miles designated for non-motorized uses and other unrecorded sites are unlikely to be adversely affected by non-motorized uses of those roads and trails and are provided protection by the closing of those routes to motorized vehicles.

Designation of exclusion areas upon the acquisition of land could coincidentally protect cultural resources and the associated objects of the monument. Providing access for wildlife viewing opportunities under recreation could disturb cultural resources through increased access, but also could provide coincidental opportunities for public interpretation and education. Implementing survey and reclamation of abandoned mines could reveal information about historical mining within the IFNM and lead to the recording of additional cultural resources related to mining, but reclamation also could disturb cultural resources. Providing access to geological sites and/or features could disturb cultural resources, but public viewing and enjoyment of geologic sites could offer opportunities to interpret cultural resources. As a result of these decisions, Alternative B decisions provide for more opportunities to increase understanding of cultural resources within the IFNM than Alternative A.

The disturbance to objects of the monument (including rock art, archaeological sites, prehistoric Hohokam sites, archaeological districts, Mission Santa Ana, and other archaeological objects of scientific interest) resulting from management actions would range from undetectable to some minor disturbance at a local scale. Compared with the other alternatives, the minimization of public access and use together with Alternative B decisions that would minimize the potential for new ground disturbance would offer the greatest protection of the monument objects for cultural resources as defined in Section 1.3.1. As cultural resources are newly discovered, BLM would evaluate the resources on a case-by-case basis and implement mitigation measures (such as closing access to sites, establishing barriers that restrict access to sites, recovering data through excavation and documentation of the site) to reduce threats or conflicts from natural- or human-caused deterioration of those resources. Such measures would further provide for “protection of the monument objects” for cultural resources.

#### **4.3.8.4 Alternative C**

The potential impacts of activities and projects associated with the proposed management decisions for special status species, wildlife and wildlife habitat, vegetation, and soil and water resources under Alternative C would be similar to Alternative A and would have the same impacts as those described under Alternative A. Allocating land as the Waterman Mountains VHA would result in the same impacts as those described under Alternative B.

Excavation of sites allocated to scientific use would be allowed, which would promote long-term preservation of the informational values of those sites and increase understanding of the regional cultural history. In contrast to Alternative B, which allocates no cultural resources to public use, Alternative C would allocate segments of the historic Sasco Railroad, historical sites associated with the Silver Bell Mine, historical ranching sites, and certain agricultural use areas within the existing Avra Valley for public use. Other sites may be allocated to public use based on specific criteria. This decision addresses program goals for public interpretation and educational opportunities, but increased visitation without adequate management could degrade the integrity of cultural resources and objects of the monument with

## Impacts on Cultural Resources (cont.)

cultural values. The allocation of sites to traditional use would result in the same impacts as those described under Alternative B.

A 640-acre area surrounding Santa Ana de Cuiquiburitac (an object of the monument) would be closed to motorized vehicles as in Alternative B, but instead of allocating the site to future use, the site would be allocated for scientific use. This allocation would allow for further research to enhance documentation and understanding of the site. Eliminating the Avra Valley CRMA would result in the same impacts as those described under Alternative B.

Designation of two utility corridors and construction of utilities within those corridors could disturb cultural resources. Rather than prohibiting authorization of new rights-of-way as in Alternative B, rights-of-way for access and utilities could be considered on a case-by-case basis. Limitation of new rights-of-way could coincidentally protect cultural resources, but issuing new rights-of-way could disturb cultural resources if impacts could not be avoided. All 11 grazing allotments would be available for grazing, which would result in impacts similar to Alternative A and a greater impacts than under Alternative B, which would retire grazing leases. In addition, the protection of the settings of cultural sites could decrease somewhat under Alternative C, with 124,900 acres within the IFNM being managed as VRM Class II, compared to 125,110 acres managed as VRM Classes I and II in Alternative B.

Approximately 10,880 acres would be closed to OHV use and OHV use would be limited to designated routes on 117,520 acres (compared to 820 acres closed and 127,580 acres limited to existing or designated routes in Alternative A). Alternative C does not provide as much protection to cultural resources and associated objects of the monument as Alternative B (38,040 acres closed and 90,360 acres limited to designated routes). Like Alternative B, Alternative C prohibits motorized use year-round within Cocoraque Butte, as well as within a 640-acre area surrounding Santa Ana de Cuiquiburitac.

Overnight vehicle-based camping would be limited to identified sites throughout the IFNM resulting in the same impacts as those described under Alternative B. However, dispersed non-vehicle-based camping would be allowed and could disturb cultural resources. Like Alternative B, recreational shooting would not be allowed so a source of potential damage to cultural resources and associated objects of the monument would be eliminated.

Actions for special status species, wildlife and wildlife habitat, vegetation would result in the same impacts as those described for Alternative B. Alternative C allows for new and continued ground-disturbing activities in areas with sensitive or fragile soils, but impacts would be mitigated.

Alternative C would limit motorized vehicle use to 124 miles of routes. The 69 archaeological and historical sites recorded along the 110 miles of those roads that have been surveyed for cultural resources, as well as sites that might be unrecorded along 15 miles that have not been inventoried, would be managed to avoid adverse impacts or mitigate impacts of continued use and maintenance of those roads. The 43 archaeological and historical sites along 205 miles designated for non-motorized uses and other unrecorded sites are unlikely to be adversely affected by the non-motorized uses of those roads and trails and are provided protection by the closing of those routes to motorized vehicles. This is less protection than Alternative B with 79 sites and 266 miles designated as non-motorized.

The disturbance to objects of the monument (including rock art, archaeological sites, prehistoric Hohokam sites, archaeological districts, Mission Santa Ana, and other archaeological objects of scientific interest) resulting from management actions would range from undetectable to some measurable effects at a local scale. Measurable effects may occur from the public use allocation of selected historical features; scientific use of Santa Ana de Cuiquiburitac; and the ongoing public use associated with travel, dispersed camping, and other allowable activities. Such effects would be fewer than expected with current

management conditions. As cultural resources are newly discovered, BLM would evaluate the resources on a case-by-case basis and implement mitigation measures (such as closing access to sites, establishing barriers that restrict access to sites, recovering data through excavation and documentation of the site) to reduce threats or conflicts from natural- or human-caused deterioration of those resources. Such measures would provide for “protection of the monument objects” for cultural resources as defined in Section 1.3.1.

#### **4.3.8.5 Alternative D**

The potential impacts of activities and projects associated with the management actions for special status species, wildlife and wildlife habitat, vegetation, and soil and water resources under Alternative D would be similar to Alternative A and would have the same impacts as those described under Alternative A.

Allocating land as the Waterman Mountains VHA would result in the same impacts as those described under Alternative B. Like Alternative C, Alternative D allows for the excavation of sites allocated to scientific use (including the Santa Ana de Cuiquiburitac site, an object of the monument), which would promote the long-term preservation of the informational values of those sites and increase understanding of the regional cultural history. Alternative D would allocate segments of the historic Sasco Railroad, historical sites associated with the Silver Bell Mine, historical ranching sites, and certain agricultural use areas within the existing Avra Valley for public use. Other sites may be allocated to public use based on specific criteria. This decision addresses program goals for public interpretation and educational opportunities, but increased visitation without adequate management could degrade the integrity of cultural resources. Allocating sites to traditional use would result in the same impacts as described under Alternative B. Closing a 640-acre area surrounding Santa Ana de Cuiquiburitac to motorized vehicle travel would result in the same impacts as those described under Alternative C. Eliminating the Avra Valley CRMA would result in the same impacts as those described under Alternative B.

Alternative D also provides more protection than Alternative A for cultural resources by modified management of the use of other resources on public land, but less protection than Alternatives B and C. With Alternative D, three utility corridors would be identified, and construction activities in those corridors, could disturb cultural resources. No utility corridors would be identified under Alternative B and only two would be identified under Alternative C. Allowing 11 grazing allotments to remain available for grazing would result in the same impacts as those described under Alternative C. Alternative D would manage 122,580 acres as VRM Class II, which is less than Alternative B (VRM Class I and II areas totaling 125,110 acres) and less than Alternative C (VRM Class II areas totaling 124,900). Reducing the area of VRM Class II designation could affect the integrity of the settings of sensitive cultural resources.

Through closure and limitation of OHV use, Alternative D provides similar protection of cultural resources as Alternative A. Under Alternative D, OHV use on 128,400 acres would be limited to designated routes (compared with 820 acres closed and 127,580 acres limited to designated routes Alternative A). Alternative D does not provide as much protection to cultural resources and objects of the monument with cultural values as Alternative B (38,040 acres closed and 90,360 acres limited to designated routes) or Alternative C (10,880 acres closed and 117,520 acres limited to designated routes). However, Cocoraque Butte, as well as a 640-acre area surrounding Santa Ana de Cuiquiburitac (an object of the monument), would remain closed to motorized vehicle use year-round resulting in the same impacts as those described under Alternative B.

Under Alternative D, overnight vehicle-based camping would be limited to identified sites, with the same resulting impacts as those described under Alternative B. Non-vehicle-based camping would result in the same impacts as those described under Alternative C.

Eliminating dispersed recreational shooting would eliminate a potential source of cultural resource damage for most IFNM lands, but the concentration of recreational shooting activities in two designated

areas would intensify the potential for damage to undiscovered cultural resources at Avra Hill and Cerrito Represo. Damage could occur from bullet strikes and ricochet, and vehicle and human trampling. In addition, damage may not be fully limited to the combined 629 acres for the designated sites as errant bullets could hit cultural resources beyond the site boundaries. However, both designed shooting areas have relatively low cultural resource sensitivity as compared to most other areas of the IFNM (see Appendix I for additional details). The implementation of management actions for special status species, wildlife and wildlife habitat, vegetation, and soil and water resources would result in the same impacts as those described for Alternative C. Continued livestock grazing would impact cultural resources the same way as decisions under Alternatives A and C. Designating acquired lands as avoidance rather than exclusion area (except in designated corridors) would result in the same impacts as those described under Alternative C.

Alternative D would limit motorized vehicle use to 226 miles of routes. The 85 archaeological and historical sites recorded along the 142 miles of those roads that have been surveyed for cultural resources, as well as sites that might be unrecorded along 84 miles of those roads that have not been inventoried, would be managed to avoid adverse impacts or mitigate impacts of continued use and maintenance of those roads. The 27 archaeological and historical sites along the 116 miles designated for non-motorized uses and other unrecorded sites are unlikely to be adversely affected by non-motorized uses of those roads and trails and are provided protection by the closing of those routes to motorized vehicles. This is less protection than Alternatives B with 79 sites and 266 miles designated as non-motorized, and Alternative C with 43 sites and 205 miles designated as non-motorized.

The disturbance to objects of the monument (including rock art, archaeological sites, prehistoric Hohokam sites, archaeological districts, Mission Santa Ana, and other archaeological objects of scientific interest) resulting from management actions would range from undetectable to measurable at a local scale. Like Alternative C, some localized disturbance of cultural resources may occur from the public use allocation of selected historical features; scientific use of Santa Ana de Cuiquiburitac; and the ongoing public use activities. Because Alternative D offers greater public accessibility than Alternatives B and C, there could be marginally greater disturbance. Recreational shooting has the potential to damage resources and Alternative D would provide for two designated shooting areas; these areas have low cultural resource sensitivity and scientific documentation of the identified cultural resource sites within these areas would mitigate for use of these areas. Because Alternative D provides for somewhat greater accessibility than Alternatives B and C, there is increased potential for inadvertent disturbance of cultural resources that have not yet been discovered. However, as resources are discovered, BLM would evaluate them on a case-by-case basis and implement mitigation measures (such as closing access to sites, establishing barriers that restrict access to sites, recovering data through excavation and documentation of the site) to reduce threats or conflicts from natural- or human-caused deterioration of those resources. Such measures would provide for “protection of the monument objects” for cultural resources as defined in Section 1.3.1.

#### **4.3.9 Impacts on Paleontological Resources**

This section discusses impacts on potential paleontological resources that could occur from management of other resources and resource uses. Although paleontological resources are currently not known within the IFNM, management actions can potentially cause damage to or destroy fossil-bearing geological formations, resulting in the loss of vertebrate fossils or other scientifically significant fossil resources. Apart from natural weathering and erosion, resources can be damaged or lost by excavation and other surface-disturbing activities, theft or vandalism. Management-related activities involving excavation or other surface disturbance can, at the same time, “discover,” as well as damage or destroy paleontological resources. When discovery occurs, resources can be curated for scientific, educational, and/or recreational values. Although damage or destruction could diminish the potential value of paleontological resources,

## Impacts on Paleontological Resources (cont.)

without removal of some of the rock surrounding fossils, the fossils would remain largely undetected. Management actions that result in erosion do not necessarily damage paleontological resources; however, the excessive erosion resulting from other surface disturbance could damage fossils present at the surface.

Increased controlled access to areas could allow for discovery of paleontological resources, which could lead to proper collection and curation for the resource and add to the scientific knowledge of the IFNM area. Conversely, with increased access the fossil resource may be damaged, destroyed, or lost due to vandalism or theft. Restriction of public access could both reduce the potential for discovery and diminish the chance of vandalism or theft. While the location of every significant paleontological locality in the IFNM is not known, the analysis considers the different management actions and their potential to directly or indirectly impact paleontological resources.

This analysis is based on the following assumptions:

- Paleontological resources are subject to an active discovery process.
- Areas containing vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils are expected to occur within three of the four Paleontological Sensitivity Management Classes prepared by BLM's Regional Paleontologist (Classes 4, 3, and 2; ranging from high to moderate sensitivity).
- Inventories prior to surface disturbance in high-probability areas would result in the identification and evaluation of previously undiscovered resources, which BLM would then manage accordingly.
- Unmitigated surface-disturbing activities could dislodge or damage paleontological resources and features that were not visible prior to surface disturbance.

Impact analyses and conclusions are based on an inventory of the paleontological resources in the area and the geologic units that occur at IFNM and on the Paleontological Sensitivity Management Classes prepared by the BLM's Regional Paleontologist.

### **4.3.9.1 Impacts Common to All Alternatives**

Activities that occur during the suppression of wildland fires (e.g., construction of fire lines, bulldozing of access roads, and general movement of heavy equipment) could disturb the surface, creating impacts on mineral soils. This can damage or destroy paleontological resources; however, most of the areas in the IFNM where paleontological resources could be present at the surface lack characteristics that encourage the ignition and spread of wildland fires, and do not support significant vegetation. Developing an activity plan or restoration plan within the IFNM would reduce loss of potentially significant paleontological resources (though none are known to occur in the IFNM) to soil erosion, weathering, and exposure by reducing surface disturbance.

Paleontological resources could be identified (and subsequently documented) as a result of cultural resource inventories, recordation, evaluations, and data recovery excavations, as well as by paleontological assessments that would be required before transferring lands from Federal jurisdiction. Regarding land tenure adjustments, including RP&P leases, documentation and evaluation of resources and implementation of mitigation measures before changes in ownership would ensure that lands with scientifically significant paleontological resources are retained or obtained, providing protection under Federal management policies.

The withdrawal of Federal lands from all forms of sale or leasing would reduce the potential for surface disturbance from development of energy and mineral resources, providing coincidental protection for any

paleontological resources in the IFNM. Prohibiting the collection of paleontological resources and limiting collection to scientific uses would protect resources in the IFNM.

Under all alternatives, impacts on paleontology resources are not anticipated as a result of implementing management actions for the following resources programs: air quality, wildlife and wildlife habitat, special status species, fire ecology, and livestock grazing. Under all alternatives, impacts on paleontology are not anticipated as a result of implementation-level decisions for the following resource programs: vegetation, scenic and visual resources, energy and minerals, recreation, lands and realty, and lands managed to protect wilderness characteristics.

#### **4.3.9.2 Alternative A (No Action)**

Under Alternative A, mining activity related to valid existing claims would be allowed on case-by-base basis, which could result in the loss or destruction of paleontological resources from related surface and subsurface disturbance. Mining activities could also expose paleontological resources, and with proper mitigation, this could add to the resource database and scientific knowledge of the area.

Under Alternative A, continuing management of recreation would allow access to areas with sensitive paleontological resources. If resources are discovered as a result, this could increase scientific knowledge of the area if resources are properly curated. However, access and associated recreational activities, such as target shooting, could also cause loss of or damage to paleontological resources.

Development and implementation of an activity plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could reduce surface disturbance and thereby reduce loss of paleontological resources to soil erosion, weathering, and exposure. Limiting vehicle travel and closing 820-acres to motorized travel would also reduce surface disturbance and could reduce erosion, providing coincidental protection of paleontological resources. Limiting OHV use to existing or designated routes on 127,580 acres (99 percent of public lands in the IFNM) could result in surface widening, route braiding, and route pioneering. OHV use on existing routes could degrade roads and increase erosion. Impacts to paleontological resources from this erosion and surface disturbance could continue in areas where travel would be limited to designated routes.

Issuing rights-of-way for joint use could create access to areas with sensitive paleontological resources. This could increase discovery of such resources, which could increase scientific knowledge of the area if the resources are properly curated; however, greater access to IFNM lands along rights-of-way could also result in loss of resources through damage, vandalism, or theft. Implementing activity plans for the Aqua Blanca Ranch Multiple Resource Management Area could also reduce erosion in those areas, with coincidental protection to paleontological resources.

#### **4.3.9.3 Alternative B**

Paleontological resources may be present in geologic resources that warrant special management, providing coincidental protection of those resources in localized areas. Prohibiting the collection of geologic resources also could protect paleontological resources. On the other hand, providing adequate access to geologic sites and/or features could allow the public to gain greater scientific, educational, and recreational value from the resource. Minimizing surface disturbance and stabilizing soils would minimize potential exposures of paleontological resources to loss or damage by weathering and soil erosion. The implementation of specific erosion control measures could further reduce loss of paleontological resources to weathering and exposure, as compared with Alternative A. In addition, managing 125,110 acres as VRM Class I and II, 60,000 acres for Semi-Primitive Non-Motorized recreation and 36,990 acres to protect wilderness characteristics would provide coincidental protection to paleontological resources by restricting surface-disturbing activities in those areas.

## Impacts on Paleontological Resources (cont.)

Under Alternative B, a monitoring scheme to evaluate the condition of cultural resources and to stop, limit, or repair damage to cultural resources would be developed and implemented. This would provide coincidental protection to recent paleontological resources (if discovered) that are a part of cultural resource sites, except in areas of valid existing rights. Additional discoveries could occur if interest results in additional surveys for paleontological resources. Requiring field surveys for paleontological resources and mitigation according to BLM guidelines prior to any ground disturbing activities on IFNM could increase protection to paleontological resources, as compared with Alternative A.

No new rights-of-way would be authorized under Alternative B (except as required by law), which could both reduce discovery, and protect paleontological resources against surface-disturbing projects. Closing 38,040 acres (areas shown on Map 2-18) to motorized vehicles would have the same impacts as those that would occur under Alternative A, but public access would be decreased. This could decrease discovery of resources by the public, but would increase the area where resources would be protected, as compared with Alternative A.

Designating 266 miles of routes for non-motorized use (as shown on Map 2-18), could limit public access, and therefore reduce the loss of paleontological resources, as compared with 346 miles open for motorized use under Alternative A.

In addition to limiting public access, Alternative B would limit dispersed, non-motorized camping to identified campsites, limit vehicle-based camping to approximately 30 specific sites, limit group camping to two designated sites, and prohibit recreational shooting. The reduction in vehicle maneuvering and human interaction within certain area may help to preserve paleontological resources in areas where such features exist.

### **4.3.9.4 Alternative C**

Impacts to paleontological resources under Alternative C would be the same as those under Alternative B, except allowing the collection of resources for scientific research or educational uses could increase the knowledge of paleontological resources (relative to both Alternatives A and B). In addition, allowing dispersed camping throughout the monument except in areas closed to protect objects of the monument and allowing group camping in three designated sites potentially could result in inadvertent damage to paleontological resources or a greater chance of illegal collection of the resources.

Rights-of-way for access and utilities would be authorized on a case-by-case basis, with the same potential impacts as those that would occur under Alternative A. Impacts from management of visual resource management would be the same types as those that would occur under Alternative B where 125,110 acres are managed as VRM Class I and II, but managing 3,420 acres to meet VRM Class III, and 80 acres to meet VRM Class IV objectives could increase surface disturbance. In addition, impacts from managing 9,510 acres to protect wilderness characteristics (as shown on Map 2-22) would be the same as Alternative B and also could reduce surface disturbance from human uses.

Impacts on paleontological resources from implementation-level decisions under Alternative C would be the same as those that would occur under Alternative B, except designating 205 miles of routes as non-motorized (as shown on Map 2-19), could further limit public access. This could reduce the loss of paleontological resources, relative to Alternatives A and B.

### **4.3.9.5 Alternative D**

Under Alternative D, impacts would be the same as those under Alternative C, with a few exceptions. Managing 1,600 acres as VRM Class IV could increase surface disturbance relative to Alternatives A, B, and C. In addition, increasing the area managed as Roded Natural to 19,060 acres could increase surface

disturbance, relative to Alternatives B, C, and D. Increasing the number of large group camping sites to four also would increase surface disturbance, relative to Alternatives B and C. Dispersed recreational shooting would be prohibited in most of the monument, but there could be very localized damage from bullet strikes to paleontological resources if these resources occur within the Avra Hill and Cerrito Represo designated shooting areas.

Impacts on paleontological resources from implementation-level decisions under Alternative D would be the same as those that would occur under Alternative C, except designating 116 miles of routes as non-motorized (as shown on Map 2-20), could limit public access. This could reduce the loss of paleontological resources by decreasing public access, relative to Alternatives A, B, and C.

#### **4.3.10 Impacts on Scenic and Visual Resources**

This section describes potential impacts on scenic and visual resources from management actions discussed in Chapter 2. Impacts on scenic and visual resources are first identified and then evaluated for consistency with VRM objectives. The Visual Resource Inventory (VRI) values and the VRM class objectives are used to guide the impact analysis. Generally, VRM Class I and Class II areas are more sensitive to changes because of the high resource values attached to those landscapes. This analysis focuses on two potential results of management decisions: (1) the introduction of elements into a natural landscape that would be evident and in contrast—in color, line, form, or texture—with that landscape, and (2) direct or indirect protection of visual resources against introduction of such contrasting elements. Most of the IFNM was inventoried under VRI Class II (74%) due to relatively high scenic quality and visual sensitivity, and viewing distance in the foreground-midground, with the rest inventoried under VRI Class III (26%).

The alternatives are analyzed according to changes within a landscape that would (or could potentially) occur as a result of a management action, regardless of VRM class. Direct changes are those that would immediately occur as a result of any one action (or combination of actions). Indirect impacts are those that would promote conditions that retain, degrade, or enhance visual resources within a landscape.

The following assumptions were used in the analysis of impacts on visual resources.

- Scenic vistas within the IFNM would increase in value over the next 20 years.
- Access to scenic landscapes would become increasingly important to residents and visitors to the area.
- Management of all resources would be consistent with the VRM objectives for the IFNM, which would vary depending on the alternative; management-related projects or activities would be avoided or mitigated if they would fail to maintain those objectives. Mitigation could include designing projects to have less visual impacts.
- Visual contrast ratings would be conducted for all proposed surface disturbing projects and activities within the IFNM in accordance with BLM Handbook 8431-1. .

##### **4.3.10.1 Impacts Common to All Alternatives**

Land treatments and other erosion prevention measures could introduce temporary visual contrasts in the landscape where manmade physical structures (e.g., straw bales, silt fences, etc.) or materials foreign to the Sonoran Desert (e.g., mulch) are used. These eventually would be removed once the site is stabilized. Land treatments to prevent erosion and deposition of soils would help retain the existing visual qualities within the IFNM and could enhance those qualities by reducing contrasts in color and texture where native plant species reestablish in disturbed areas.

Under all alternatives, suppression of wildfire in all areas of the IFNM could limit burned areas that could cause contrasts in color and texture on the landscape. Suppression would continue to protect existing vegetation and prevent conversion of native vegetation to more fire-dependent species, and limit the potential for smoke, and haze that could obscure vistas in the IFNM. However, surface disturbance from fuels treatments could result in contrasts in color, line, and texture in localized areas.

Authorization of mining activity on valid existing mining claims on a case-by-case basis could result in mining activities that change the appearance of landforms, vegetation, and structural landscape features at mining sites. Potential impacts from mining activities could include the appearance of tailings piles, waste-rock piles, heavy equipment, and surface disturbance in localized areas.

Permitting the collection of paleontological resources could result in surface-disturbing activities such as digging and vegetation removal. The small-scale visual contrasts in color and texture that would occur within the landscape as a result of these activities would be very localized and not inconsistent with VRM class objectives.

The Arizona Standards for Rangeland Health and Guidelines for Grazing Administration would apply under all alternatives. The guidelines promote the proper functioning of ecological conditions, and would help preserve or enhance the scenic quality of the natural landscapes within the IFNM.

Existing facilities at the Pan Quemado communication site would continue to be visual intrusions into the landscape (contrasting in line, form, texture, and scale) in and around an isolated area south of Avra Valley Road. The structures are visible from a greater distance south of the site than from the north due to differences in topography and landform. Visual impacts to the north do not extend beyond existing hills and mountains that interrupt the line of sight. Existing facilities and towers at the Confidence Peak communication site would continue to be in contrast with the landscape in and around areas of the Silver Bell Mine. However, the scenic quality of this area has already been disturbed by mining-related alterations to the landscape and the presence of existing overhead transmission lines. Existing overhead transmission lines would continue to create visual contrasts in surrounding areas. Visual contrasts related to the El Tiro Glider Port Recreation and Public Purpose Act (R&PP) lease area (including roads, fields, runways, hangars and support structures, aircraft, and flying activity) would continue for at least the term of the lease and any future lease renewals; no new R&PP leases would be issued.

Measures to conserve habitat for desert tortoise and Nichol Turk's head cactus would provide coincidental protection to existing visual resources by restricting surface-disturbing activities and disturbance to vegetation.

#### **4.3.10.2 Alternative A (No Action)**

Under Alternative A, the public lands in the IFNM (128,400 acres) would be managed as VRM Class III. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should both dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. Projects of all scale and size will be required to meet the VRM Class III objectives, and may be subject to special design requirements. Projects that are found not to meet the objectives will be required to be further mitigated until compliant with objective, not approved, or require an RMP amendment in order to move forward. Allocation of the entire IFNM under VRM Class III would partially retain the existing character of the landscape in the entire area inventoried under VRI Class II, and throughout all of the VRI Class III areas.

Under Alternative A, motorized vehicles and associated activity would continue to be visible on existing routes throughout most of the monument. Equipment associated with vehicle-based camping would

continue to be visible in localized areas, with concentrations in the most scenic and attractive mountainous areas. Minor visual contrast from dispersed camping, including parking turnouts, fire rings, incidental litter, or other localized evidence of use, would continue to be visible along access routes and affects views of the Sonoran Desert (an object of the monument). Continuation of motorized vehicle use in the IFNM could increase surface disturbance, erosion, evidence of use, or accumulation of debris on existing routes (due to a combination of high use and a lack of restrictions), creating small scale visual contrasts in color and texture within the landscape. Visual impact from recreational shooting would continue related to targets, used shells, and trash, soil surface disturbance and damage to vegetation. Maintaining the three existing mile-wide utility corridors would allow for construction of new major utilities, maintenance access roads, and ancillary facilities and structures, and could result in vegetation clearing. These would be consistent with VRM Class III objectives. Overhead transmission lines could be visible for miles, having some effects on the visual objects of the monument (views of the Sonoran Desert). Existing facilities and towers at the Pan Quemado communication site would continue to be in contrast with the landscape (in line, form, texture, and scale) in and around an isolated area south of Avra Valley Road. Additional structures at the 160-acre site would be allowed and would be visible from a greater distance south of the site than from the north due to differences in topography and landform. Visual impacts to the north would not extend beyond existing hills and mountains that interrupt the line of sight. Retaining public land (128,400 acres) and acquiring land could promote retention of the current visual characteristics of those lands because, consistent with VRM objectives, overall landscape characteristics could be retained on up to approximately 26,890 acres of land identified for acquisition, if that land were acquired; however, VRM Class III would allow for some changes in the landscape.

Implementation of an activity plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area that helps restore damaged watershed areas would improve watershed condition to satisfactory, increase soil cover, reduce sediment yield, and improve ecological site condition to good, thereby reducing the potential for visual contrasts that could otherwise occur due to excessive erosion. Management actions that prevent erosion and deposition of soils would promote retention of the existing visual qualities within the IFNM and could enhance those qualities by reducing contrasts in color and texture where native plant species reestablish in disturbed areas.

Managing 11 allotments as available for livestock grazing would continue visual impacts related to the presence of livestock, range improvements, and consumption of vegetation. New rangeland improvements could be developed to manage livestock, particularly fences and water developments, which could introduce noticeable structures that would draw the attention of casual observers in localized areas, but would not be expected to change the overall character of the landscape. Range improvements would be less likely in desert tortoise habitats (Category I and II) because they would be discouraged in those areas and the potential for visual impacts would be reduced.

Prohibiting land use authorizations (except along existing roads) within the Waterman Mountains ACEC would limit the potential for new structures and activities that could introduce contrasting elements into the surrounding landscape on approximately 2,240 acres (2 percent) of the public land within the IFNM. Activities generating visual contrasts along existing roads still could be authorized, subject to Class III visual contrast limits.

Developing an activity plan for the Agua Blanca Ranch Multiple Resource Management Area that would help improve the condition of that watershed, would reduce the potential for visual contrasts from excessive erosion because the plan would improve watershed condition to satisfactory, increase soil cover, and reduce sediment yield. Management actions that prevent erosion and deposition of soils would be designed within Class III objectives, and promote retention of the existing visual qualities within the IFNM and could enhance those qualities by reducing contrasts in color and texture where native plant species reestablish in disturbed areas.

Implementing conservation measures for desert tortoise habitat would result in indirect protection of visual resources in areas where surface-disturbing activities are restricted or prohibited.

Installing new fencing would introduce visual contrasts in localized areas, but the visual contrast would be limited and consistent with VRM class III objectives.

Managing livestock to increase forage for desert tortoises would promote retention of the natural character of vegetation in desert tortoise habitat areas and retain visual resource values.

Developing new stock water sources would increase the number of manmade structures, generating a localized but noticeable change in the landscape within the areas of the Twin Tanks and Cocoraque Pastures. This also could lead to indirect, localized impacts on the visual character of natural vegetation water sources because livestock would tend to congregate around water sources, but project design features would be consistent with VRM Class III objectives.

Authorizing specific land use permits, easements, and rights-of-way on a case-by-case basis would ensure that projects and activities meet VRM class III objectives, and that the visual impact of those projects or activities is mitigated.

Limiting communication facilities to designated sites would protect visual resources, as no communication facilities could be established elsewhere in the IFNM.

Based on the impacts described above for Alternative A, the disturbance to objects of the monument (including visual resources and views of the Sonoran Desert) resulting from management actions would range from undetectable to measurable at a broad scale (i.e., continuing management of the IFNM as VRM Class III, which would allow for greater modifications to the landscape). However, on a case-by-case basis, BLM would evaluate specific projects as they are proposed and implement mitigation measures to minimize or reduce human-caused impacts on visual resources (e.g., requiring projects be located in or adjacent to previously disturbed areas, where practical, or revegetating areas of disturbance to minimize new visual contrast in the landscape). Such measures would provide for “protection of the monument objects” for visual resources as defined in Section 1.3.1.

#### **4.3.10.3 Alternative B**

This alternative differs from Alternative A primarily due to the various VRM classifications that would establish greater restrictions on activities that could result in visual contrasts within the IFNM. VRM Class I designations would preserve the existing character of the landscape on approximately 36,990 acres (29 percent) of the most scenic, natural appearing, and visually sensitive parts of the public lands in the IFNM, thereby protecting views of the Sonoran Desert, an object of the monument. Only those management activities that would introduce very low visual contrasts into the landscape would be allowed in VRM Class I areas, which would include the Sawtooth Mountains, West Silver Bell Mountains, and the Roskrige Mountains. VRM Class II designations would retain the existing character of the landscape in approximately 88,120 acres (68 percent) of the public lands in the IFNM, including sensitive biological, cultural, and recreation areas. Only those management activities that would introduce low visual contrasts would be allowed in VRM Class II areas (though slightly greater contrasts would be allowed compared to Class I areas). Surface-disturbing activities would be required to blend in with the landscape and not attract the attention of the casual observer, thus protecting views of the Sonoran Desert. VRM Class III designation would partially retain the existing character of the landscape on approximately 3,290 acres (3 percent) of the public lands in the IFNM, including communication sites, utility corridors, and areas with existing landscape modifications. Projects and surface-disturbing activities with moderate visual contrasts that could attract the attention of the casual observer could be allowed in these areas. Overall, the existing visual quality and natural character of the landscape in the IFNM would be

preserved, and some existing visual impacts would be mitigated (e.g., reclamation of routes in closed areas). Visual contrasts from existing and anticipated landscape modifications would be localized and would blend in with the natural landscape and consistent with VRM objectives designed to accommodate existing impacts.

Under Alternative B, VRM Class I allocations would preserve the existing character of the landscape in approximately 34 percent of the area inventoried under VRI Class II, and 12 percent of the area inventoried under VRI Class III. VRM Class II allocations would retain the existing character of the landscape in approximately 65 percent of the area inventoried under VRI Class II, and 77 percent of the area inventoried under VRI Class III. VRM Class III allocations would partially retain the existing character of the landscape in approximately 10 percent of the area inventoried under VRI Class III. Areas with existing landscape modifications would be excepted from the VRM allocations and every attempt would be made to minimize the visual impact of these activities through visual design mitigation techniques and rehabilitation where practicable.

Short-term direct and indirect visual impacts from motorized vehicles and associated activity would be similar to those under Alternative A, but the locations and concentrations of those impacts would be reduced in extent under this alternative. Evidence of motorized vehicle use could become more concentrated in areas with roads remaining open to public use, compared to Alternative A where use would be more dispersed. Visual impacts related to vehicle use and activity would be reduced around the Sawtooth, West Silver Bell, and Roskrige Mountains.

Compared to Alternative A, this alternative would establish RMZs that would provide for different recreational activities and experiences in each RMZ, resulting in different types and locations of visual impacts throughout the IFNM. In general, visual impacts from recreation would be focused in some areas and dispersed in others. Visual impacts from recreational activities would be most noticeable within approximately 17,610 acres (14 percent) in the Roded Natural RMZ, where visitor services and facilities such as BLM personnel patrols, parking turnouts and/or driveways, kiosks, signs, fences, campsites, overlooks, range improvements, sanitation, and incidental visitor management activities would be found. This could also have some effect on views of the Sonoran Desert, an object of the monument. Visual contrasts created by vehicle-based camping (e.g., campers, wide roads, parking turnouts, recreation or interpretive site improvements) would be site-specific and designed within VRM objectives. For example, visual impacts related to group camping (e.g., large open areas, multiple vehicles, pets, recreation activity) would be noticeable at the two identified large group sites located at Manville and Reservation Roads, respectively. The appearance of vehicles and campfire smoke would be more likely in those group-camping areas. Impacts of recreational use associated with Roded Natural settings would be reduced in parts of the IFNM designated under other RMZs compared to Alternative A.

Recreation management activities within the Semi-Primitive Motorized RMZ would promote retention of existing visual landscape qualities on 14,540 acres (11 percent) on IFNM lands. Visual impacts in the Semi-Primitive Motorized zone would mainly be caused by the presence of primitive roads, turnouts and/or parking areas, signs, kiosks, fences, and relatively infrequent visitors.

Prohibiting native wood campfires would promote a more natural appearance at recreation sites and activity areas (e.g., in the vicinity of popular campsites) since more dead and downed vegetation would remain as litter, and the amount of standing deadwood would increase relative to Alternative A. There also would be a reduction in the amount of campfire smoke under this alternative relative to Alternative A, since charcoal and camp stoves tend to produce less smoke than wood fires. There would be a reduction in visual impacts related to target shooting from incidental refuse (e.g., targets, spent shells) and resource damage compared to Alternative A because IFNM would be closed to recreational

shooting. Existing visual impacts from vegetation and soil disturbance at dispersed recreational shooting sites would be restored over time through natural processes.

Visual impacts from proliferation of access points, gates, and routes would be prevented along the developing urban interface and around developed private land inholdings. Controlling access could increase the traffic at the access points that are designated through the travel management planning process and on related travel routes, and could require installation of barriers to implement closures, generating localized impacts on visual resources. Providing equestrian staging areas would generate noticeable visual changes at the designated sites (relatively large parking spaces/staging areas, vehicles with trailers, signs, manure, etc.).

Minimizing surface disturbance and loss of existing vegetation during construction activities would limit the amount of visual contrast caused by the alteration of vegetation and soils resulting from management activities in the IFNM. Minimizing these contrasts would promote retention of the existing visual qualities found throughout IFNM, including views of the Sonoran Desert. Further, a rapid revegetation would be promoted in areas where vegetation is removed, which would mitigate for visual contrasts created by surface disturbances that may become necessary. Removal of living or dead vegetation would generally be prohibited under this alternative, with only a few specific exceptions (e.g., trimming vegetation along routes designated for motorized travel). These exceptions would result in localized, small-scale visual contrasts that would not be noticeable by casual observers. Visual contrasts from any authorized activities would be consistent with VRM class objectives. The natural landscape character could be indirectly enhanced in site-specific areas where soils are stabilized and restored. Stabilizing and restoring soils would promote establishment of native plant species, reduce the potential for invasive weed establishment, and reduce soil erosion and/or deposition.

Locating facilities away from and prohibiting ground-disturbing activities within areas of sensitive or fragile soils would prevent visual contrasts in some areas while potentially increasing visual contrasts in others. These actions would promote retention of existing visual characteristics in areas with sensitive or fragile soils because there would be less potential for visual contrasts that are associated with surface-disturbing activities (soil erosion and/or deposition, construction of facilities, range improvements, etc.) compared to Alternative A. Meanwhile, areas without sensitive or fragile soils would have a higher potential for visual contrasts in color and texture resulting from surface-disturbing activities relative to Alternative A. Mitigation efforts in areas without sensitive or fragile soils could alleviate the visual contrasts arising from surface-disturbing activities if disturbed vegetation and soils were restored.

Prohibiting surface-water diversions and groundwater pumping that removes water from the IFNM would prevent visual contrasts from potential water wells and conveyance systems (pipelines, ditches) that could otherwise occur. The decision would promote retention of the existing visual character throughout the IFNM.

Visual contrasts in line, color, and texture would result from the development of new routes or realignments and may be noticeable to the casual observer in localized areas, and could diminish visual objects of the monument (views of the Sonoran Desert). Development of a travel and transportation plan could indirectly reduce impacts to visual resources where monitoring identifies conflicts with VRM class objectives.

Implementing an integrated weed management program that assigns priority control areas would promote retention of existing visual qualities associated with the vegetative communities within the IFNM. While weed control areas likely would include treatments that introduce localized visual contrasts in color over the short term, the action would prevent the spread of weeds that could otherwise threaten the visual qualities associated with the natural vegetation of the landscape, thus improving visual resources over the

long term. Visual contrasts from weed treatments would be consistent with VRM class objectives. Visual contrasts in color from populations of weeds could be eliminated where weed treatments permanently remove weeds from vegetative communities.

The IFNM land restoration plan would reduce visual contrasts created from disturbed vegetative plant communities by identifying disturbed areas and prioritizing them for restoration. Passive restoration would be emphasized under this alternative, which would eventually reduce the visual contrasts created by invasive plants and soil erosion and/or deposition of disturbed areas. Contrasts in color and texture of disturbed areas would remain on the landscape over the short term until passive restoration efforts became effective. Localized areas of contrast could be introduced to the landscape where active restoration methods are used depending on the treatment and project design. Active restoration methods that incorporate mechanical and chemical techniques could create visual contrasts in color, line, and texture with the landscape over the short term relative to the surrounding landscape. Short-term impacts would result where the application of herbicide and mechanical treatments created areas of bare ground, dead plant material, or discoloration. These impacts would be localized and would cease once new vegetation became established. Establishment of a natural range of native plant associations would decrease visual contrasts in color, line, and texture of degraded areas relative to the surrounding landscape over the long term because the restored plant community would likely match the plant community of the surrounding landscape more closely than non-native plant associations.

Priority wildlife habitat areas and special status species habitats likely would experience a reduced potential for surface disturbance, which would promote retention of visual qualities associated with those landscapes. Visual resources would be protected to the extent that surface-disturbing activities are restricted in these areas. Prohibiting land use authorizations generally throughout the IFNM could limit the potential for new projects and activities. Visual impacts of potential land use authorizations would be limited to disturbed areas along travel routes, and would have little additional visual contrasts. The closure of lambing areas within the Desert Bighorn Sheep WHA would reduce the opportunities for wildlife viewing activities on a short-term, seasonal basis. However, wildlife population enhancement proposals could result in an increase in wildlife viewing opportunities in areas throughout the IFNM from the increased abundance and/or diversity of wildlife.

Classification of cultural sites for scientific use and measures taken to protect the integrity of those sites would promote retention of visual qualities associated with those sites in localized areas. There could be temporary, short-term visual contrasts from scientific and historical studies that utilize research equipment and personnel. The impacts would be short-term because surface disturbance would not be permitted under this alternative. The lack of public use designations for cultural sites under this alternative would promote retention of existing visual qualities of those sites since the potential for human disturbances (e.g., surface disturbance, litter) would be reduced. The physical barriers used to exclude motorized vehicles from cultural resource sites would introduce structures that increase visual contrasts in that area depending on the barrier type and design, but the visual impact would be localized and noticeable only in views within the project area. Collection and study of paleontological resources would have the same visual contrasts in localized areas as those described under Alternative A. The field surveys for paleontological resources, which would be required under this alternative prior to any ground-disturbing activities, would identify the presence of paleontological resources, which indirectly could help protect visual resources from degradation in localized areas.

Visual contrasts associated with livestock grazing and range improvements under this alternative could increase in some areas and decrease in other areas, compared with Alternative A. Visual impacts from grazing operations and range improvements would be restored in the long term to visual contrast levels appropriate for the VRM class in respective areas because livestock grazing activities would cease once current leases expire. Vegetation contrasts and surface disturbance associated with watering sites and diet

supplement (e.g., salt licks, protein supplement) areas would be reduced and possibly eliminated. However, increased fencing could be required to keep livestock off public land, which could cause surface disturbance and additional visual contrast in localized areas.

The potential for development of new utility lines would be reduced under this alternative compared to Alternative A because few, if any, new rights-of-way would be granted under this alternative. This would help to preserve views of the Sonoran Desert, an object of the monument. New major transmission lines would be precluded except for an existing right-of-way in the Aguirre Valley area, which has not been developed. Some views and portions of the IFNM could be affected by development of utilities on adjacent lands, but acquisition of non-Federal lands and mineral estate within the IFNM boundaries could help protect visual resources from development. Visual contrasts related to routes through military withdrawals on approximately 300 acres (<1 percent) of the IFNM would be reduced because the routes would likely be reclaimed to natural conditions if and when the land is returned to BLM, and if no alternative public use for the site is found.

The activity plan for the Agua Blanca Ranch Multiple Resource Management Area would not be developed or implemented; however, management actions related to soil resources would occur throughout the IFNM (rather than within one specific area of the IFNM).

Construction of specific erosion control measures on a case-by-case basis could promote retention of visual qualities in localized areas where the potential for visual contrasts in color and texture are reduced from soil erosion and deposition events. Erosion control measures that employ materials not otherwise found in the IFNM could result in short-term visual contrasts in localized areas.

Analysis of flood and erosion control structures for removal would not alter the existing visual landscape of the IFNM, unless actual removal occurred. If maintained, existing dikes and dense vegetation stands in the impoundment area would remain. Visual contrasts associated with existing control structures have become generally naturalized, blending in with the natural landscape. Visual contrasts on views from important viewing and/or observation areas would remain low. If the structures were breached or removed, plant die off could become noticeable in the dense vegetation stands in the impoundment area. Visual contrasts created from such an event might include variations in color and texture in low-lying basins. These impacts would generally not be visible beyond a localized area due to the low-lying nature of existing water basin collection areas. Potential visual contrasts would remain within the VRM class objectives and be limited to localized areas, but over the long term the areas would be expected to return to natural conditions.

New fencing would introduce visual contrasts in very localized areas along certain travel routes. Visual contrasts evident in views from important viewing and/or observation areas would be consistent with VRM class objectives.

Construction of new wildlife waters could introduce visual contrasts in localized, small project areas related to their structural features, possible vegetation clearing, and access points. Visual impact from maintained or modified waters would be reduced if project designs involve removal of rainfall collection structures and protective fences. Removal of unnecessary waters could help restore the visual quality of localized areas. New or maintained waters would be designed and located to be consistent with VRM class objectives. Removal of manmade structures would reduce visual contrasts in the IFNM by reducing the appearance of structures constructed of materials not otherwise found in the IFNM and removing forms that do not naturally occur in the IFNM's landscape, thus contributing to restoration of the views of the Sonoran Desert.

Implementing conservation measures associated with the Lesser Long-nosed Bat Recovery Plan likely would result in restrictions on surface disturbance to bat habitat, indirectly reducing the potential for visual contrast and protection of visual resources. Conservation of desert tortoise habitat would result in the same impacts on visual resources as those described under Alternative A.

Controlling or restricting activities that result in fugitive dust could result in a reduction of fugitive dust in the IFNM and a reduction of visible haze originating from the IFNM, thus increasing visibility and enhancing views of the Sonoran Desert (an object of the monument). Rehabilitation of disturbed areas also would reduce the long-term visual contrasts associated with those areas.

Reclamation activities at previous mining sites and attempts to return those areas to a natural condition would enhance visual resources by reducing contrasts caused by mining materials and surface disturbance (e.g., removal of tailings piles, equipment, revegetation). Reclamation that involves construction of barriers to keep people from entering mines could cause increased contrasts on a very small scale, in site-specific areas.

Although very few rights-of-way would be issued under this alternative, implementing site-specific protective measures in right-of-way areas would promote retention of visual resources through the right-of-way terms and conditions developed on a case-by-case basis. Visual qualities could be restored where facilities or associated disturbances are brought into compliance with stipulations. The granting of land use authorizations and permits on a case-by-case basis would have the same impacts as those described under Alternative A. In contrast to Alternative A, this alternative would further protect acquired lands from visual contrasts that arise from rights-of-way since all acquired lands would be designated as an exclusion area.

Based on the impacts described above for Alternative B, the disturbance to objects of the monument (including views of the Sonoran Desert) resulting from management actions would range from undetectable to measurable at a local scale. Overall, the visual quality of natural landscapes would be maintained, consistent with the VRM categories, which would provide “protection of the monument objects” for visual resources as defined in Section 1.3.1.

#### **4.3.10.4 Alternative C**

This alternative is similar to Alternative B because it too establishes VRM class management objectives that would restrict activities that may contrast with the IFNM landscape. However, there are differences between this alternative and Alternative B. VRM class objectives under this alternative would be somewhat less restrictive than those under Alternative B because there would be no lands managed under VRM Class I objectives under this alternative. VRM Class II designation would retain the existing character of the landscape in areas with sensitive biological resources, cultural resources, and recreation sites over a total of 124,900 acres (97 percent) of the public lands within the IFNM. Activities resulting in visual contrasts in VRM Class III designated areas would be similar to those described under Alternative B but would occur on an additional 130 acres. VRM Class III designation would partially retain the existing character of the landscape on approximately 3,420 acres (3 percent) of the public lands within the IFNM. Eighty acres of the IFNM would be managed according to VRM Class IV objectives. Activities that result in a high level of visual contrast could be permitted in that parcel. Mining activities, utility development, or construction are examples of the types of visual contrasts that could occur in VRM Class IV areas. Overall, the existing visual quality and natural character of the landscape would be retained, and some existing visual impacts could be restored.

Under Alternative C, VRM Class II allocations would retain the existing character of the landscape in 100 percent of the area inventoried under VRI Class II, and 90 percent of the area inventoried under VRI Class III. VRM Class III allocations would partially retain the existing character of the landscape in

approximately 10 percent of the area inventoried under VRI Class III. VRM Class IV allocations would provide for management activities which require modifications of the existing character of the landscape on less than 1 percent of the area inventoried under VRI Class II and VRI Class III combined. Visual impacts in areas under this allocation are related to existing landscape modifications, and would be similar to those presently found. Visual impacts would be visible primarily in the vicinity of the existing modifications. A slight increase in the existing disturbance may be allowed for maintenance of existing authorizations, and potential development related to utility corridors.

Short-term direct and indirect visual impacts from motorized vehicles and associated activities would be less in extent from those described under Alternatives A, but somewhat greater than those described under Alternative B. Motorized vehicle activity would be evident along the routes designated for motorized use. Development of a transportation plan would have the same impacts to monitoring and mitigation efforts under this alternative as those described under Alternative B. Efforts made to control fugitive dust emissions under this alternative would reduce the appearance of dust as described under Alternative B. Development of new routes would have the same impacts as described under Alternative B.

The potential for activities resulting in visual contrasts from establishment of RMZs under this alternative would be similar to those described under Alternative B; however, the extent of impacts associated with each zone would be different under this alternative. Visual contrasts associated with the Roded Natural RMZ would be similar but more extensive than those described under Alternative B because the Roded Natural zone would include 18,380 acres (14 percent) of the public lands in the IFNM under this alternative. The appearance of camping activities under this alternative would be concentrated in the Roded Natural RMZ—as described in Alternative B—but there could be greater short-term visual contrasts in that zone under this alternative because campers could burn wood campfires that create smoke. Visual contrasts associated with overnight vehicle-based camping and group camping would be similar to those described under Alternative B, but could occur over a greater extent under this alternative due to the increased availability of vehicle-based campsites. Visual contrasts associated with the Semi-Primitive Motorized RMZ would be similar, but would occur on a greater area relative to Alternative B. Visual impacts associated with Semi-Primitive Motorized RMZ would occur on approximately 36,230 acres (28 percent) of the public lands in the IFNM. Visual impacts associated with Semi-Primitive Non-Motorized zones would be similar to those described under Alternative B, but would occur on approximately 57,450 acres (45 percent) of the IFNM, which is a decrease of about 2,550 acres from Alternative B. Visual impacts related to recreational shooting, equestrian staging areas, and the proliferation of access points, gates, trails and/or routes would be the same as those described under Alternative B.

Efforts to minimize surface disturbance and stabilize soils would have the same impacts on visual resources as those described under Alternative B. The location of facilities and ground-disturbing activities under this alternative would have similar types of impacts on visual resources as those described under Alternative B, but there would be increased potential for visual impacts in areas with sensitive or fragile soils because surface disturbance would be allowed in those areas. Mitigation would be necessary where sensitive or fragile soils were disturbed and could cause short-term contrast with the surrounding natural environment by increasing the amount of manmade structures that appear on the landscape. The prohibition of surface-water diversions and groundwater pumping would have the same impacts on the visual qualities of the IFNM as those described under Alternative B. The possible removal of flood- and erosion-control structures would have the same impacts on visual resources as those described under Alternative B.

An integrated weed management approach that assigns priority weed control areas would have the same impacts on the landscape character of the plant communities of the IFNM as those described under Alternative B. A land restoration plan that emphasizes passive restoration and uses a variety of

reclamation methods would have the same impacts on the character of the landscape as those described under Alternative B. Prohibitions on the removal of living or dead and downed native plant material under this alternative would have similar impacts on those described under Alternative B.

Priority wildlife and plant habitat areas would have the same tendency to protect visual characteristics as those described under Alternative B, with one exception: camping could cause localized impacts in the Waterman Mountains VHA and Ragged Top VHA that could be noticeable in the foreground by casual observers. Closure of portions of the Desert Bighorn Sheep WHA during lambing season would have the same impacts on wildlife viewing opportunities as those described under Alternative B. Construction of new wildlife waters would have the same impacts as those described under Alternative B. Removal of unnecessary manmade structures would have the same impacts on the landscape as those described under Alternative B.

Allocation of cultural sites to scientific use would have similar impacts on visual resources as those described under Alternative B. However, under this alternative there could be greater visual contrasts created at the sites from excavation activities that would not occur under Alternative B. Sites allocated to public use would be managed to specifically accommodate public visitation, and the visual sensitivity would increase at these locations accordingly. The development of interpretive facilities and access routes could introduce visual contrasts at the sites by increasing the number of manmade structures in localized areas. Restrictions on the collection of paleontological resources would result in the same impact on visual resources as those described under Alternative A. The requirement for field surveys prior to ground-disturbing activities in the IFNM would result in the same impacts on visual resources as those described under Alternative B. Mine reclamation activities would have the same impacts on surface disturbance and appearance of structures as those described under Alternative B.

Increased visual contrasts could be created from livestock grazing activities under this alternative over the long term when compared with Alternative B. However, these impacts could cease in localized areas if grazing leases are relinquished or cancelled, though BLM could reallocate these areas for grazing. Livestock grazing would have the same direct and indirect impacts on the appearance of vegetation as those described under Alternative A. Visual impacts on vegetation would continue if AUMs were reallocated. Visual contrasts created by rangeland improvements would be similar to those described under Alternative A.

Retaining Federal lands in the IFNM and acquiring additional lands would result in the same impacts on visual resources as those described under Alternative B. Actions associated with the approximately 300-acre military withdrawal would result in the same impact on visual resources as those described under Alternative B.

Potential development in the utility corridors for underground facilities would result in some visual contrasts in line, texture, and color in right-of-way areas. If developed, the underground trenching and clearing used to bury the utility could be noticeable to the casual observer over the short-term and possibly over the long-term depending on the amount of vegetation removed and area disturbed. Reclamation and restoration of the vegetative community after installation would help reduce long-term visual impacts. Potential development in the aboveground utility corridors would result in visual contrasts mainly in the vegetation, and structural features of line, form, texture, and scale with the surrounding landscape, potentially affecting some views of the Sonoran Desert (an object of the monument).

The decision to provide access for wildlife viewing opportunities would have the same impacts as those described under Alternative B.

## Impacts on Scenic and Visual Resources (cont.)

Conservation measures associated with the Lesser Long-nosed Bat Recovery Plan would result in the same impacts on visual resources as those discussed under Alternative B. Conservation of desert tortoise habitat would result in the same impacts on visual resources as those described under Alternative A.

Fencing used to prevent damage to vegetation would have the same impacts on visual resources as those described under Alternative B.

Rehabilitation efforts and management of fugitive dust would have the same impacts on existing and potential visual contrasts as those described under Alternative B.

Additional stock water sources in the Twin Tanks and Cocoraque Pastures would increase the number of manmade structures, which would create visual contrasts when seen by the causal observer in localized areas. Wildlife enclosure fencing would increase the appearance and number of manmade structures within the landscape in localized areas. This could increase visual contrast in these areas, but would be consistent with the VRM class objectives. Maintenance of existing access routes would perpetuate linear clearings along fence line, creating or maintaining visual contrasts in the landscape. Visual contrasts from the clearings and the fences would be consistent with the VRM class objectives for those areas.

Based on the impacts described above for Alternative C, the disturbance to objects of the monument (including views of the Sonoran Desert) resulting from management actions would range from undetectable to measurable at a local scale. Overall, the visual quality of natural landscapes would be maintained, consistent with the VRM categories, which would provide “protection of the monument objects” for visual resources as defined in Section 1.3.1.

### **4.3.10.5 Alternative D**

This alternative is similar to Alternative C because nearly all lands in the IFNM would be managed to meet VRM Class II objectives. Approximately 122,580 acres (95 percent) would be managed according to VRM Class II objectives under this alternative, which is 2,320 acres less than Alternative C. Potential visual contrasts associated with VRM Class II areas would be similar to those described under Alternative B but would occur over a lesser extent, since there would be a total of 125,110 acres designated as Class I or II under Alternative B. VRM Class II designation would retain the existing character of the landscape in the IFNM and would include sensitive biological resource, cultural resource, and recreation areas. Approximately 4,220 acres (3 percent) of the IFNM would be managed as VRM Class III. Visual contrasts in VRM Class III areas would be similar to those described in Alternative B. The greatest potential for visual contrasts under this alternative would occur on 2,660 acres of utility corridors. Impacts on visual resources from rights-of-way for underground and overhead lines would occur over an expanded area compared to Alternatives B and C. Under this alternative, the corridors would be wider (1/4-mile wide, compared to no corridors under Alternative B, and 200- to 300-foot-wide corridors under Alternative C) and there would be an additional corridor, compared to Alternative C, allowing overhead facilities in the northwestern portion of the IFNM. This alternative would result in fewer potential visual impacts on the landscape than Alternative A in VRM Class II areas, but there would be a greater potential for visual contrast to occur in the VRM Class IV areas under this alternative (which would not be provided for under Alternative A). There potentially could be some increased visual contrasts within the landscape in site-specific areas compared to Alternative C, mainly as a result of the additional utility corridor. Greater visual contrast could affect the visual objects of the monument (views of the Sonoran Desert). This alternative is similar to Alternatives A and C, in that it would not designate any VRM Class I areas.

Under Alternative D, VRM Class II allocations would retain the existing character of the landscape in approximately 98 percent of the area inventoried under VRI Class II, and 87 percent of the area inventoried under VRI Class III. VRM Class III allocations would partially retain the existing character of

the landscape in approximately 1 percent of the area inventoried under VRI Class II, and 11 percent of the area inventoried under VRI Class III. VRM Class IV allocations would provide for management activities which require modifications of the existing character of the landscape on less than 1 percent of the area inventoried under VRI Class II, and about 2 percent of the area inventoried under VRI Class III. Visual impacts in areas under this allocation are related to existing landscape modifications, and would be similar to those presently found, but would increase if additional development occurs along the utility corridors.

Direct and indirect impacts from motorized vehicle use and associated activity along designated routes would be similar to those described under Alternative A, though slightly reduced in extent, but greater than those under Alternatives B and C.

The designation of RMZs would have similar impacts on visual resources relative to Alternatives B and C, except visual impacts associated with Roded Natural zone would occur in more of the IFNM than either Alternative B or C. The Roded Natural zone would occur on 19,060 acres (14 percent) of the IFNM. There could be increased visual contrasts in the Roded Natural zone under this alternative relative to Alternatives B and C because dead and downed wood, standing deadwood, or dead growth on plants would gradually disappear around campsites and along roadways as it was collected for firewood. This could result in a greater likelihood of tree damage from ripping off branches and visual degradation of vegetation around recreation activity areas relative to Alternatives B and C. Relative to Alternative A, visual impacts from vehicle-based camping would be reduced in areas other than those designated for camping. Camping would result in visual contrasts similar to those discussed under Alternatives B and C, except four group campsites would be identified (two more than under Alternative B, and one more than under Alternative C). There would be a reduction in shooter refuse (e.g., targets, spent shells) throughout most of the monument with the elimination of dispersed recreational shooting. However, the localized visual contrasts at the approximately 629 acres of designated shooting areas would be significant because concentrating recreational shooting activities into a smaller area than Alternative A would increase the amount of target debris and surface disturbance, including damage to vegetation or defacement of soils and rocks. Visual contrasts from recreational access and equestrian staging areas would be the same as those discussed under Alternative B.

Actions that minimize surface disturbance and loss of existing vegetation during construction activities would have the same impact on visual resources as those described under Alternative B, but Alternative D would allow for the potential use of non-native plants for restoration efforts, which may introduce short-term, and localized visual contrasts in existing disturbed areas because the plants may grow in forms that are not otherwise found in the IFNM. Visual contrasts after reclamation would be consistent with VRM class objectives. Maintenance and improvement of soil cover and productivity would have the same impact on visual resources as those described under Alternative A. Allowing ground-disturbing activities in areas of sensitive or fragile soils would have the same impacts on visual resources as those described under Alternative C. Prohibition of surface water diversions and groundwater pumping would have the same impacts on visual resources as those described under Alternative B.

Prohibitions on the removal and/or use of living or dead and downed native plant material would have impacts similar to those described under Alternative C, except there would be greater potential for collection of firewood around routes and campsites. This could result in greater visual contrasts than under either Alternative B or C. Weed management would have the same impacts on visual resources as those described under Alternative B. Restoration and reclamation techniques would result in the same impacts on visual resources as those discussed under Alternative B. The types of vegetation used for restoration would have the same impacts on visual resources as those described under Alternative C.

## Impacts on Scenic and Visual Resources (cont.)

Scientific investigations at cultural sites would result in the same impacts on visual resources as those described under Alternative C. Allocation of public uses at cultural sites would result in the same impact on visual resources as those described under Alternative C. Restrictions on the collection of paleontological resources and the requirement for field surveys prior to ground-disturbing activities in the IFNM would result in the same impacts on visual resources as those described under Alternative B.

Retaining Federal lands in the IFNM and acquiring additional lands would result in the same impacts on visual resources as those described under Alternative B. Actions associated with the approximately 300-acre military withdrawal would result in the same impact on visual resources as those described under Alternative B. Not acquiring mineral estate with surface estate acquisitions could result in surface disturbance to IFNM land in the future, if valid existing claims to minerals were present in acquired areas at the time of acquisition. This surface disturbance could generate contrasts in color, line, form, and texture in those areas, depending on the activities conducted.

Impacts on visual resources resulting from utility corridors would be similar to Alternative C, but would occur over a greater extent (2,660 acres of public land under Alternative D compared with 241 acres of public land under Alternative C), because Corridor 1 would be wider and could be further disturbed for underground development. Localized views of utilities, particularly for the aboveground utility corridors, would degrade the visual objects of the monument (views of the Sonoran Desert). Corridor 2 also would be wider under this alternative than under Alternative B. Also, there could be greater impacts on visual resources if an overhead transmission line were installed. Construction of an overhead utility in Corridor 3 would impact the casual observer by creating contrast in line, form, texture, scale, and color of the surrounding area. The potential for visual contrasts in utility corridors and rights-of-way would be reduced under this alternative compared to Alternative A because the corridors under this alternative would be  $\frac{3}{4}$  mile narrower under this alternative. Restrictions on new rights-of-way would result in the same impacts on visual contrasts as those discussed under Alternative B. Visual impacts associated with the Pan Quemado communication site would be the same as those described under Alternative B. Visual impacts associated with the Confidence Peak communication site would be similar to those described under Alternative B, but there would be an increase in contrast resulting from the additional facility that would be allowed under this alternative. This visual contrast would occur in the localized area only and would be attenuated by viewing distance and topography and mitigation measures.

Livestock grazing activities in the IFNM would result in the same impacts on visual resources as those described under Alternative C. Establishment of priority wildlife habitats and allocation of the Desert Bighorn Sheep WHA would result in the same impacts on visual resources as those described under Alternative B.

The decision to rehabilitate existing disturbed areas and manage fugitive dust would have the same impacts on visual contrasts as those discussed under Alternative B.

Improvement of wildlife viewing opportunities would have the same impacts as those described under Alternative B.

Removal of existing flood- and erosion-control structures, and unnecessary fences, roads, facilities, and utility lines would have the same impacts as those described under Alternative B.

New fencing would have the same impacts on visual resources as those described under Alternative B.

Construction of new wildlife waters would result in the same impacts on visual resources as those described under Alternative B. Additional water sources for livestock and maintenance of those water sources would result in the same impacts on visual resources as those described under Alternative C.

## Impacts on Scenic and Visual Resources (cont.)

Conservation measures associated with the Lesser Long-nosed Bat Recovery Plan would result in the same impacts on visual resources as those discussed under Alternative B. Conservation of desert tortoise habitat would result in the same impacts on visual resources as those described under Alternative A.

Increasing the number of wildlife and livestock exclosures would result in the same impacts on visual resources as those described under Alternative C.

Designating routes along fence lines for motorized travel would result in the same impacts on visual resources as those described under Alternative C.

Implementing protective and/or mitigation measures for rights-of-way would result in the same impacts on visual resources as those described under Alternative B.

Based on the impacts described above for Alternative D, the disturbance to objects of the monument (including views of the Sonoran Desert) resulting from management actions would range from undetectable to measurable at a local scale. Overall, the visual quality of natural landscapes would be maintained, consistent with the VRM categories, which would provide “protection of the monument objects” for visual resources as defined in Section 1.3.1.

### **4.3.11 Impacts on Wilderness Characteristics**

This section describes potential impacts on lands managed to protect wilderness characteristics from management of resources and resource uses. The objectives established for lands managed to protect wilderness characteristics are used to guide the impact analysis. Actions that affect naturalness, opportunities for solitude, and opportunities for primitive and unconfined recreation on lands shown to have wilderness characteristics (described in Chapter 3) are considered under this analysis.

The following assumptions were used in the analysis of impacts on lands with wilderness characteristics.

- Lands with wilderness characteristics constitute 36,990 acres of the public land within the IFNM.
- Uses and activities occurring outside these lands could influence the wilderness characteristic values, though such influences would generally be indirect.

The following analysis considers a management action’s potential to cause changes to a landscape that could alter naturalness, and reduce or enhance opportunities for solitude and/or opportunities for primitive and unconfined recreation. For example, some actions could help protect wilderness characteristics across a broad landscape area; others could diminish wilderness characteristics by increasing the visibility of structures or routes in an area. The terms “localized,” “site-specific,” and “landscape level” denote the general extents to which impacts could occur. Site-specific impacts are generally small and described geographically when possible. Landscape-level impacts generally occur on a broad scale and affect large areas, or the entire monument.

#### **4.3.11.1 Impacts Common to All Alternatives**

Maintaining and improving soil cover and productivity could promote retention of naturalness by preventing erosion of soils from lands managed to protect wilderness characteristics. Naturalness would be retained to the extent that native plant communities are protected from direct mortality or indirectly harmed by establishment of invasive plants within the greater plant community.

Managing the IFNM as a suppression area for fire could result in disturbance of lands managed to protect wilderness characteristics, as necessary, to control wildfires. Surface disturbance, fuels treatments, vehicle

#### Impacts on Wilderness Characteristics (cont.)

travel in emergency situations, or treatments related to fire suppression could result in diminished naturalness and opportunities for solitude over the short term in localized areas.

Administration of valid existing mining claims on a case-by-case basis would continue to reduce the opportunities for solitude and naturalness in site-specific areas where valid mining claims exist, which could diminish wilderness characteristics in localized areas, particularly within the Silver Bell and West Silver Bell Mountains.

Providing signage for visitor information, regulations, or interpretation could diminish naturalness in localized areas.

Acquiring land to protect wilderness characteristics could increase the potential for protecting naturalness, opportunities for solitude, and opportunities for primitive unconfined recreation in those areas. In addition, acquiring land or mineral estate could provide indirect protection of wilderness characteristics because naturalness, and opportunities for solitude and primitive unconfined recreation could be considered before land use authorizations and permits were granted within or around areas with such values. The Confidence Peak communication site would continue to diminish naturalness and primitive recreational opportunities in that very localized area.

Resource programs that would have no impact on wilderness characteristics in the IFNM include those for paleontology resources and special designations.

#### **4.3.11.2 Alternative A (No Action)**

Though no lands would be managed to protect wilderness characteristics, values of naturalness, opportunities for solitude, and/or opportunities for primitive and unconfined recreation would still be present on 36,990 acres; therefore, impacts on those values are assessed based on the management decisions under Alternative A.

Efforts to minimize livestock impacts on rare plant habitats and desert tortoise habitats could result in localized degradation of naturalness to the extent that livestock waters are moved to new areas where no manmade structures exist. Indirect impacts on naturalness also could result where livestock congregate around relocated water sources and damage the plant community. Conversely, naturalness in and around rare plant and desert tortoise habitats could be indirectly enhanced if livestock waters were moved from those areas. The provision of signage for visitor information, regulations, or interpretation could reduce naturalness in localized areas by increasing the appearance of structures in localized areas. However, it is likely that signs or facilities would be located near roads or access points, where the magnitude of such intrusions would be negligible.

Managing the public lands in the IFNM as a VRM Class III area would provide for limited protection of lands with wilderness characteristics, given that modifications to the landscape can occur in VRM Class III areas. While naturalness would not be reduced as a result of the VRM Class III designation, degradation of wilderness characteristics would not be precluded by VRM Class III objectives. Visitors could expect relatively moderate changes to the landscape that attract attention and diminish naturalness. Closing 800 acres to OHV use and limiting vehicular travel to existing routes in areas with wilderness characteristics would promote retention of naturalness, opportunities for solitude, and opportunities for primitive unconfined recreation in localized areas where routes do not exist.

Allowing dispersed non-motorized camping throughout the IFNM would promote protection of wilderness characteristics by providing opportunities for primitive and unconfined recreation. However, localized impacts from vehicle parking and maneuvering and from persons engaging in camping activities

### Impacts on Wilderness Characteristics (cont.)

(such as building fire rings and trampling vegetation within the campsite) may diminish the wilderness characteristics of the localized area for persons visiting the area after a campsite has been used.

The use of firearms throughout the IFNM could diminish naturalness and opportunities for solitude where noise and shooter refuse (e.g., spent shells, targets, trash) or gunfire occurs within the landscape.

Allowing rights-of-way within lands managed to protect wilderness characteristics would diminish naturalness in localized areas, as well as opportunities for solitude during construction and maintenance of the facility.

Decisions that would increase the appearance of fences could result in reduced naturalness where fences were obvious features within the landscape. Efforts to minimize livestock impacts on special status plants by moving or replacing livestock watering sites could result in localized degradation of naturalness in those areas where watering sites appear. However, naturalness could be partially restored from this action where livestock watering sites are removed from an area.

Land use authorizations could diminish naturalness and opportunities for primitive recreation in localized areas. However, mitigation measures implemented in right-of-way areas could minimize degradation of wilderness characteristics associated with structures and routes in localized areas. Generally, lands with wilderness characteristics would be protected from the intrusion of vehicles, people, and noise because motorized vehicle use would be limited to 346 miles of existing routes.

#### **4.3.11.3 Alternative B**

This alternative would provide the greatest protection for wilderness characteristics in the IFNM. Naturalness, opportunities for primitive recreation and solitude would be maintained on 36,990 acres of the IFNM due to the protection of wilderness characteristics on that acreage and other decisions in support of that management.

Designating 36,990 acres as VRM Class I (coincident with the lands managed to protect wilderness characteristics) would provide protection of portions of the Silver Bell Mountains, Sawtooth Mountains, Ragged Top, and Roskrige Mountains as a result of the restrictive objectives for management of VRM Class I areas.

Closing 36,990 acres of land managed to protect wilderness characteristics to motorized vehicle travel would promote naturalness and opportunities for primitive recreation to a greater extent than Alternative A.

The establishment of the Primitive and Ragged Top Wildlife Viewing RMZs (totaling approximately 36,200 acres) within a majority of the area managed to protect wilderness characteristics would promote naturalness and opportunities for primitive recreation because uses and structures would be restricted in those areas. Conducting surveys at recreation sites could diminish opportunities for solitude in localized areas; however, it is likely that surveys would be conducted near roads or access points, where the magnitude of such intrusions would be negligible. Limiting overnight, dispersed, non-motorized camping to identified campsites would reduce opportunities for solitude in the IFNM because there would be an increased likelihood that overnight campers would encounter each other at the designated campsites. Further, naturalness at these sites could be reduced if there was a concentration of features associated with overnight camping (e.g., surface disturbance, trails, etc.). Restricting large groups to specific campsites would help maintain naturalness and opportunities for primitive recreation and solitude on lands managed to protect wilderness characteristics. Restricting the discharge of firearms would provide protection of naturalness, opportunities for solitude, and primitive recreation on lands managed to protect wilderness characteristics.

## Impacts on Wilderness Characteristics (cont.)

Allocating the IFNM as a right-of-way exclusion would minimize the potential for degradation of naturalness and primitive recreation opportunities that sometimes accompanies new rights-of-way. Very few land use authorizations would be allowed, which would provide protection for naturalness throughout the IFNM.

Surface disturbance during construction and maintenance activities would temporarily reduce naturalness in localized areas. Mitigation and restoration could alleviate the short-term loss of naturalness if there were no new structures associated with the surface disturbance. In areas of sensitive or fragile soils, naturalness would not be affected by surface-disturbing activities. Prohibitions on surface water diversions, groundwater pumping, and surface disturbance for cultural resource investigations in the IFNM would reduce the potential for a loss of naturalness resulting from the mortality of native plants. Native plant communities would tend to maintain their natural resilience to disturbances since water would not be removed from the IFNM. Further, opportunities for primitive recreation would be retained because structures associated with water pumping and diversion would be precluded.

Eliminating recreational target shooting throughout the IFNM could help retain naturalness and opportunities for solitude by minimizing firearm noise and shooter refuse (e.g., spent shells, targets, trash) within the landscape.

Vegetative material could be removed from the IFNM under very specific instances under this alternative, which could temporarily diminish opportunities for primitive recreation and naturalness in localized areas. Weed management and vegetation restoration activities could temporarily diminish naturalness and opportunities for solitude in localized project areas where activities are either observed directly (e.g., work crews, machinery) or indirectly (e.g., areas of bare ground, decadent vegetation). However, weed management activities and restoration projects could indirectly promote retention of wilderness characteristics by precluding the appearance of those weeds that could otherwise diminish natural native plant communities in areas managed to protect wilderness characteristics.

Excluding humans from the Desert Bighorn Sheep WHA could reduce opportunities for solitude and primitive recreation from January 1 through April 30. Efforts to reintroduce native wildlife to the IFNM could enhance naturalness if reintroduction were successful. Prohibition of land use authorizations within the Waterman Mountains VHA and the Ragged Top VHA could indirectly promote retention of naturalness within those areas if native plant communities are maintained. Prohibiting camping within both VHAs would reduce opportunities for solitude and primitive recreation, but would minimize the presence of humans and thereby enhance the sense of wilderness characteristics in these areas.

Prohibiting range improvements would promote protection of existing lands with wilderness characteristics in the IFNM because the potential for additional intrusions on naturalness from structures like livestock waters and cattle guards would be reduced. However, additional fences may be erected to keep livestock grazing on State Trust or private land from entering the Federal land.

Efforts to control fugitive dust emissions could enhance naturalness by precluding a temporary loss of visibility that sometimes occurs with fugitive dust. Opportunities for solitude could be enhanced indirectly where fugitive dust plumes are suppressed because visitors would be less likely to observe dust plumes from a great distance. If dust suppression efforts were effective, visitors seeking wilderness characteristics in the IFNM would be less likely to notice vehicles traveling on unpaved roads in the distance.

Management decisions could result in diminished naturalness in site-specific areas where access to geologic features is improved through the use of roads, signage, or structures. Provisions for access could

## Impacts on Wilderness Characteristics (cont.)

indirectly reduce opportunities for solitude in localized areas around distinct geologic features if there is a corresponding increase in visitation.

The appearance of fences would have similar impacts as those described under Alternative A.

Avoidance of projects and activities that disturb priority species habitats would indirectly promote retention of naturalness, and opportunities for solitude and primitive recreation in localized areas by minimizing the appearance of structures and/or surface-disturbing activities in priority species habitats. New wildlife watering areas could diminish naturalness and opportunities for primitive recreation if structures were associated with the action.

Rehabilitation of existing disturbed areas to reduce visual contrasts could result in a temporary, site-specific degradation of naturalness, opportunities for solitude, and primitive recreation due to the appearance of equipment and work crews that implement the rehabilitation. However, opportunities for solitude and primitive recreation would be restored after rehabilitation was implemented, and naturalness could be enhanced if rehabilitation is successful in establishing more contiguous native plant communities.

Mitigation measures taken to protect resources from land use authorizations that involve construction and maintenance activities could result in protection of naturalness in localized areas.

Designating 63 miles of routes for motorized use and 266 miles of routes for non-motorized use, and identifying 17 miles of routes for reclamation would protect wilderness characteristics on the 36,990 acres where those values have been identified because no motorized routes would be designated within those areas.

### **4.3.11.4 Alternative C**

Naturalness, and opportunities for primitive recreation and solitude would be maintained on 9,510 acres of the IFNM due to the management of lands to protect wilderness characteristics on that acreage and other decisions in support of that management, which is less than the 36,990 acres where wilderness characteristics have been identified.

The 36,990 acres of land managed to protect wilderness characteristics would be managed as VRM Class II, which would provide protection of portions of the Silver Bell Mountains, Sawtooth Mountains, Ragged Top, and Roskrige Mountains as a result of the restrictive objectives for management of VRM Class II areas. This would provide less protection from potential intrusions in those areas relative to Alternative B.

Closing portions of the areas identified as possessing wilderness characteristics to motorized vehicle travel and limiting motorized travel to designated routes, would promote naturalness and opportunities for primitive recreation to a greater extent than Alternative A, though to a lesser extent than Alternative B.

The establishment of the Primitive and Ragged Top Wildlife Viewing RMZs on approximately 16,290 acres of the 36,990 acres managed to protect wilderness characteristics would promote naturalness and opportunities for primitive recreation in those areas because uses and structures would be restricted. In addition, a majority of the remaining 20,700 acres would be allocated to the Semi-Primitive Non-Motorized RMZ, which also would afford some protection to wilderness characteristics, as motorized uses would not occur in those areas. A small proportion of the areas managed to protect wilderness characteristics would be located within Roded Natural or Semi-Primitive Motorized zones, where degradation of naturalness and opportunities for solitude could occur as a result of motorized uses and increased numbers of visitors in those areas. Conducting surveys at recreation sites would have the same

## Impacts on Wilderness Characteristics (cont.)

impacts as those described under Alternative B. Allowing overnight, dispersed, non-motorized camping throughout the IFNM would increase opportunities for solitude in areas identified with wilderness characteristics because there would be a decrease in the likelihood that overnight campers would encounter each other. Restricting large groups to specific campsites and prohibiting the discharge of firearms, except for authorized hunting, would have the same impacts as described under Alternative B, except an additional group campsite would be identified in the area managed to protect wilderness characteristics, which could diminish naturalness and opportunities for solitude and primitive unconfined recreation in the localized area near that group campsite.

Allocating the IFNM as a right-of-way avoidance area would help protect wilderness characteristics on 36,990 acres because rights-of-way that could diminish naturalness and opportunities for solitude during construction and maintenance would be restricted in those areas. This would be less restrictive than Alternative B, under which the IFNM would be an exclusion area.

Management actions restricting surface disturbance would be the same as those under Alternative B, resulting in the same impacts, except that surface-disturbing activities would be allowed in areas of sensitive and fragile soils. As these soils occur in a portion of the lands managed to protect wilderness characteristics, there could be some degradation of naturalness and loss of opportunities for solitude if surface disturbance were to occur in those areas. Also, surface disturbance could be authorized for cultural resource investigations, resulting in diminished wilderness characteristics in localized areas over the short term.

Management actions for vegetation would be the same as those under Alternative B.

Excluding humans within the Desert Bighorn Sheep WHA and reintroductions of native wildlife would have the same impacts as those described under Alternative B. Prohibition of land use authorizations within the Waterman Mountains VHA and the Ragged Top VHA could indirectly promote retention of naturalness within those areas if native plant communities are maintained. Allowing camping within both VHAs would increase opportunities for solitude and primitive recreation in areas managed to protect wilderness characteristics.

Efforts to control fugitive dust emissions would have the same impacts as those described under Alternative B.

The decision to provide access to geologic sites would have the same impacts as those described under Alternative B.

New range improvements could diminish naturalness and opportunities for primitive recreation in localized areas, particularly if they are constructed in areas where previously there were no structures visible. The loss of naturalness could be short term or long term depending on the range improvement.

The appearance of fences would have similar impacts as those described under Alternative A. Avoidance of projects and activities that could disrupt priority species habitats would have the same impacts on naturalness and opportunities for primitive recreation as those described under Alternative B. The potential for installation of new wildlife waters would have the same impacts on naturalness as those described under Alternative B. Wildlife and livestock enclosures would result in diminished naturalness and opportunities for primitive recreation where fences are visible to visitors. Monitoring activities within enclosures could result in temporary reductions in opportunities for solitude where enclosures exist due to the presence of work crews at monitoring sites.

## Impacts on Wilderness Characteristics (cont.)

Rehabilitation of disturbed areas to achieve contrast levels consistent with VRM class objectives would have the same impacts as those described under Alternative B. Efforts to reduce dust in the IFNM through certain control measures would have the same impact on naturalness as those described under Alternative B.

Mitigation requirements associated with the land use authorization process would have the same localized impacts on naturalness as those described under Alternative B. Impacts on naturalness and opportunities for primitive recreation from land use authorizations would be similar to those described under Alternative A, but fewer areas would be affected due to the avoidance area allocation in contrast to no avoidance or exclusion area establishment under Alternative A.

Designating 124 miles of routes for motorized use and 205 miles of routes for non-motorized use, and identifying 17 miles of routes for reclamation would protect lands with wilderness characteristics on about 9,510 of the 36,990 acres where those values have been identified, because no motorized routes would occur within those areas.

### **4.3.11.5 Alternative D**

Though no lands would be managed to protect wilderness characteristics, values of naturalness, opportunities for solitude, and/or opportunities for primitive and unconfined recreation would still be present on 36,990 acres; therefore, impacts on those values are assessed based on the management decisions under Alternative D.

Limiting motorized travel to designated routes, would promote naturalness and opportunities for primitive recreation to a greater extent than Alternative A, though to a lesser extent than Alternatives B and C, because no areas would be closed to vehicle use (and additional miles of routes would be designated for motorized travel).

The establishment of the Ragged Top Wildlife Viewing RMZ on approximately 6,500 acres of the 36,990 acres managed to protect wilderness characteristics have been identified would promote naturalness and opportunities for primitive recreation in those areas because uses and structures would be restricted. The remaining 30,490 acres would be allocated to several RMZs including Semi-Primitive Non-Motorized, Semi-Primitive Motorized, and Roaded Natural, which would afford some protection to wilderness characteristics in the non-motorized areas. Similarly, designating the areas managed to protect wilderness characteristics as VRM Class II would provide protection for those values. Areas where motorized uses would be allowed could diminish wilderness characteristics as degradation of naturalness and loss of opportunities for solitude could occur as a result of motorized uses and increased numbers of visitors in those areas. Conducting surveys at recreation sites would have the same impacts as those described under Alternative B. Allowing overnight, dispersed, non-motorized camping throughout the IFNM would increase opportunities for solitude in areas managed to protect wilderness characteristics because there would be a decrease in the likelihood that overnight campers would encounter each other, but the associated signs of camping (fire rings, trampled vegetation) may diminish the character of the wilderness setting for others passing through the area. Restricting large groups to specific campsites would have the same impacts as described under Alternative C. Limiting the opportunities for recreational shooting to the Avra Hill and Cerrito Represo designated target shooting areas would minimize shooting noise in the majority of IFNM by eliminating firearm noise other than intermittent noise associated with permitted or authorized hunting.

Allocating the IFNM as a right-of-way avoidance area would have the same impacts as those described under Alternative C.

## Impacts on Wilderness Characteristics (cont.)

Management actions restricting surface disturbance would have the same impacts as those described under Alternative C.

Management actions for vegetation would have the same impacts as those described under Alternatives B and C, except non-native plants could be used for restoration, which could result in diminished naturalness in localized areas within areas managed to protect wilderness characteristics.

Management actions for the Desert Bighorn Sheep WHA, Waterman Mountains VHA, and Ragged Top VHA would have the same impacts as described under Alternative C.

Efforts to control fugitive dust emissions would have the same impacts as those described under Alternative B.

The decision to provide access to geologic sites would have the same impacts as those described under Alternative B.

New range improvements would have the same impacts as those described under Alternative C.

The appearance of fences would have similar impacts as those described under Alternative A. Avoidance of projects and activities that could disrupt priority species habitats would have the same impacts on naturalness and opportunities for primitive recreation as those described under Alternative B. The potential for installation of new wildlife waters would have the same impacts on naturalness as those discussed under Alternative B. Wildlife and livestock exclosures would result in diminished naturalness and opportunities for primitive recreation where fences are visible to visitors. Monitoring activities within exclosures could result in temporary reductions in opportunities for solitude where exclosures exist due to the presence of work crews at monitoring sites.

Rehabilitation of disturbed areas to achieve contrast levels consistent with VRM class objectives would have the same impacts as those described under Alternative B. Efforts to reduce dust in the IFNM through certain control measures would have the same impact on naturalness as those described under Alternative B.

Mitigation requirements associated with the land use authorization process would have the same localized impacts on naturalness as those described under Alternative B. Impacts on naturalness and opportunities for primitive recreation from land use authorizations would be similar to those described under Alternative A, but fewer areas would be affected due to the avoidance area allocation under this alternative, which would not occur under Alternative A.

Designating 226 miles of routes for motorized use and 116 miles of routes for non-motorized use, and identifying 4 miles of routes for reclamation would protect lands with wilderness characteristics in localized areas where routes are closed, but potentially diminish wilderness characteristics where motorized uses would occur.

## **4.4 RESOURCE USES**

### **4.4.1 Impacts on Energy and Minerals**

The analysis of potential effects on mineral resources is limited to effects on valid existing mining claims because the Proclamation designating the IFNM withdrew the area from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, subject to valid existing rights. Impacts on geological resources and features are covered under Section 4.2.2. Impacts on renewable energy resources are covered as land use authorizations under Section 4.4.4.

Withdrawal of the IFNM from all mineral entry or development, subject to valid existing rights, prevents any new exploration for undiscovered mineral deposits or the development of any known deposits. To be valid any existing mining claim must have discovery prior to June 9, 2000. Validity would be determined on a case-by case basis. Any mining claim not having discovery would be null and void. Under all alternatives, mining activity within the IFNM (on Federal mineral estate) would continue to be administered on a case-by-case basis for valid mining claims. Existing mining claims (shown on Map 3-8) grant the locator the exclusive right to explore for and develop the locatable minerals plus the right to use the surface resources to the extent required for mining operations. No impacts on the development of valuable minerals would result from any of the alternatives, as the RMP would not affect valid existing mining claims. As a result of case-by-case administration, activities associated with valid existing mining claims could result in surface disturbance on approximately 4,590 acres, and within additional areas, as necessary, to provide adequate access to the valid existing claim.

#### **4.4.2 Impacts on Livestock Grazing**

This section describes potential impacts on livestock grazing resulting from the implementation of management actions for other resource programs.

The analysis is based on the following assumptions:

- All existing leases are subject to Terms and Conditions, as appropriate.
- Construction of range improvements (e.g., fences, pipeline, water wells, troughs, and reservoirs) result in a localized loss of vegetation cover throughout their useful life.
- Range improvements generally lead to better livestock distribution and may increase the forage base.
- Current trends in livestock market conditions will continue. Livestock values would therefore remain the same as at present.
- Assessments of vegetation-related impacts are based on expectations of normal precipitation during the life of the plan.
- Long-term grazing-use levels are based on monitoring information, including utilization studies and actual use data.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources in the IFNM, review of existing literature, and information provided by BLM resource specialists. Effects are quantified where possible or are described in qualitative terms in the absence of quantitative data. Impacts on livestock grazing activities are generally the result of activities that affect the quality and quantity of available forage levels, the ability to construct range improvements, and human disturbance and/or harassment of livestock within grazing allotments.

##### **4.4.2.1 Impacts Common to All Alternatives**

Implementation of livestock grazing management actions could impact livestock grazing by requiring operators to make adjustments to grazing practices to comply with the Arizona Standards for Rangeland Health. Such adjustments could include modified turnout dates, modified grazing periods, growing season rest, modified grazing systems, exclosures, implementation of forage utilization levels, and livestock conversions. Managing the uplands, xeroriparian sites, and resource conditions to meet the Arizona Standards for Rangeland Health could increase the percent cover of desired vegetation species and improve vegetation species diversity and structure. In addition, this would reduce opportunities for establishment of noxious weeds and invasive species. Although these adjustments would help to enhance

## Impacts on Livestock Grazing (cont.)

rangeland conditions and increase long-term forage production, animal unit month (AUM) use could decrease for some livestock operators. (This would apply under Alternative B only until leases expire.)

Management of soil, water, vegetation, and wildlife resources generally would serve to enhance vegetative community conditions and indirectly affect livestock grazing by improving forage conditions. Improving soil resources would increase the health and productivity of vegetation resources by reducing erosion. Managing soil and water resources to maintain watershed integrity and functioning hydrology would maintain and enhance vegetation and water quality, which could indirectly increase available forage for livestock use. Uneven distribution of big game populations would cause some grazing allotments to receive a disproportionate amount of wildlife grazing; this is especially true for allotments located either entirely or partially within big game management areas. As a result, livestock operators in these areas could be required to implement grazing adjustments to comply with the Standards for Rangeland Health.

Fire suppression and implementation of programs to reduce ignitions would limit the potential for loss of forage due to wildfire events. There could be further indirect benefits to livestock where plant mortality and stress is avoided, resulting in a maintenance of plant resistance to disease and insect pest infestations. This could reduce opportunities for establishment of noxious weeds and invasive plant species, and could maintain the quantity or quality of forage available for livestock grazing. Fuel treatments to maintain non-hazardous fuel levels using manual, biological, mechanical, or chemical treatments would result in the short-term loss of vegetation depending on the treatment applied. Some losses of vegetation would be of undesirable plant species including exotic and invasive species, which are treated to reintroduce or promote desirable plant species. This would improve forage available for livestock grazing in treated areas, however short-term there could be a reduction in the area available for livestock grazing.

Recreation activities would impact livestock grazing through direct human disturbance and localized surface disturbance. Surface disturbance could remove vegetation including livestock forage. These impacts could increase animal displacement, harassment, or injury, mainly from the use of vehicles. Preventing cross-country travel by OHVs would prevent a loss of forage and forage quality in the IFNM by preventing plant mortality. The action also would prevent an indirect reduction in forage quality by protecting plant communities from surface disturbance and the potential for establishment of noxious weeds and invasive species.

Mining activities on the 4,590 acres of existing mining claims and construction activities related to the development of rights-of-way would cause localized surface disturbance and increase the potential for establishment of noxious weeds and invasive species. This could remove livestock forage over the short term and could result in changes in grazing management practices and/or stocking levels of individual allotments. Increased vehicle travel on new roads also would increase the potential for harassment of and injury to livestock. However, an increase in improved roads could facilitate livestock management operations by improving access to remote locations within allotments.

Activities associated with management of cultural resources could remove vegetation resources in localized areas. Fencing cultural sites and excluding grazing from these sites also could result localized loss of forage. Restrictions on surface-disturbing activities near cultural sites could prevent the removal of forage in these areas, but could result in the modification or relocation of rangeland improvement projects.

Retaining all public lands within the IFNM could improve BLM's ability to manage vegetation resources. This could improve vegetation diversity and structure and increase the amount of forage available for livestock grazing.

## Impacts on Livestock Grazing (cont.)

Withdrawal of the IFNM from all forms of mineral entry could reduce surface disturbance. This would help to maintain or improve the overall health, vigor, and productivity of desirable perennial vegetation, and maintain rangeland health and watershed function.

Under all alternatives, impacts on livestock grazing are not anticipated as a result of implementing management actions for the following resources and resource uses: air quality, geological resources, paleontological resources, and special designations.

### **4.4.2.2 Alternative A (No Action)**

Managing the IFNM to meet VRM Class III objectives could allow for surface disturbance activities that reduce forage in site-specific areas. In addition, managing 8,240 acres in nine allotments as utility corridors and designating the 160-acre Pan Quemado communication site could result in surface disturbance from construction and development. Support facilities such as utility towers constructed in these areas, would result in the permanent loss of vegetation from localized areas, reducing the amount of forage available for livestock grazing. Restoration of disturbed sites could replace the livestock forage that is lost as a result of facility construction.

Dispersed camping and recreational shooting within the IFNM could impact livestock grazing if surface disturbance results in a loss of vegetation in localized areas. These recreational activities could disrupt livestock grazing and reduce forage utilization in localized areas. Harassment of livestock from OHV recreation potentially could occur along existing routes in the 127,580 acres where OHVs are limited to existing routes.

Construction of rangeland improvements would increase livestock distribution and allow livestock to utilize more of the rangeland, which would consequently enhance rangeland conditions. Specifically, developing off-site water sources and fencing riparian areas could draw livestock away from sensitive areas and result in maintaining or increasing riparian conditions and improving livestock distribution.

Restrictions on surface-disturbing activities in priority wildlife habitat areas could reduce the potential loss of forage available for livestock grazing. However, rangeland improvements could also be limited in this area. Bighorn sheep management areas would occur over 41,470 acres on seven allotments and desert tortoise management areas would occur over 30,880 acres on ten allotments.

Implementing management actions to limit motorized vehicle use to 346 miles of existing routes would help improve the overall health, vigor, and productivity of desirable perennial vegetation, and improve or maintain rangeland health and watershed function by limiting surface disturbance. Activity plans for the Agua Blanca Ranch Multiple Resource Management Area and the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could improve vegetation diversity and structure by reducing surface disturbance. This could reduce opportunities for establishment of noxious weeds and invasive species, and the quantity and quality of forage available for livestock grazing.

Developing an activity plan for the monument, including plans for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area and the Silver Bell Desert Bighorn Sheep Management Area, could help to maintain or improve the overall health, vigor, and productivity of desirable vegetation, and maintain rangeland health and watershed function. In addition, acquiring 800 acres of private and State lands could improve BLM's ability to manage vegetation and wildlife resources. This could increase the area and amount of forage available for livestock grazing.

Providing additional water sources could increase vegetation diversity and structure in localized areas by improving livestock distribution. Implementing protective measures during construction to minimize erosion, vegetation loss, disturbance of cultural resources in authorized rights-of-way would help

maintain the overall health, vigor, and productivity of desirable perennial vegetation and maintain rangeland health and watershed function. This would indirectly help maintain the existing quantity and/or quality of forage available for livestock grazing.

#### **4.4.2.3 Alternative B**

Making all BLM livestock allotments unavailable for grazing as leases expire could eliminate livestock grazing within the planning area. Investments in support features such as stock waters would be abandoned. The livestock operators would have to find alternative sources of feed or reduce their herds to a size that could be maintained year-round on non-Federal property after the leases expire. Other private land or State Trust pastures would have to be rented, and these might not be available. The livestock operators could be forced to sell some or the entire livestock herd. Land values for State Trust or private land within the monument could be diminished for ranching purposes. Impacts subsequently discussed in this section would affect livestock leases until they expired.

Managing 125,110 acres (97 percent of public lands in the IFNM) as VRM Class I and II could reduce the potential for a loss of forage by restricting surface disturbance while restricting the location, type, or design of proposed range improvements. In addition, managing 36,990 acres (29 percent of public lands in the IFNM) to protect wilderness characteristics and closing bighorn sheep lambing areas to human entry from January 1 through April 30 could limit access for livestock management activities, while reducing the potential for loss of forage from surface-disturbing activities, compared with Alternative A. Impacts related to VRM Class III management would have similar types of impacts on those described under Alternative A, but would occur over 125,110 fewer acres and could reduce surface disturbance. This could help maintain or improve the amount of forage available for livestock.

Impacts from management actions that restrict surface disturbance would have similar impacts as those described under Alternative A, but they would apply over a greater area. Surface-disturbing activities would be restricted on an additional 63,180 acres of livestock allotments containing sensitive or fragile soils (49 percent of public lands in the IFNM). Excluding rights-of-way and minimizing surface disturbance that results in the loss of vegetation during the construction and maintenance of facilities would help maintain existing forage quantity and quality.

Actions that limit the use of motorized vehicles would have the same impacts as those described under Alternative A, but would occur over a greater area. Closing the 38,040 acres to motorized vehicles could reduce the amount of surface disturbance from human uses, compared with Alternative A. Managing 17,610 acres (14 percent of public lands in the IFNM) as Roaded Natural and 14,540 acres (11 percent of public lands in the IFNM) as Semi-Primitive Motorized could focus motorized recreation in those areas, which could lead to conflicts between visitors and livestock, such as harassment. Meanwhile, prohibiting recreational shooting and limiting public and equestrian access (as well as public use, such as camping) to designated sites could reduce conflicts and disturbance to livestock grazing operations throughout the entire IFNM. This could decrease the amount of surface disturbance and reduce costs for livestock operators, compared with Alternative A.

Implementing the applicable conservation measures for special status species could reduce surface disturbance, increase the percent cover of desirable vegetation species, and improve vegetation species diversity. Opportunities for establishment of noxious weeds and invasive species could be reduced while increasing the quantity and quality of forage available for livestock grazing. Conservation measures could limit the location or type of rangeland improvement projects on 11 allotments. Conservation measures could increase the amount of forage available for livestock grazing, compared with Alternative A. However, if monitoring were to identify livestock grazing as a threat to a special status species, this could result in the restriction or exclusion of livestock from areas.

Prohibiting the removal of living or dead native plant material and special management for geological resources would help promote retention of existing forage and seed sources. Maintaining existing surface and groundwater resources to preserve existing vegetation diversity could promote retention of existing forage quality and reduce opportunities for establishment of noxious weeds and invasive species. Acquisition of non-Federal lands would have the same impacts on forage quantity as Alternative A, except use of the forage by livestock until leases expire could be limited because acquired acreage may be placed into conservation easements.

Development of a land restoration plan could help maintain forage quality and quantity by restricting surface-disturbing activities, improving vegetation diversity, and reducing opportunities for establishment of noxious weeds and invasive species over a greater area, compared with Alternative A. This could increase the amount of forage available for livestock grazing until existing leases expire relative to Alternative A. Passive restoration techniques could result in slower restoration rates relative to Alternative A. Implementing fencing along designated routes to prevent damage to sensitive and unique vegetation and minimize the spread of invasive species and noxious weeds could result in the restriction or exclusion of livestock from certain areas, relative to Alternative A. Livestock operation costs in the IFNM could increase if livestock movement between pastures is restricted as a result of fencing along designated routes. However, fencing along designated routes could improve livestock distribution and forage utilization, resulting in indirect improvement of rangeland plant communities.

Protective measures in authorized rights-of-way and managing land acquisitions as exclusion areas could help maintain the overall health, vigor, and productivity of desirable vegetation and maintain rangeland health and watershed function because surface-disturbing activities would be restricted. In addition, reclaiming abandoned mines could increase the amount of land available for livestock grazing and could increase the amount of forage available for livestock grazing (compared with Alternative A) if the plant communities are restored. This would indirectly help maintain or increase the existing quantity and/or quality of forage available for livestock grazing in localized areas, compared with Alternative A.

#### **4.4.2.4 Alternative C**

Managing nine allotments as perennial could reduce management costs for livestock operators by increasing the predictability of areas available for livestock grazing in the IFNM compared with Alternative A. There could be a decrease of quality forage if livestock operators did not defer grazing during drought years since grazing disturbance during drought can decrease the availability of palatable species within the IFNM. Maintaining the ephemeral livestock grazing management on two allotments would allow for continued grazing in these areas, similar to Alternative A, following an analysis under Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management before authorizing grazing.

The amount of forage available for livestock grazing could decrease relative to Alternatives A and B by allowing the consumption of living and dead plant material by livestock. Impacts from soil and water resource management would be similar to those described under Alternative B, except range improvements on 10 allotments with sensitive or fragile soils would be allowed under this alternative while prohibited under Alternative B.

Impacts from recreation management actions would be the same as those described under Alternative B, except 18,380 acres (14 percent of public lands in the IFNM) would be managed as Roded Natural and 36,230 acres (28 percent of public lands in the IFNM) as Semi-Primitive Motorized, which could decrease the amount of surface disturbance relative to Alternative A and increase the amount of surface disturbance compared to Alternative B. Increasing the number of large-group camping sites to three and allowing overnight camping in 9,020 acres of VHAs would increase localized surface disturbance,

compared with Alternative B. Shooting restrictions would have the same impacts as those described under Alternative B.

Impacts on livestock grazing operations from management of visual resources in VRM Classes II and III areas would be similar to those described under Alternative B, but would occur over different extents. Impacts related to VRM Class II areas would occur over 124,900 acres (97 percent of public lands in the IFNM), while impacts associated with VRM Class III areas would occur on 3,420 acres (3 percent of public lands in the IFNM). In contrast to Alternative B, there would be no VRM Class I areas. Considering rights-of-way on a case-by-case basis could reduce the potential for site-specific losses of forage associated with surface-disturbing activities if rights-of-way were denied, and increase the potential for site-specific loss of forage if rights-of-way were granted.

Management actions to restore the ecological health of resources would have impacts similar to those described under Alternative B.

Impacts from OHV area designations and utility corridors and rights-of-way would be similar to those described under Alternative A, but OHV closure areas on 10,880 acres would result in less surface disturbance and potential for livestock harassment than that under Alternative A. OHV closure areas would occur over 27,160 fewer acres relative to Alternative B. Utility corridors would occur on 241 acres, affecting six allotments, which would be less acres than 8,240 acres under Alternative A, but more than Alternative B where utility corridors would not be identified.

Impacts from decisions such as implementing conservation measures, limiting vegetation removal, and developing a restoration plan would be similar to those under Alternative B. Differences in the miles of routes designated for motorized use would not be anticipated to affect current grazing management, as administrative access could be granted.

#### **4.4.2.5 Alternative D**

Management of impacts from recreation would be similar to those described under Alternative B, with a few exceptions. Managing 19,060 acres (15 percent of public lands in the IFNM) as Roaded Natural and 59,020 acres (46 percent of public lands in the IFNM) as Semi-Primitive Motorized could increase localized surface disturbance from recreation. In addition, increasing the number of large-group campsites to four also could increase localized surface disturbance, compared with two large group campsites under Alternative B and three large group campsites under Alternative C. Prohibiting dispersed recreational shooting would reduce conflicts and disturbance to livestock grazing operations compared to Alternative A. However, designated shooting areas would be established in areas that are part of the Silver Bell and Agua Blanca grazing allotments and the damage to vegetation coupled with routine firearm noise and human presence could deter livestock from grazing in and near the designated shooting areas. Impacts from management of visual resources would be the same as those described under Alternative B; 122,580 acres (95 percent of public lands in the IFNM) would be managed to meet VRM Class II objectives, and there would be no VRM Class I areas. This would reduce restrictions on rangeland improvement projects, compared with Alternatives B and C. In addition, not managing areas to protect wilderness characteristics could increase surface disturbance from human uses, but could reduce restrictions on rangeland improvement projects compared to Alternatives B and C.

Impacts from utility corridors and rights-of-way would be the same as those described under Alternative A, except the extent of those impacts would be reduced to potentially occur on 2,660 acres on six allotments, where surface disturbance could be increased. This could reduce the loss of vegetation from facilities and surface disturbance compared with 8,240 acres under Alternative A, and increase disturbance relative to 241 acres under Alternative C.

Alternative D would include the restoration of disturbed areas by allowing the use of native and non-native plants in limited emergency situations where they may be necessary to protect the resources or when taking no action would further degrade the resources. Using non-native plants in areas to protect resources could increase vegetation diversity and structure over the long term, and restoration activities could include techniques that would result in a faster rate of recovery relative to Alternatives B and C. This would reduce opportunities for establishment of noxious weeds and invasive species and could increase the quantity and quality of forage available for livestock grazing relative to Alternatives A, B, and C. Restoring areas on a case-by-case basis would improve vegetation diversity and structure and reduce opportunities for establishment of noxious weeds and invasive species. This could increase the quantity or quality of forage available for livestock grazing relative to Alternative A if it increases the acres restored.

Implementing conservation measures, limiting vegetation removal, and developing a restoration plan would have the same impacts as those described under Alternative B.

The main differences in implementation-level decisions, particularly the miles of routes designated for motorized use would not be anticipated to affect current grazing management, as administrative access could be granted.

#### **4.4.3 Impacts on Recreation**

This section presents potential impacts on recreation from management actions that would result in changes to the recreational settings, opportunities, and experiences. The analysis notes where a particular management action could improve the recreation setting for some users and degrade the recreation setting for others. For example, prohibiting motorized uses in a particular area could increase opportunities for solitude and primitive recreation, but decrease opportunities for vehicle touring or vehicle-based camping. Management actions that result in surface disturbance could decrease vegetation cover or otherwise alter land surfaces, subsequently affecting the recreation setting and the potential recreation experience. In contrast, management actions that restrict surface disturbance could prevent the establishment of some types of recreational facilities in some areas. This would protect settings, but potentially limit experiences. Management actions to improve resource conditions would tend to preserve the existing recreation setting; however, they could reduce opportunities for some recreation experiences, for example, through access restrictions.

The analysis of impacts on recreation is based on the following assumptions:

- Demand for recreational opportunities available in the IFNM will increase, with a corresponding increase in visitor use.
- Levels of participation in traditional recreational uses within the IFNM will continue to increase or decrease over time depending on social, economic factors, growth in the local area and region, and the popularity of activities changes and new pursuits are attracted to the Monument. Activities likely to see increased participation include: motorized/OHV recreation, wildlife viewing, environmental interpretation, hiking, mountain biking, equestrian, camping, target shooting, geocaching and use of horse-drawn coaches and wagons). Hunting is likely to continue to fluctuate depending on game populations and quality of the hunting experience, and the hunter population. Increasing recreational use will increase the potential for resource damage and conflicts between users.
- Demand for Special Recreation Permits (SRPs) will increase during the life of the plan.

## Impacts on Recreation (cont.)

- BLM will continue to issue SRPs for commercial recreational use, organized group activities, and competitive events in accordance with regulations at 43 CFR 2930.
- Management of recreational opportunities will require cooperation and coordination with private landowners or other land-managing agencies, given the land ownership pattern within and around the IFNM.
- Motorized and non-motorized vehicle use will be limited to designated roads and trails.
- Staffing will be available for law enforcement, visitor services, and use supervision required to intensively manage visitor use and resources.

The impact analyses and conclusions are based on interdisciplinary team knowledge of resources and the IFNM, review of existing literature, and information from other agencies. Effects are quantified where possible. In the absence of quantitative data, qualitative descriptions and best professional judgment were used. Analysis of impacts on recreation was conducted by researching the RMP decisions for all actions for any resource or resource use that could cause a change or changes to recreational opportunities, settings, or experiences available in the IFNM.

### **4.4.3.1 Impacts Common to All Alternatives**

Withdrawal of the IFNM from all forms of energy and mineral entry will help preserve the natural character of the landscape, which would maintain existing recreational settings. However, administering portions or all of approximately 4,590 acres of valid existing mining claims on a case-by-case basis could impact the recreational setting by changing the natural character of the landscape as a result of surface disturbance. Mining activities also could alter the recreation experience for non-motorized recreational users if access restrictions were imposed in those localized areas. Site-specific mitigation measures identified during subsequent NEPA analysis could reduce impacts on the natural landscape and maintain recreational settings and opportunities.

Managing the IFNM for full suppression of all fires, in accordance with applicable conservation measures, would help maintain existing recreational settings, as would implementation of programs to reduce ignitions and emphasize wildfire prevention. Closures of localized areas during fire suppression activities would limit recreational opportunities in the short term. Fuels treatments also could limit recreational opportunities in the short term in localized areas.

Maintaining or improving soil cover and productivity could maintain existing recreational settings by preserving the soil and vegetation resources and reducing soil erosion. Managing the IFNM to meet rangeland health standards and guidelines in accordance with the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration also would help maintain the recreational settings. If rangeland health standards were not being met, this could result in short-term degradation of recreational settings in localized areas. However, in these situations, recreational opportunities could be limited through access restrictions in order to achieve rangeland health standards.

Prohibiting the collection of objects, including paleontological resources, would limit surface-disturbing activities that could degrade recreational settings. However, eliminating this casual collection activity would reduce recreational opportunities in the IFNM.

Acquiring non-Federal lands could decrease the potential for surface-disturbing activities and increase the area of public land available for recreational opportunities and experiences.

In general, retention of all public land would provide for continued recreational opportunities within the IFNM (though the specific opportunities in localized areas would vary by alternative). Existing recreation

opportunities, settings, and experiences would be preserved and could increase if additional areas not presently available for public recreational use are acquired. The continued presence of two communication sites (regardless of whether additional facilities were allowed at each site) would diminish the recreational settings in localized areas near the communication sites over the long term.

Under all alternatives there would be no impacts on recreation as a result of implementation-level decisions for air quality, geology, and paleontological resources.

#### **4.4.3.2 Alternative A (No Action)**

Custodial recreation management could increase the number of vehicle-based campsites in areas near existing routes, providing for opportunities for vehicle-based camping throughout the IFNM. However, this dispersed use could result in increased surface disturbance in localized areas, degrading the natural landscape and diminishing recreational settings over time. Similarly, allowing recreational shooting outside of developed areas would provide for that recreational opportunity, but could increase surface disturbance in localized areas with frequent use, potentially diminishing the recreational settings. As a result of limiting motorized vehicle travel to existing routes, dispersed non-vehicle-based camping opportunities would be preserved in areas that are not near or accessible by existing roads. Allowing recreationists to collect wood for use in campfires including the use of rustic fireplaces and fire rings would provide for the ongoing opportunity, but could diminish the natural landscape in areas of concentrated use, which could degrade the recreational setting. Continuing to allow cross-country equestrian travel would provide for opportunities for those users to experience more remote areas of the IFNM without conflicts with motorized or non-motorized vehicles.

Managing the IFNM (128,400 acres) as VRM Class III and continuing the designation of utility corridors on 8,240 acres would allow surface disturbance throughout a majority of the IFNM, reducing naturalness and degrading recreational settings. If facilities were installed, opportunities for semi-primitive non-motorized recreation could be diminished in localized areas as a result of increased motorized uses within those areas that would be necessary to maintain the facilities. Site-specific mitigation imposed as part of any land use authorization could reduce potential impacts on the natural landscape (and associated recreational settings) and surface disturbance.

Managing 127,580 (99 percent) of the IFNM as limited to designated or existing routes would maintain opportunities for motorized recreation, throughout the monument. As motorized uses would be limited to designated or existing routes, the potential for conflicts between motorized-vehicle users and IFNM users seeking more primitive forms of recreation would be limited.

Closing 820 acres (1 percent) to OHV use, managing 41,470 acres as the Silver Bell Bighorn Sheep Management area and 2,240 acres of public land as the Waterman Mountains ACEC (including prescriptions limiting land use authorizations to areas along existing or designated routes) would restrict surface-disturbing activities in those areas, reducing opportunities for motorized vehicle travel and associated recreational uses, such as vehicle-based camping and vehicle sightseeing. Reducing surface disturbance in these areas would help maintain the existing recreational settings by preserving natural landscapes; this also would increase semi-primitive recreational opportunities.

Acquiring non-Federal mineral estate underlying Federal surface holdings could reduce surface disturbance from potential mining activities, which would help maintain existing recreational opportunities and settings in those localized areas.

The development of an activity plan for the Agua Blanca and Cocoraque Butte-Waterman Mountains Multiple Resource Management Area could restrict recreation uses and activities in localized areas where surface disturbance is restricted. In contrast, reducing surface disturbance would protect the natural

landscape and help maintain the area's recreational settings, which subsequently could increase opportunities for semi-primitive recreation and enhance the recreational experiences.

Decisions to develop and implement activity plans for Aqua Blanca Ranch and Cocoraque Butte-Waterman Mountains Multiple Resource Management Area could result in actions or restrictions that would maintain the natural landscape by improving watershed conditions, reducing erosion, and retaining vegetation – all of which would maintain the recreational settings and associated opportunities for semi-primitive non-motorized recreation. In addition, implementing the Nichol Turk's head cactus recovery plan could reduce surface disturbance resulting in enhanced watershed conditions, which could contribute to continued semi-primitive non-motorized recreational experiences in that area. However, this could restrict some types of recreation opportunities, particularly motorized recreational uses.

Providing additional stock water sources in the Twin Tanks and Cocoraque pastures would cause short-term surface disturbance, degrading the recreation setting in localized areas. Long-term this could support wildlife-based recreation (watching, hunting) activities.

Managing 346 miles of routes as open for motorized use would maintain existing recreation opportunities in those areas. However, as recreational uses in the IFNM increase, the frequency of conflicts between motorized and non-motorized recreational users would be expected to increase – as motorized and non-motorized users would share these routes.

#### **4.4.3.3 Alternative B**

Allocating the IFNM as a Special Recreation Management Area (SRMA) would be associated with the development of specific recreation niches, management objectives for recreational activities, production of varied experiences and benefits, and defining the character of the recreational settings associated with the target market(s). Within the SRMA, each RMZ would target different recreation niches, with different targeted recreation experiences (or outcomes) and settings. Most of the defined recreational settings would rely on a relatively natural, undeveloped landscape. Visitor services would support production of varied recreational experiences, with signs of management presence varying depending on the character of the setting (patrols, indirect controls, facilities, signs) associated with each RMZ. Managing the IFNM with RMZs would help maintain the recreational settings by providing five distinct RMZs that each would accommodate various uses, which could reduce conflicts between different recreational users. For example, recreationists seeking solitude could visit the Primitive RMZ, while those who prefer vehicle touring could visit the Roded Natural or Semi-Primitive Motorized RMZs.

However, the RMZs would reduce opportunities for motorized recreation by managing 96,200 acres (75 percent) of the public lands in the IFNM for Primitive or Semi-Primitive Non-Motorized recreation opportunities and experiences. In addition, managing 38,040 acres (30 percent) as closed to OHV use also could reduce opportunities for motorized recreational experiences relative to Alternative A.

Prohibiting dogs and recreational shooting would represent the loss of certain recreational opportunities compared to Alternative A, but could result in the potential for maintaining naturalness in localized areas where shooting would no longer occur and increase the quality of other recreational experiences (i.e., bird watching, hiking, etc.). Hunters who have used public land within IFNM during the off-season to practice their hunting skills by target shooting or to sight firearms would be affected by the prohibition of recreational target shooting, although sighting of firearms in the IFNM would be permitted when in compliance with the AGFD-established hunting seasons. An indirect effect of prohibiting target shooting within IFNM is that it would shift demand for this recreational opportunity to other public lands and facilities in the region that provide for target shooting. Concentrating the use to fewer locations could result in increased resource damage, noise complaints, but safety concerns would be alleviated by site

## Impacts on Recreation (cont.)

selection, and cleanup costs from removal of target debris and other litter and site management might be more efficient due to the fewer locations.

Equestrian uses would be restricted to routes designated for motorized and non-motorized travel, limiting the type and location of recreational experiences for these users compared to Alternative A.

Except in areas where restricted, mechanized uses (such as bicycles) would be allowed on motorized routes and non-motorized primitive roads, but would not be allowed on non-motorized trails. Because there would be fewer motorized roads with Alternative B than with the no-action alternative and because bicycles would not be allowed on non-motorized trails, bicycle use within IFNM may be more concentrated on the available routes, although some bicyclists may opt to ride in other locations outside of IFNM where there are fewer use restrictions.

Prohibiting ground-disturbing activities in areas of sensitive or fragile soils on 17,820 acres that are within the Roded Natural and Semi-Primitive Motorized RMZs and managing 36,990 acres to protect wilderness characteristics could restrict the location of recreation facilities and the potential for recreational activities that would cause surface disturbance. In contrast, prohibiting ground-disturbing activities and managing areas to protect wilderness characteristics would help maintain the natural landscape in those areas, consistent with the allocations of the Semi-Primitive Non-Motorized, Ragged Top Watchable Wildlife, and Primitive RMZs. In addition, management and implementation actions designating public access sites, reducing erosion, or protecting vegetation could indirectly increase non-motorized recreational opportunities, by improving the setting for non-motorized activities by protecting the naturalness of the area and reducing the potential for conflicts with motorized uses.

Managing 125,110 acres (97 percent) to meet VRM Class I and II objectives, managing the IFNM as an exclusion area for rights-of-way, and managing 29,820 acres as the Desert Bighorn Sheep WHA also would reduce surface disturbance. In addition, minimizing surface disturbance during the construction, reconstruction, or maintenance of facilities, excluding new rights-of-way (to the extent possible) also could reduce surface disturbance. As a result of reduced surface disturbance, natural landscapes would be maintained, along with the associated recreational settings. Within these areas, non-motorized recreational opportunities, including wildlife watching, hunting, and dispersed non-vehicle-based camping, would be maintained or even enhanced relative to Alternative A. However, these management actions could reduce opportunities for motorized travel and motorized-based recreational uses—restricting the potential experiences to areas along designated motorized routes relative to Alternative A.

Managing 3,420 acres (3 percent) to meet VRM Class III and managing 17,610 acres as the Roded Natural RMZ could result in surface disturbance and degrade the recreational setting in localized areas. In contrast, opportunities for motorized travel and motorized-based recreational uses would be provided in these areas, similar to the opportunities provided under Alternative A. Allowing overnight camping at identified sites only and group camping at two specific sites and establishing public access points through the travel management planning process would restrict camping and access opportunities to specific locations, but would help maintain the natural landscape and recreational settings throughout the IFNM. Fencing along travel routes would result in short-term surface disturbance in localized areas that could degrade the recreational settings and reduce the quality of semi-primitive recreation experiences in these areas.

Management actions to support control of dust emissions from vehicle travel, prevent vegetation loss, manage noxious weeds, and protection of priority or special status species habitats could restrict recreation activities and reduce recreation opportunities in localized areas. Similarly, allocating cultural sites for scientific use could result in restrictions on recreational access to protect resources causing a localized reduction in recreation opportunities relative to Alternative A.

## Impacts on Recreation (cont.)

Developing and implementing a restoration plan for the IFNM could help maintain or enhance recreational settings and, over the long term, increase recreation opportunities and experiences by restoring disturbed areas. However, restoration activities could restrict access resulting in diminished recreational opportunities or experiences in localized areas relative to Alternative A.

The travel management decisions could reduce conflicts between motorized and non-motorized users, enhancing recreation opportunities and experiences for both user groups. Non-motorized transportation by the public would be permitted on approximately 266 miles of routes, providing for more opportunities for non-motorized users, but fewer opportunities for motorized users (on 63 miles of routes), relative to Alternative A.

The removal of fences, roads, facilities, and utility lines no longer necessary for transportation, monument administration, or other purposes in their present locations would restore or enhance the natural landscape and associated recreational setting in those areas. The barriers presented by fences also would be removed, enhancing unconfined recreation activities, such as hunting or dispersed hiking and/or horseback riding. However, non-renewal of existing grazing leases when they expire may require new fences to prevent livestock grazing on adjacent non-Federal lands from wandering into IFNM, although the elimination of the leases could also eliminate potential conflicts between grazing and recreational uses.

Installing new wildlife waters could enhance wildlife-based recreation opportunities, but the water developments would have a short-term, localized impact on recreation setting from surface disturbance.

Providing adequate access to geologic sites and/or features for viewing and enjoyment (where public access would not conflict with other resource goals or uses) could enhance the recreation opportunities in the IFNM.

### **4.4.3.4 Alternative C**

Management of RMZs would reduce opportunities for motorized recreation relative to Alternative A as approximately 73,740 acres (57 percent) of public lands in the IFNM would be allocated for Primitive or Semi-Primitive Non-Motorized recreation opportunities and experiences (including the Ragged Top area); however, this would provide more opportunities for motorized recreation relative to Alternative B. In addition, managing 10,880 acres (8 percent) as closed to OHV use could reduce opportunities for motorized recreational experiences relative to Alternative A. Prohibiting recreational shooting would have the same impacts that occur under Alternative B. Allowing dogs within the IFNM (while leashed, unless being used for hunting or livestock operations) would maintain recreational opportunities associated with those uses, such as hiking and/or hunting; however, this could diminish experiences for visitors who prefer to not encounter dogs. Allowing cross-country equestrian travel would result in the same impacts as described under Alternative A.

Mechanized uses, such as bicycles, would be allowed on approximately 124 miles of routes, which is fewer miles than with Alternative A, but more than with Alternative B. While there would be greater concentration of use areas compared to taking no action, there would continue to be adequate opportunities for dispersed bicycle use within IFNM.

Allowing ground-disturbing activities in areas of sensitive or fragile soils (with mitigation) within the Roaded Natural and Semi-Primitive motorized RMZs (which overlap on 30,720 acres) would result in diminished recreational opportunities or experiences in areas where surface disturbance affects the recreational setting. Managing 9,510 acres to protect wilderness characteristics would result in the same types of impacts as under Alternative B, though over a lesser extent (since Alternative B includes 36,990 acres managed to protect wilderness characteristics). Management and implementation actions

designating public access sites, reducing erosion, or protecting vegetation could indirectly increase non-motorized recreational opportunities and would result in the same impacts as under Alternative B.

Managing 124,900 acres (97 percent) to meet VRM Class II objectives, managing the IFNM as an avoidance area for rights-of-way, and managing 29,820 acres as the Desert Bighorn Sheep WHA would have similar impacts as those under Alternative B. However, there would be a slightly increased potential for surface-disturbing activities to occur from land use authorizations, resulting in diminished recreational settings and potential short-term restrictions on access that could reduce recreational opportunities in localized areas as a result of managing as an avoidance rather than exclusion area (for rights-of-way) and due to the less restrictive VRM class objectives on a limited number of acres.

Managing 3,420 acres (3 percent) to meet VRM Class III and managing 54,610 (43 percent) as the Roaded Natural and Semi-Primitive Motorized RMZs could result in surface disturbance and degrade the recreational setting in localized areas, but also could increase opportunities for motorized recreation experiences compared to Alternative B. Allowing overnight, dispersed, non-motorized-based camping throughout the IFNM except in specified areas for the protection of resource values would provide for opportunities that would not exist under Alternative B. Allowing group camping at three specific sites would result in the same impacts that occur under Alternative B, but at one additional site—providing for slightly increased group camping opportunities. Establishing public access points and fencing along travel routes would result in the same impacts that occur under Alternative B.

Designating utility corridors would allow for surface disturbance in localized areas, reducing naturalness and degrading recreational settings. If facilities were installed, opportunities for semi-primitive non-motorized recreation could be diminished in localized areas as a result of increased motorized uses within those areas that could be necessary to maintain the facilities. Site-specific mitigation imposed as part of any land use authorization could reduce potential impacts on the natural landscape (and associated recreational settings) from surface disturbance, as well as any restrictions that could result on recreational opportunities. These impacts would be similar to those that would occur under Alternative A, but over a lesser extent due to the reduced width of the corridors (200 to 300 feet wide under Alternative C, compared to one mile wide under Alternative A).

Allowing group tours at cultural sites open to public uses would increase recreational opportunities.

Allowing livestock grazing at all eleven allotments and acquiring the mineral rights when acquiring surface estate could help maintain the recreation setting. Short-term areas where livestock congregate could degrade the recreation setting and experience by removing vegetation. By acquiring mineral estate when acquiring surface estate, BLM could limit future surface disturbance in those areas.

Impacts from decisions to remove facilities that are no longer used, installation of wildlife waters, and providing access to geologic resources would have the same impacts as Alternative B.

Non-motorized travel by the public would be permitted on approximately 205 miles of routes and motorized travel on 124 miles of routes, representing increased motorized opportunities relative to Alternative B, but fewer than Alternative A; in contrast more non-motorized recreational opportunities would be provided relative to Alternative A, but fewer than Alternative B.

#### **4.4.3.5 Alternative D**

Management of RMZs would reduce opportunities for motorized recreation relative to Alternative A, but increase them relative to Alternatives B and C as approximately 50,270 acres (39 percent) of public lands in the IFNM would be allocated for Semi-Primitive Non-Motorized recreation opportunities and experiences (including the Ragged Top area). Limiting motorized vehicle travel to designated routes

## Impacts on Recreation (cont.)

throughout the IFNM would result in similar impacts on opportunities for motorized recreation as Alternative A (as the 820 acres closed under Alternative A would not include any routes designated for motorized travel under Alternative D). Allowing dogs within the monument would result in the same impacts that occur under Alternative C. Allowing collection of firewood would result in the same impacts that occur under Alternative A. Allowing cross-country equestrian travel would result in the same impacts as described under Alternative A.

Establishing two designated areas consisting of approximately 629 acres for recreational shooting would continue to provide for recreational shooting opportunities, but recreation experiences would differ from that currently experienced as assessed for Alternatives A, B and C. Limiting recreational shooting to two areas would increase opportunities outside of the shooting areas for recreationists to experience solitude or recreational activities requiring quiet (such as bird watching or nature photography) compared to Alternative A and result in a localized loss of these opportunities compared to Alternatives B and C. Alternative D increases opportunities for recreational shooting compared to Alternatives B and C, and reduces these opportunities compared to Alternative A. The recreation experience for recreational shooting also would be altered because limiting recreational shooting to two designated areas could increase the number of participants at a site. This could enhance the experience by providing opportunities to socialize with persons having a common interest and to shoot in an area actively managed for shooting activity. However, sharing an area may diminish the experience for some shooters and encourage the use of other locations in which shooting is allowed outside of IFNM.

The number of miles of mechanized use routes for bicycles would be greater with Alternative D than with Alternative B and C, but fewer than with Alternative A. Continued opportunities for dispersed bicycle use would be available, but there would be use restrictions that may prompt some bicyclists to ride in regional locations outside of IFNM.

Allowing ground-disturbing activities in areas of sensitive or fragile soils within the Roaded Natural and Semi-Primitive Motorized RMZs would result in the same impacts as under Alternative C, though over a greater extent (41,420 acres, compared to 30,720 acres under Alternative C). Management and implementation actions designating public access sites, reducing erosion, or protecting vegetation could indirectly increase non-motorized recreational opportunities and would result in the same impacts as under Alternative B.

Managing 122,580 acres (95 percent) to meet VRM Class II objectives, managing the IFNM as an avoidance area for rights-of-way, and managing 29,820 acres as the Desert Bighorn Sheep WHA would have similar impacts as those under Alternative B. However, there would be a slightly increased potential for surface-disturbing activities to occur from land use authorizations, resulting in impacts to recreational settings and opportunities, including potential short-term restrictions on access.

Managing 4,220 acres (3 percent) to meet VRM Class III objective, managing 1,600 acres (1 percent) to meet VRM Class IV objectives, and managing 78,080 acres (61 percent) as the Roaded Natural and Semi-Primitive Motorized RMZs could result in surface disturbance and degrade the recreational setting in localized areas, but also could increase opportunities for motorized recreation experiences compared to Alternatives B and C. Allowing overnight dispersed non-motorized-based camping throughout the IFNM except in specified areas for the protection of resource values would result in the same impacts that occur under Alternative C. Allowing group camping at four specific sites would result in the same impacts that occur under Alternative B, but at two additional sites—providing for increased group camping opportunities. Establishing public access points and fencing along travel routes would result in the same impacts that occur under Alternative B.

## Impacts on Recreation (cont.)

Allowing group tours at cultural sites and allowing livestock grazing at all eleven allotments would have the same impacts that occur under Alternative C.

Designating utility corridors would have the same impacts as Alternative C, though over a greater extent as a result of the addition of one more corridor and the wider corridors that would be established relative to Alternative C (the corridors would be ¼-mile wide under this alternative, compared to 200- to 300-foot wide under Alternative C).

Impacts from decisions to remove facilities that are no longer used, installation of wildlife waters, and providing access to geologic resources would have the same impacts as Alternative B.

Non-motorized travel by the public would be permitted on approximately 116 miles of routes and motorized travel on 226 miles of routes, representing increased motorized opportunities relative to Alternatives B (63 miles) and C (124 miles), but fewer than Alternative A (346 miles); in contrast, more non-motorized recreational opportunities would be provided relative to Alternative A (no routes designated), but fewer than Alternatives B (266 miles) and C (205 miles).

### **4.4.4 Impacts on Lands and Realty**

The analysis of potential effects on lands and realty from the proposed alternatives is limited to effects on land tenure (ownership) and the opportunities for land use authorizations within the IFNM. Generally, areas defined in the RMP as having restrictions for issuing land use authorizations could limit opportunities for facilities such as utilities, including, but not limited to, rights-of-way for electric generating facilities (including renewables), transmission lines, pipelines, and communication towers. In addition, various management prescriptions could alter BLM's ability to authorize land uses. For example, areas closed to OHV travel would potentially limit BLM's ability to authorize a right-of-way through that area.

The following assumptions were used when assessing the impacts on lands and realty:

- BLM would use voluntary approaches to acquire surface (and mineral) estate.
- Site-specific impacts caused by development of facilities in designated corridors or development of communication sites would be assessed in accordance with NEPA using an environmental assessment or EIS process prior to approval by BLM, and mitigation measures could be required.
- The demand for rights-of-way would increase within the life of this plan.
- Right-of-way holders may maintain their use and access at their discretion consistent within the terms of their grant.

Impact analyses and conclusions are based on an understanding of BLM's authority to acquire land within the boundary of the IFNM as well as BLM's responsibilities to authorize various uses of public land through a lands and realty program (e.g., issuing rights-of-way). Spatial analyses were conducted using GIS data and analyses. Impacts are described qualitatively to differentiate among the alternatives; impacts are quantified wherever possible. Analyses of impacts on lands and realty are based on consideration of the goals of the lands and realty program to secure non-Federal land and interests in land, and manage land use authorizations, such as rights-of-way, in a way that minimizes impacts on the natural and cultural resources of the IFNM, and their uses.

#### **4.4.4.1 Impacts Common to All Alternatives**

Under all alternatives, BLM could acquire land and incorporate those lands into the IFNM. No lands would be transferred out of Federal ownership, per the Proclamation, unless an exchange would further

the protective purposes of the monument. Under all alternatives acquisitions would be dependent upon having a willing seller. The resulting impact would be that more area within the IFNM's boundaries could be managed by BLM in the future.

BLM's ability to issue land use authorizations in localized areas may be limited by BLM's obligation to respect valid, existing mining claims.

Under all alternatives, impacts on lands and realty are not anticipated as a result of implementing management actions for the following resources and resource uses: air quality, geologic resources, fire ecology, cultural resources, paleontological resources, energy and mineral resources, and livestock grazing.

#### **4.4.4.2 Alternative A (No Action)**

Very few management prescriptions would have impact on lands and realty or BLM's ability to authorize land uses within the IFNM. Land tenure adjustments and land use authorizations would be affected primarily as a result of decisions under lands and realty, travel management, and special designations. To a lesser extent, decisions for managing vegetation and scenic and visual resources also would potentially impact lands and realty or BLM's ability to authorize land uses. No impacts on lands and realty would be anticipated under Alternative A from decisions for soil and water resources or recreation.

Land tenure adjustments would focus on acquisition of non-Federal land in the Waterman Mountains, Sawtooth Mountains, Agua Blanca Ranch area, Cocoraque Butte area, Silver Bell Mountains, and three sections of land in the West Silver Bell Mountains. Acquisitions would be driven by opportunities or land availability in these geographic areas. In addition, BLM would pursue acquisition of non-Federal mineral estate underlying Federal surface holdings, which would reduce the need for land use authorizations for surface uses in areas that are not Federal minerals—that is, BLM would have management jurisdiction over both surface and subsurface uses as a result of successful acquisitions. Also under lands and realty decisions, the existing corridors (approximately 8,240 acres of public land) would be maintained for existing and future rights-of-way (Map 2-15). Land use authorizations for major utility rights-of-way, such as high-voltage transmission lines, would be restricted to these corridors. Other rights-of-way, such as distribution lines to inholdings, could be granted in the corridors as well; however, BLM would maintain the ability to authorize uses such as these outside the designated corridors. Communication facilities would be restricted to the two designated sites. Other rights-of-way could be consolidated to the extent practicable.

Closing 820 acres to OHV (or any motorized-vehicle) travel would include about 800 acres around Ragged Top for protection of vegetation and wildlife habitat and about 20 acres for the Special Management Area. These closures could effectively restrict land use authorizations in these areas as a result of access limitations that would be enforced as part of the OHV closure. OHV travel in the remaining areas of the IFNM would be restricted to existing routes, which could limit opportunities for land use authorizations to areas along existing routes if the authorization (e.g., right-of-way) required motorized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes).

Continuing the designation of the Waterman Mountains ACEC (shown on Map 2-3) and its associated management prescriptions for the protection of the Nichol Turk's head cactus would restrict BLM's opportunities to authorize land uses (e.g., rights-of-way) to areas along existing routes on the 2,240 acres of public land within the ACEC. The 60 miles of existing roads within the ACEC would provide numerous opportunities for rights-of-way within the ACEC.

Development and implementation of an activity plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could result in additional, but very localized restrictions to land use authorizations in that area to meet natural resource objectives. Cocoraque Butte is a special restriction area for vehicle travel (refer to Map 2-19), which is essentially managed as closed to motorized vehicle travel.

Managing public lands within the IFNM as VRM Class III would not preclude land use authorizations, but would allow only moderate changes to the landscape, not “major modification” of the landscape character. As such, land use authorizations requiring major modifications would not be permitted, or proponents of such uses would be required to implement mitigation measures to, at a minimum, partially retain the landscape character.

The implementation-level decisions under Alternative A generally would be analyzed on a site-specific basis for their impacts on lands and realty. However, under travel management, limiting motorized vehicle travel to existing routes (Map 2-19) could effectively limit opportunities for future rights-of-way or other land use authorizations that may require additional access routes (unless administrative access was granted for such purposes).

#### **4.4.4.3 Alternative B**

Land use authorizations under this alternative would be restricted primarily as a result of decisions under lands and realty, soil and water resources, wildlife and wildlife management, special status species, scenic and visual resources, recreation, and travel management. To a lesser extent, decisions for managing vegetation also would potentially impact lands and realty or BLM’s ability to authorize land uses.

Land tenure adjustments would focus on acquisition of non-Federal land throughout the monument, on an opportunistic basis, rather than within specific areas. This would provide greater flexibility for BLM in prioritizing land for acquisition and would account for ongoing, changing conditions in and around the IFNM. In addition, BLM would pursue acquisition of non-Federal mineral estate underlying Federal surface holdings, which would reduce the need for land use authorizations for surface uses in areas that are not Federal minerals—that is, BLM would have management jurisdiction over both surface and subsurface uses as a result of successful acquisitions. BLM would not acquire surface estate unless subsurface estate (minerals) could be acquired concurrently, in order to ensure that management of the acquired lands would be consistent with the goals of the IFNM. As a result, this could limit acquisition opportunities in some areas. Over time, these decisions would lead to increased land being managed as part of the IFNM under BLM’s jurisdiction.

Allocating all of the public lands within the IFNM, approximately 128,400 acres, as an exclusion area (without any designated utility corridors), would result in the consideration of land use authorizations such as rights-of-way (including renewable energy projects) only when required by law. The only exception would be at two designated communication sites, where communication facilities would be authorized on up to a total of approximately 5 acres of public land. These decisions would effectively prohibit new land use authorizations within the IFNM; existing right-of-way authorizations would be allowed to continue and may be renewed in accordance with 43 CFR 2800, which regards rights-of-way under FLPMA. In the event that a land use authorization was required by law, mitigation could be required to ensure protection of monument objects.

Prohibiting ground-disturbing activities in areas of fragile and sensitive soils would severely restrict land use authorizations in those areas. Similarly, prohibiting surface water diversions and groundwater pumping that removes water from the IFNM could limit land use authorizations associated with those types of activities.

## Impacts on Lands and Realty (cont.)

Eliminating livestock grazing as existing leases expire would not have a direct effect on lands and realty within IFNM, but could indirectly diminish the value of nearby State Trust or private land for ranching purposes.

Establishing the Desert Bighorn Sheep WHA to protect habitat lambing areas and movement corridors, and limiting public access within localized areas of the WHA during lambing season could result in localized restrictions on land use authorizations; however, the allocation of the IFNM as an exclusion area for rights-of-way would almost entirely eliminate the potential for any land use authorizations to occur within this area at all.

Establishing the Waterman Mountains Vegetation Habitat Management Area (VHA) and its associated management prescriptions would restrict land use authorizations (unless necessary or required by law within the exclusion area) to areas located along routes designated for motorized travel.

Designating 36,990 acres of the IFNM as VRM Class I, 88,120 acres as VRM Class II, and 3,290 acres as VRM Class III (Map 2-7) would result in restrictions on any required land use authorizations to comply with the objectives for the respective management class. Opportunities for land use authorizations in areas managed as VRM Class I would be severely limited, while some, but limited, opportunities for land use authorizations would be available in VRM Class II areas. Areas designated as VRM Class III would provide the greatest opportunities for land use authorizations, particularly those that would be noticeable within the landscape.

The RMZs under Alternative B would result in approximately 96,200 acres of public land being managed for non-motorized recreational opportunities (which includes approximately 29,420 acres of Primitive RMZ, 6,780 acres of Ragged Top Wildlife Viewing RMZ, and 60,000 acres of Semi-Primitive Non-Motorized RMZ) (Map 2-12), consistent with the routes designated as closed to motorized vehicle travel. Land use authorizations, though not specifically restricted in these areas under the recreation decisions, could effectively be limited due to the reduced opportunities for motorized access in these areas (unless administrative access was granted for such purposes). Opportunities for land use authorizations would be greatest within the 17,610-acre Roaded Natural RMZ and the 14,540-acre Semi-Primitive Motorized RMZs.

Closing approximately 38,040 acres to OHV travel would result in further restrictions on land use authorizations in those areas (primarily associated with the Primitive RMZ and areas managed to protect wilderness characteristics) (Map 2-20), beyond the restrictions that already would occur as a result of allocating the IFNM as an exclusion area for land use authorizations. OHV travel in the remaining area of the IFNM would be restricted to designated routes, which would limit opportunities for land use authorizations to areas along those designated routes if the authorization (e.g., right-of-way) required motorized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes).

Minimizing or mitigating for surface-disturbing activities under vegetation could result in localized restrictions to land use authorizations.

The implementation-level decisions under Alternative B generally would be analyzed on a site-specific basis for their impacts on lands and realty. However, under travel management, vehicle travel would be limited to 63 miles of routes designated for motorized vehicle travel (Map 2-20), which could limit opportunities for future rights-of-way or other land use authorizations if additional access and/or routes were required for that specific right-of-way (unless administrative access was granted for such purposes).

#### **4.4.4.4 Alternative C**

Under Alternative C, land use authorizations would be restricted primarily as a result of decisions under lands and realty, soil and water resources, wildlife and wildlife management, special status species, scenic and visual resources, recreation, and travel management. To a lesser extent, decisions for managing vegetation also would potentially impact lands and realty or BLM's ability to authorize land uses.

Land tenure adjustments for surface and/or subsurface estate would occur as described under Alternative B, with the same impacts.

All of the public lands within the IFNM except two designated utility corridors (one for underground utilities only, and one for underground or overhead utilities, totaling 241 acres) would be allocated as avoidance area for future rights-of-way (including renewable energy projects). Similar to Alternative A, land use authorizations for major utility rights-of-way would be restricted to the designated corridors, and other rights-of-way could be granted in the corridors. Though BLM would maintain the ability to authorize land uses such as these outside the designated corridors, the allocation of the IFNM as an avoidance area would limit opportunities for rights-of-way. As with Alternative B, communication facilities would be restricted to the two designated sites, totaling approximately 5 acres of public land; this would provide for two localized and very limited opportunities for additional communication facilities within the IFNM. Existing rights-of-way would be allowed to be renewed in accordance with 43 CFR 2800.

Ground-disturbing activities in areas of fragile and sensitive soils would be allowed rather than prohibited compared to Alternative B, which would provide opportunities for land use authorizations in those areas. However, site-specific restrictions and/or mitigation could be required.

Establishing the Desert Bighorn Sheep WHA and Waterman Mountains VHA would have the same impacts as those described under Alternative B.

Designating approximately 122,580 acres to VRM Class II and approximately 4,220 acres to VRM Class III (Map 2-8) would result in restrictions on land use authorizations to comply with the objectives for the respective management class. Opportunities for land use authorizations would be limited, though not completely prohibited, in VRM Class II areas, and some restrictions also would apply in VRM Class III areas. The approximately 80 acres designated as VRM Class IV would not greatly restrict land use authorizations, given the objectives of that VRM class.

The recreation zoning under Alternative C would result in approximately 73,740 acres of public land being managed for non-motorized recreational opportunities (which includes approximately 57,450 acres of public land identified as Semi-Primitive Non-Motorized RMZ, 6,780 acres of public land identified as the Ragged Top Wildlife Viewing RMZ and approximately 9,510 acres of public land identified as a Primitive RMZ) (Map 2-13), consistent with the routes designated as closed to motorized vehicle travel. Though land use authorizations are not specifically restricted in these areas according to the recreation decisions, authorizations would effectively be limited due to the reduced opportunities for motorized access in these areas (unless administrative access was granted for such purposes). Opportunities for land use authorizations would be greatest within the 18,380-acre Roaded Natural RMZ and the 36,230-acre Semi-Primitive Motorized RMZs.

Closing approximately 10,880 acres to OHV travel would result in restrictions on land use authorizations in those areas (Map 2-21), beyond the restrictions that already would occur as a result of allocating the IFNM as an avoidance area for land use authorizations. OHV travel in the remaining area of the IFNM would be restricted to designated routes, which would limit opportunities for land use authorizations to areas along those designated routes if the authorization (e.g., right-of-way) required motorized vehicle

## Impacts on Lands and Realty (cont.)

access for construction, operation, or maintenance (unless administrative access was granted for such purposes).

Minimizing or mitigating for surface-disturbing activities would result in similar impacts as those that would occur under Alternative B.

The implementation-level decisions under Alternative C generally would be analyzed on a site-specific basis for their impacts on lands and realty. However, under travel management, motorized vehicle travel would be limited to 124 miles of routes designated for motorized travel (Map 2-21), which would limit opportunities for future rights-of-way or other land use authorizations that may require additional access routes (unless administrative access was granted for such purposes).

### **4.4.4.5 Alternative D**

Land use authorizations would be restricted primarily as a result of decisions under lands and realty, soil and water resources, wildlife and wildlife management, special status species, scenic and visual resources, recreation, and travel management. To a lesser extent, decisions for managing vegetation also would potentially impact lands and realty or BLM's ability to authorize land uses.

Land tenure adjustments for surface and/or subsurface estate would occur as described under Alternative B, with the same resulting impacts, except mineral estate acquisitions would not be required as part of surface estate acquisitions. This could result in an increase in the amount of split estate land within the IFNM, where BLM would not have jurisdiction to manage or prohibit uses of subsurface estate.

All of the public lands within the IFNM except three designated utility corridors (one for underground utilities only, and two for underground or overhead utilities) would be allocated as avoidance area for future rights-of-way (including renewable energy projects). Impacts would be similar to those described under Alternative C, though with a greater area allocated for corridors (2,660 acres) compared to Alternative C (241 acres).

Allowing ground-disturbing activities in areas of fragile and sensitive soils would result in the same impacts as those described under Alternative C.

Establishing the Desert Bighorn Sheep WHA and Waterman Mountains VHA would have the same impacts as those described under Alternative B.

Designating approximately 122,580 acres to VRM Class II and approximately 4,220 acres to VRM Class III (Map 2-9) would result in restrictions on any required land use authorizations to comply with the objectives for the respective management class. Opportunities for land use authorizations would be limited, though not completely prohibited in VRM Class II areas, and some restrictions also would apply in VRM Class III areas. The approximately 1,600 acres designated as VRM Class IV, primarily associated with utility corridors, would not greatly restrict land use authorizations, given the objectives of that VRM class.

The recreation zoning under Alternative D would result in approximately 50,270 acres of public land being managed for non-motorized recreational opportunities (which includes approximately 43,770 acres of public land identified as Semi-Primitive Non-Motorized RMZ and 6,500 acres of public land identified as the Ragged Top Wildlife Viewing RMZ) (Map 2-14), consistent with the routes designated as closed to motorized vehicle travel. Though land use authorizations are not specifically restricted in these areas according to the recreation decisions, authorizations could be limited due to the reduced opportunities for motorized access in these areas (unless administrative access was granted for such purposes).

## Impacts on Lands and Realty (cont.)

Opportunities for land use authorizations would be greatest within the 19,060-acre Roded Natural RMZ and the 59,020-acre Semi-Primitive Motorized RMZs.

No areas would be closed to motorized vehicle travel; OHV travel on public lands would be restricted to designated routes (Map 2-22), which would limit opportunities for land use authorizations to areas along those designated routes if the authorization (e.g., right-of-way) required motorized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes).

Minimizing or mitigating for surface-disturbing activities would result in similar impacts as those that would occur under Alternative B.

The implementation-level decisions under Alternative D generally would be analyzed on a site-specific basis for their impacts on lands and realty. However, under travel management, motorized vehicle travel would be limited to 226 miles of routes designated for motorized travel (Map 2-22), which would limit opportunities for future rights-of-way or other land use authorizations that may require additional access routes (unless administrative access was granted for such purposes).

### **4.4.5 Impacts on Travel Management**

The analysis of effects on travel into and within the IFNM—including access to areas within the monument—from management decisions proposed under the alternatives focuses on the loss or gain of access for motorized and non-motorized surface travel and air transportation. The impacts are determined by whether current access throughout the IFNM would be changed and the degree to which management would meet the goals and objectives for travel management.

Monument ingress and egress would be affected by surface travel route closures, limitations, and other management actions limiting access. Increased access by way of new route designations, route maintenance, and the opening of closed areas would affect surface travel. Changes to access of inholdings also would affect surface travel.

The following assumptions were used when assessing the impacts on travel and access:

- During implementation planning, the BLM will assess all proposed actions for site-specific effects in order to avoid long-term impairment of travel and access to areas within the monument.
- Changes to travel management, as outlined in each alternative, will be consistent with the other management decisions proposed under that particular alternative.
- Regional population growth, as well as national monument status, will result in a general trend of increasing visitation and use of the open roads on the public lands within the IFNM boundaries.

Impact analyses and conclusions are based on study of the project area and existing planning documents. Spatial analyses were conducted using GIS data. Impacts are quantified where possible or described in qualitative terms, if appropriate. Impacts on travel and access would include short- or long-term effects from changes in access for OHV travel, and changes in the routes that are available for motorized and non-motorized surface travel.

#### **4.4.5.1 Impacts Common to All Alternatives**

Erosion prevention measures and land treatments to maintain and improve soil cover and productivity would correct drainage and erosion problems on existing travel routes, improving road conditions. Such measures and/or treatments would be applied to routes consistent with OHV use designations and individual route designations.

## Impacts on Travel Management (cont.)

Under all alternatives, wildfire on the IFNM would be suppressed in all instances. Fire suppression activities could require emergency access that may not be accommodated by the travel route system. As a result, additional routes, though possibly only temporary and administrative, could be required for management of wildfires or to conduct fuels treatments. Overall, this would not increase the routes or areas where motorized uses would be allowed.

Mining activity within the IFNM would continue to be administered on a case-by-case basis. Access needs related to mining claims would be accommodated consistent with OHV areas and route designations under each alternative, to the extent possible. However, valid existing mining claims could require additional access that may not be accommodated by the travel route system. As a result, additional routes could be established for the specific purpose of exercising a valid existing mining claim. Site-specific impacts would be identified and mitigated through subsequent NEPA analysis.

Acquiring lands would protect and potentially expand public travel and access within the IFNM because additional routes and access points could become available for public use. These potential localized changes to travel management would be addressed on a case-by-case basis. In contrast, the acquisition of non-Federal mineral estate would eliminate potential access needs related to the private development of minerals on split estate.

No impacts on travel management would occur as the result of decisions for geological resources, vegetation, special status species, paleontological resources, livestock grazing, or special designations.

### **4.4.5.2 Alternative A (No Action)**

Restrictions on travel within the IFNM would result primarily from the travel management decisions. To a lesser extent, decisions for managing wildlife and wildlife habitat, lands and realty, scenic and visual resources, and recreation also could affect travel management. No impacts on travel management would result from management decisions for air quality, cultural resources, or wilderness characteristics because the management decisions proposed for these resources under Alternative A would not result in restrictions on travel management or increased access within the IFNM. However, while not a management decision, the increased visitation to IFNM associated with recreational demand and regional population growth may result in heavier use of existing travel routes. This could result in increased vehicle emissions within the IFNM boundaries and more human interactions that could affect cultural resources or degrade wilderness characteristics.

Motorized travel within the IFNM would be limited to existing routes in accordance with the Proclamation (a total of 346 miles of roads and trails). Closing 820 acres to OHV travel and limiting motorized vehicle travel to existing (or designated) routes on the remaining approximately 127,580 acres would provide an extensive travel network throughout the IFNM, with very few areas where motorized travel would be prohibited. Approximately 800 acres of the closure would occur around Ragged Top to protect wildlife and wildlife habitat, and the remaining 20 acres would occur in the Special Management Area. Cross-country equestrian uses would be allowed, providing for access into remote areas by equestrian users, but that could result in the establishment of additional trails from continued use.

Maintaining three 1-mile-wide utility corridors within the IFNM and allowing rights-of-way throughout the IFNM would require continued access for construction and maintenance of such facilities (though administrative access could be granted for such purposes).

Designating the IFNM entirely as a VRM Class III area and continuing custodial management for recreation would support the travel-management decision that limits motorized travel to existing routes throughout the IFNM (except within the 820 acres that would be closed); these decisions would not generate any additional direct impacts on travel management. Cross-country horseback riding would

continue, resulting in increased public access into remote areas, but such use could result in the establishment of additional trails.

The implementation-level decision designating approximately 346 miles of routes for motorized vehicle travel (i.e., the existing routes) would provide extensive access throughout the IFNM for both motorized and non-motorized uses.

#### **4.4.5.3 Alternative B**

Restrictions on travel within the IFNM would result primarily from the travel-management decisions. To a lesser extent, decisions for managing air quality, soil and water resources, wildlife and wildlife habitat, cultural resources, lands and realty, scenic and visual resources, areas managed to protect wilderness characteristics, and recreation also could affect travel management.

Closing approximately 38,040 acres (almost 30 percent of the public lands within the IFNM) to motor vehicle travel and limiting motorized vehicle travel to designated routes on 90,360 acres would restrict travel and access within the IFNM, compared to Alternative A. Restricting access into the IFNM to locations designated through the travel management planning process would limit access from nearby areas, but also could prevent the proliferation of unauthorized routes from various locations. Travel and access restrictions would be associated with VRM Class I areas, areas managed to protect wilderness characteristics, protection of cultural resources, and the Primitive RMZ.

Controlling fugitive dust emissions, particularly through the use of road-use restrictions that limit or eliminate access, could affect travel management in localized areas.

Prohibiting surface disturbance to protect soil and water resources in areas of sensitive or fragile soils could constrain travel and access in those areas, particularly from future consideration of new route development.

Allocating approximately 29,820 acres for the Desert Bighorn Sheep WHA would reduce public access to that area; lambing areas would be closed year-round to all motorized travel, and to non-motorized travel (and public entry) during the lambing season.

As no cultural resource sites would be allocated to public use under Alternative B, access to such sites could be restricted in localized areas.

Eliminating the utility corridors within the IFNM and allowing rights-of-way only when required by law (i.e., allocating the entire IFNM as a right-of-way exclusion area) would limit the need for additional access for construction and maintenance of such facilities. Access for existing facilities would not be affected.

Designating a majority of the IFNM as VRM Classes I and II areas (36,990 and 88,120 acres, respectively), managing 36,990 acres to protect wilderness characteristics, and designating approximately 96,200 acres as non-motorized RMZs (including the Primitive, Ragged Top Wildlife Viewing, and Semi-Primitive Non-Motorized RMZs) would support the travel-management decisions to close 38,040 acres to motorized uses and limit motorized travel to designated routes on the remaining 90,360 acres. Limiting vehicle-based and dispersed camping to identified sites and limiting large-group camping to two sites would restrict access for camping to specific areas within the IFNM. Cross-country horseback riding would not be allowed, resulting in a lack of access to remote areas by equestrian users, but also preventing the proliferation of unauthorized trails; however, equestrian travel would be allowed on routes designated for motorized and non-motorized travel. In addition, six staging areas would be established for equestrian users of the IFNM, limiting areas where users could access the IFNM.

The implementation-level decision that would designate approximately 63 miles of routes for motorized vehicle travel would provide limited access throughout the monument for both motorized and non-motorized uses, which would be much more restrictive for motorized uses relative to Alternative A. In addition, there would be a provision to provide increased access, as necessary, on a case-by-case basis, which could result in surface disturbance in a localized area. However, other routes could be reclaimed if they are no longer needed for transportation, wildlife management, monument administration, or other purposes.

#### **4.4.5.4 Alternative C**

Restrictions on travel within the IFNM would result primarily from the travel management decisions. To a lesser extent, decisions for managing air quality, soil and water resources, wildlife and wildlife habitat, cultural resources, lands and realty, scenic and visual resources, areas managed to protect wilderness characteristics, and recreation also could affect travel management.

Closing approximately 10,880 acres (about 8 percent of the public lands within the IFNM) to motorized travel and limiting it to designated routes for on 117,520 acres would be more restrictive relative to travel and access compared to Alternative A, but less restrictive compared to Alternative B. Restricting access into the IFNM to locations designated through the travel management planning process would result in the same impacts as described under Alternative B. Travel and access restrictions would be associated with management for wildlife habitat, protection of cultural resources, and the Primitive RMZ.

Controlling fugitive dust emissions would have the same impacts as those described under Alternative B.

Travel and access could be constrained (but not eliminated) where protection of soil and water resources (in areas of sensitive or fragile soils) would restrict, but not prohibit, surface disturbance, providing for greater travel and access opportunities relative to Alternative B.

Allocating approximately 29,820 acres for the Desert Bighorn Sheep WHA would result in the same impacts as those described under Alternative B.

Allocating cultural resource sites to public use would provide opportunities for increased access into localized areas, which would be precluded under Alternative B.

Allocating two 200- to 300-foot-wide utility corridors and allocating the IFNM as a right-of-way avoidance area would limit the need for additional access for construction and maintenance of facilities to a greater extent compared to Alternative A (1-mile-wide corridors), and to a lesser extent, relative to Alternative B (no corridors). Access for existing facilities would not be affected.

Designating a majority of the IFNM as VRM Class II (124,900 acres), managing 9,510 acres to protect wilderness characteristics, and designating approximately 73,740 acres to non-motorized RMZs (including the Primitive, Ragged Top Wildlife Viewing, and Semi-Primitive Non-Motorized RMZs) would support the travel-management decisions to close 10,880 acres to motorized uses and limit motorized travel to designated routes on the remaining 117,520 acres. Limiting vehicle-based camping to identified sites and limiting large-group camping to three sites would restrict access for camping (except dispersed non-motorized-based camping) to specific areas within the IFNM. Cross-country horseback riding would be allowed under this alternative, providing similar access for equestrian users that would be available under Alternative A, and increased access compared to Alternative B. Cross-country horseback riding would result in increased public access into remote areas, but such use could result in the establishment of additional trails from continued use. Providing six staging areas for equestrian users would have the same impacts as described under Alternative B.

The implementation-level decision designating approximately 124 miles of routes for motorized vehicle travel would provide limited access throughout the IFNM for both motorized and non-motorized uses, which would be much more restrictive for motorized uses compared to Alternative A, though less restrictive compared to Alternative B. Provisions for increased access and route reclamation would result in the same impacts as those described under Alternative B.

#### **4.4.5.5 Alternative D**

Restrictions on travel management within the IFNM would result primarily from the travel-management decisions. To a lesser extent, decisions for managing air quality, soil and water resources, wildlife and wildlife habitat, cultural resources, lands and realty, scenic and visual resources, areas managed to protect wilderness characteristics, and recreation also could affect travel management.

Limiting motorized vehicle use to designated routes on 128,400 acres would be more restrictive of travel and access within the IFNM relative to Alternative A, but less restrictive relative to Alternatives B or C. Restricting access into the IFNM to locations designated through the travel management planning process would result in the same impacts as those described under Alternative B.

Controlling fugitive dust emissions would have the same impacts as those described under Alternative B.

Management to protect soil and water resources (in areas of sensitive or fragile soils would allow greater access to those areas, relative to Alternative B, and the same access, relative to Alternative C (ground disturbance would be restricted rather than prohibited) as described under Alternative C.

Allocating approximately 29,820 acres for the Desert Bighorn Sheep WHA would result in the same impacts as described under Alternative B.

Allocating cultural resources sites to public use would have the same impacts as described for Alternative C.

Allocating three ¼-mile utility corridors and allocating the IFNM as a right-of-way avoidance area (outside those corridors) would limit the need for additional access for construction and maintenance of facilities, to a greater extent than under Alternative A (due to the 1-mile corridor width under Alternative A), but to a lesser extent than Alternatives B (no corridors) or C (two 200 to 300-foot-wide corridors). Access for existing facilities would not be affected.

Designating a majority of the IFNM as a VRM Class II area (122,580 acres) and approximately 50,270 acres to non-motorized RMZs (including the Ragged Top Wildlife Viewing and Semi-Primitive Non-Motorized RMZs) would support the travel-management decision limiting motorized travel to designated routes, which would affectively limit access throughout the IFNM. Limiting vehicle-based camping to identified sites and limiting large-group camping to four sites would result in impacts similar to those described under Alternative C. Cross-country horseback riding would be allowed with the same resulting impacts as described for Alternative C. Providing six staging areas for equestrian uses would have the same impacts as those described under Alternative B.

The implementation-level decision designating approximately 226 miles of routes for motorized vehicle travel would provide limited access throughout the IFNM for both motorized and non-motorized uses, which would be much more restrictive for motorized uses relative to Alternative A (346 miles), though less restrictive relative to Alternatives B (63 miles) or C (124 miles). Provisions for increased access and route reclamation would result in the same impacts as those described for Alternative B.

#### **4.4.6 Impacts on Special Designations**

Special designations provide additional protection for areas with unique natural, historic, scenic, or recreational resources. The existing Waterman Mountains ACEC is the only such designation in the IFNM (the same area is identified as the “Waterman Mountains VHA” under all other alternatives). The area was originally designated to protect habitat for the Nichol Turk’s head cactus.

The following assumptions were used when assessing the impacts on special designations:

- Only changes as to whether the Waterman Mountains ACEC would be designated would affect ACECs.
- Specific impacts on resources or uses resulting from the continuation or elimination of the Waterman Mountains ACEC are included under resource sections (e.g., vegetation and special status species).

Impacts are described qualitatively to differentiate among the alternatives, and are quantified wherever possible.

##### **4.4.6.1 Impacts Common to All Alternatives**

No impacts would be common to all alternatives, as the Waterman Mountains ACEC would only remain designated under Alternative A.

##### **4.4.6.2 Alternative A (No Action)**

Under Alternative A, only decisions for special status species and special designations would affect ACECs. The Waterman Mountains ACEC (approximately 2,240 acres of BLM-administered land) would continue to be designated for the protection of the Nichol Turk’s head cactus.

##### **4.4.6.3 Alternative B**

Under Alternative B, the 2,240-acre Waterman Mountains ACEC designation would not continue because the IFNM designation and management proposed for the IFNM (in this plan) would provide protection of the special status species for which the ACEC was established.

##### **4.4.6.4 Alternative C**

Under Alternative C, the 2,240-acre Waterman Mountains ACEC designation would not continue because the IFNM designation and management proposed for the IFNM (in this plan) would provide protection of the special status species for which the ACEC was established.

##### **4.4.6.5 Alternative D**

Under Alternative D, the 2,240-acre Waterman Mountains ACEC designation would not continue because the IFNM designation and management proposed for the IFNM (in this plan) would provide protection of the special status species for which the ACEC was established.

#### **4.5 IMPACTS ON SOCIAL AND ECONOMIC RESOURCES**

The social and economic conditions are characterized by the needs, demands, and values of the local, regional, and National publics as well as the economic opportunities, benefits, and constraints that are represented by the IFNM. The programs with the strongest correlation between BLM management and social and economic conditions are energy and minerals, grazing, recreation, and lands and realty.

This analysis of the potential social and economic impacts of the alternatives for the IFNM RMP considers the current contribution (i.e., impact) of IFNM to the social and economic environment of the region (i.e., social and economic study area, see Section 3.5). Economic impacts are defined as expected gains or losses from market transactions on local jobs and income and market and non-market value of resources to users. Social impacts are defined as the consequences to human populations that alter the way in which people live, work, recreate, relate to one another, organize to meet their needs, and generally cope as members of society. Social impacts also include cultural impacts involving changes to the norms, values, and beliefs that guide and rationalize their cognition of themselves and their society (Interorganizational Committee on Principles and Guidelines 2003). Social impacts are defined as direct, meaning that they would potentially result from the action taken, or secondary, meaning that they result from the primary or direct impacts and often are separated from the direct impact in terms of both time and geographic distance.

Key economic impact variables that were considered as part of the analysis include employment, income, economic dependency, and market and nonmarket economic value of resources to users within the social and economic study area and at the regional and national levels. Key social impact variables include population change, community and institutional structures, political and social resources, community and family changes, and community resources.

Impact analyses and conclusions are based on interdisciplinary team knowledge of social and economic conditions within the planning and decision areas, which included BLM specialists from the Tucson Field Office and cooperating agencies, as well as a review of existing literature. Effects are quantified where possible using field investigations, demographic data and geographic information systems. In the absence of quantitative data, the magnitude of impacts is described qualitatively.

It is assumed that the current trends for economic and social needs, demands and values will continue for the next 20 years.

#### **4.5.1 Impacts Common to All Alternatives**

Regardless of alternative, management of the IFNM would continue to be subject to compliance with the Proclamation, which emphasizes the protection of monument objects. All alternatives would continue to recognize the social value of resource protection and include minor to moderate expenditures and earnings associated with BLM management of the IFNM. The national monument designation is an expression of the broad social value that public land with notable biological, cultural, and geological resources should be conserved. All alternatives for management of IFNM support the objectives of the Proclamation, and consequently contribute to the protection of social values in the IFNM.

In accordance with the Proclamation, the IFNM would continue to be withdrawn from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing. Only those unpatented mining claims within the IFNM that predate the establishment of the IFNM could potentially be developed; and that development would continue to be subject to establishment of valid rights. Since there currently is no activity within the decision area associated with nonmetallic mineral mining, salable minerals, leasing and development for fluid minerals, or permits for energy resources, no existing operations within the IFNM would be affected by BLM management decisions. However, off-site mineral mining operations could be affected from a slightly increased demand because mineral materials necessary for road maintenance and other activities within the IFNM would be imported from those offsite locations. The withdrawal does preclude the potential economic development of undiscovered mineral resources. Where development on valid existing rights occurs, economic gains would be realized commensurate with the scale of the activity. As the majority of the active mining claims in the IFNM are owned by Asarco Silver Bell Mining, L.L.C. and almost all of the

claims are located around the Silver Bell Mountains, social impacts would be minimal and localized in scale because activities would be clustered in the same previously disturbed area. Two other claimants own the remaining claims. There also would be the social value in the continued access to strategic mineral resources. Regardless of alternative, any proposals to develop valid existing rights would be subject to site-specific, case-by-case review of plans of operation, reclamation plans and other development plans to ensure that objects of the monument are protected prior to authorization.

Land acquisitions could result in the acquisition of mineral rights that would then be withdrawn from future exploration and development by virtue of the Proclamation. This would preclude the potential economic development of these resources. Acquisition of mineral rights supports those values and beliefs that the IFNM should not be disturbed by mining activities and is counter to those values and beliefs that these resources should be accessible and economic opportunities realized.

The continuation of policy to retain Federal land (surface and subsurface estate) would preclude economic activity that could potentially be associated with land development activity on disposed lands.

Fire suppression and associated programs would continue to have minor socioeconomic impacts related to protection of life and property, fire ecology, aesthetics, and the employment and expenditures related to these programs.

Arizona Standards for Rangeland Health and Guidelines for livestock grazing would be implemented, affecting both resource management decisions and livestock grazing. Associated socioeconomic conditions (addressed in Section 3.5) would continue to be affected because this management supports local ranching and promotes sustainable use of public land for grazing. All alternatives would have potential for only minor fiscal impacts, changes in Payment in Lieu of Taxes (PILT) payments, or changes in the BLM budgetary process.

The following socioeconomic impacts would be common to all alternatives. Land use authorizations for permits and easements would continue to be considered on a case-by-case basis, contingent on compatibility with the natural and cultural resource goals of the IFNM. Social and economic impacts related to permits and easements would be driven primarily by the support provided to local livestock grazing, recreation, and mineral and other development. Under all alternatives, the implementation decision to limit vehicle use to designated routes would not preclude access for development of mineral resources where valid existing rights exist.

Under all alternatives, there would be no environmental justice impacts because there would be no disproportionate adverse impacts to minority and/or low income populations as a result of implementation of the proposed management alternatives.

#### **4.5.2 Alternative A (No Action)**

Under the No Action Alternative, BLM management of public lands in the IFNM would continue under current management direction. The implications for energy and minerals, livestock grazing, recreation, and lands and realty are detailed below. For other resources, management and implementation decisions would generally recognize the social values for the protection of air quality, geologic resources, soil and water resources, vegetation, wildlife and wildlife habitat, special status species, cultural resources, paleontological resources, special designations, and management of lands with wilderness characteristics. Under existing management decisions, some of the issues or concerns expressed during scoping and ongoing public involvement would not be addressed through the RMP process.

## Impacts on Social and Economic Resources (cont.)

Under Alternative A, mineral or energy resources would continue to be subject to review on a case-by-case basis, and mitigation and management requirements would be required in accordance with existing management decisions. The social impact would be mixed: favorable to those that value protection of lands from impacts that would be associated with mineral or energy resource development, but unfavorable to those who value the potential development of mineral and energy resources on public lands.

The continuation of the management decisions for the 41,470-acre Silver Bell Desert Bighorn Sheep Management Area (to acquire land within this area and, thereby, withdraw these lands without valid existing rights from development per the Proclamation) could limit options for the development of mineral and energy resources. There are mining claims in this area, which is part of a copper mineral district. However, the continuation of existing management decisions for the 800-acre portion of the Silver Bell Desert Bighorn Sheep Management Area (to prohibit surface occupancy for oil/gas development and designate the area as closed to OHVs) would have no impact because there are no valid existing rights in this area and, therefore, the affected area is withdrawn for mineral and energy development per the Proclamation.

The continuation of the management decision to acquire through exchange non-Federal mineral estate underlying Federal surface holdings in the Silver Bell RCA would continue to result in the withdrawal of these mineral resources from exploration and development per the terms of the Proclamation. Acquisition of additional lands in the Sawtooth Mountains CRMA could result in the acquisition of mineral rights, with similar potential impacts on economic gains. The Sawtooth Mountains include a manganese mineral district.

Alternative A would allow continued open range ranching at the IFNM, which is considered an important part of regional history and community. Economic gains from livestock operations and the BLM grazing fees would be tied to allowable stocking of cattle on grazing allotments, which would continue to be commensurate with annual rainfall and maintenance of Rangeland Health Standards. Ongoing application of the guidelines for grazing administration from BLM's Arizona Standards for Rangeland Health and Guidelines for Grazing Administration would continue to potentially lead to adjustments in stocking rates or require range improvements that could have economic impacts, including adjustments in livestock operators' income and expenditures and grazing fees paid to BLM.

The continuation of existing recreation management programs would result in relatively minor economic impacts due to visitor expenditures and highly varied social impacts associated with the availability and quality of recreation activities in the IFNM. Many of the issues and concerns raised during public scoping and ongoing public involvement for this plan were centered around potential impacts on resources from recreation uses of the IFNM. Without changes in current management, some of these issues and concerns would not be addressed by the RMP process. Associated social effects, such as conflicts among uses, would continue and possibly escalate.

The continuation of existing management of realty actions would have minor impacts on the potential economic activity associated with development related to lands and realty transactions. Land acquisition strategies would be focused on pre-monument status and existing right-of-way corridors would remain and allow for additional use and new right-of-way development. Development within existing or new rights-of-way would have potential social impacts related to the location the development, and economic impacts on the service population affected by infrastructure improvements. These impacts would be evaluated on a site-specific basis in accordance with NEPA.

Continuing to limit motorized vehicle use to existing routes would potentially result in additional expense for project proponents and localize social impacts to those viable options for siting facilities along existing routes.

Decisions to meet public land health standards or protect desert tortoise habitat could affect stocking rates and range management. Minor expenditures and earnings would be associated with providing additional (stock) water sources in the Twin Tanks and Cocoraque Pastures.

#### **4.5.3 Alternative B**

Aggregate socioeconomic impacts that potentially would occur under Alternative B have been grouped into four categories: (1) BLM expenditures and earnings associated with prescribed projects or protective measures requiring additional work or increased expense, (2) restrictions on use that recognize social values for resources but that may deny certain use/access opportunities, (3) indirect economic impacts from potential changes in levels of IFNM visitation (which are closely related to recreation and other public use/access decisions), and (4) changes to special designations or natural/cultural resource allocations. Aggregate social and economic impacts would result from the additive impact of minor expenditures and earnings associated with prescribed projects or protective measures requiring additional work or increased expense. These include:

- air quality projects to control fugitive dust emissions
- soil and water resource management decisions for areas of sensitive or fragile soils; soil resource protection during construction, reconstruction, or maintenance projects; and implementation-level decisions for erosion control and flood protection projects
- vegetation resource management decisions for integrated weed management and invasive species/noxious weed control including land restoration actions, various vegetation reclamation methods; use of native plants in restoration; and implementation decisions for fencing along designated routes and monitoring invasive species and noxious weed treatment areas
- prohibiting the collection of geologic resources, except when authorized by permit for a specific legitimate purpose
- implementation of RMP and implementation-level decisions for wildlife management and special status species, including RMP decisions for the proposed management of the Desert Bighorn Sheep WHA and wildlife population enhancement and implementation decisions for wildlife water projects; removal of fences, roads, facilities, and utilities lines no longer needed; construction and/or modification of fencing for safe travel; and special status species monitoring programs
- resource management decisions for cultural resource studies and implementation decisions for the prescribed monitoring scheme for cultural resources
- resource management decisions for visual resource management
- resource management and implementation decisions for proposed motorized vehicle area and road closures and travel and transportation maintenance plan actions

Each resource-based management decision recognizes the social value attached to that resource (e.g., air quality – social value for clean air, biological resources – belief that special protection should be afforded to special status species, livestock grazing – value for etc.). On overall balance, Alternative B supports the values and beliefs that favor the protection or conservation of monument objects and other natural and cultural resources and allows for the minimum amount of allowable human use within the IFNM, based

on valid existing rights and meeting BLM's multiple use mandate. This is reflected in management actions to close sensitive areas to motorized vehicle use; managing 36,990 acres to protect wilderness characteristics; road restrictions for air quality; restrictions on access use for geologic resources warranting special management protection; prohibiting surface water diversion and groundwater pumping that affects IFNM values; minimizing surface disturbance for vegetation; prohibiting camping on BLM-administered land in the Waterman Mountains VHA and Ragged Top VHA; not allocating cultural resource sites for public use and designating most of the IFNM as VRM Class I or VRM Class II. Management decisions that result in restrictions on public access/use opportunities would strike a balance between social values for unfettered access to public lands, but consistent with the social value of resource protection.

Management actions related to prohibiting dogs and human entry for protection of desert bighorn sheep would have mixed social and potential minor economic effects. The resource management decision to prohibit dogs on public land within the IFNM would provide a protective measure for the desert bighorn sheep, which is socially valued. However, those who visit the IFNM or live within, adjacent to, or nearby the IFNM that attach value to the companionship and experience with their dogs would be precluded from such experiences. Those that live on inholdings within the IFNM would be required to confine their dogs to private or State Trust lands. Additionally, those that use dogs as working dogs in their livestock operations and those that use dogs to augment their hunting success on public lands would be impacted both socially (i.e., changing the way that people work and recreate) and economically (i.e., reduced hunting success, change in range operations). The management action to seasonally close the lambing areas within the Desert Bighorn Sheep WHA to human entry similarly aligns with the social value for protection of the desert bighorn sheep, but is counter to the social value for the protection of access/use of public land and associated people-place connections associated with seasons. A healthy desert bighorn sheep population is intertwined with spending associated with visitation, especially for wildlife viewing opportunities; such expenditures would become more seasonal and may increase (or at least not decrease) as a result of management actions.

The resource management decision to manage 36,990 acres to protect wilderness characteristics recognizes the social value for these areas and would potentially increase the non-market value of these areas. There would be an increased likelihood that proposals for use in these areas (to be considered on a case-by-case basis) would not be permitted. Similarly, collection of geological resources would be prohibited, but collection and removal of geological resources for educational and/or scientific purposes under special use permit would be allowed. This recognizes the social value for educational and/or scientific use of such resources.

Some Alternative B management decisions could potentially translate into indirect economic impacts from changes in IFNM visitation. Potential decreases in visitation may occur for some users as a result of increased restrictions on use and reduced opportunities for public access. These include restrictions on motorized access, camping, recreational target shooting, equestrian use, non-motorized mechanized use, prohibiting dogs on public land within the IFNM, seasonally closing lambing areas to human entry, not allowing group tours of cultural resources, and closing environmentally sensitive areas. The following decisions under recreation are specific examples of such restrictions that also reduce specific recreation opportunities:

- Prohibiting native wood campfires and allowing camp stoves/charcoal only at identified campsites would be protective of resource values, but would deny the continued opportunity for this experience.
- Prohibiting the use and discharge of firearms would reduce economic impacts from damage to personal property and would be consistent with those publics concerned about the resource

## Impacts on Social and Economic Resources (cont.)

impacts of recreational shooting at the IFNM, but counter to those who value the opportunity for recreational shooting at the IFNM.

- Limiting non-motorized and mechanized uses on routes designated as open to motorized use may increase conflicts between users.
- Prohibiting non-motorized mechanized use within areas managed to protect wilderness characteristics could limit certain types of activity-based people-place connections associated with this use in these areas.

Economic activity associated with IFNM visitation (e.g., expenditures at business in local communities) could be shifted to other recreation sites within the general area that are not as restrictive as the IFNM would become under this alternative (e.g., BLM lands outside of the IFNM where recreational target shooting is allowed under certain circumstances or areas where mountain biking trails are separated from motorized use trails). Because the recreational activities would be expected to shift from one location to another, no local or statewide economic effects are expected from expenditures on firearms, ammunition, mountain bicycles, and related purchases. Given the increasing urbanization in the area and the wider attraction because of the monument designation, the overall visitation of the IFNM from local and regional residents would be expected to increase or remain unchanged despite of these management changes. Out of town visitation likely would remain unchanged by these management actions; other factors likely would continue to dominate trends within changes in this type of visitation (national coverage of interest stories for the IFNM, wildflower season, national travel trends, etc.).

The potential countervailing impact is that there may be minor increased visitation due to the proposed protection of resource sites and access to them where people-place connections have been identified as important. These include geologic resource sites, VHAs, WHAs, watchable wildlife areas, and management for species and habitat, including hunted species. Such protection could result in increased publicity for the IFNM and increased public interest and visitation both from local and out of town visitors. In addition, a countervailing impact could result from the purchase of materials such as camp stoves or firewood in the local community for use on the IFNM since native wood campfires would no longer be allowed within the IFNM.

Recreation management under the Alternative B allocates the IFNM as a SRMA with an Undeveloped Recreation-Tourism Market strategy, which will exclude major investments in facilities, but provide for intensive management of the setting and visitor services. The allocation of RMZs would have a combined impact with the management decisions for transportation and public access and management of areas to protect wilderness characteristics under this alternative. The emphasis would be on providing semi-primitive non-motorized opportunities (to include those areas identified to be managed to protect wilderness characteristics), with most intensive use activities occurring within Roaded Natural RMZ. Visitor service presences would correlate with the RMZ environment. Under Alternative B, visitor center facilities would be provided offsite in coordination with the local communities, providing a potential opportunity for a development project in the local communities.

Overnight use would become more restrictive and shifted from vehicle-based camping in dispersed locations (currently available throughout the IFNM) to identified sites only. Not allowing for continued camping within the Ragged Top VHA and closure of localized areas to camping to protect resources, and limiting group camping to large identified campsites (two identified at this time) would eliminate certain opportunities that exist today for camping throughout the IFNM including in areas where people and/or groups may have established sense of place connections. Non vehicle-based camping would be allowed at identified campsites within the IFNM. People-place connection may similarly be limited by the requirement for non-vehicle-based camping to occur at identified sites.

## Impacts on Social and Economic Resources (cont.)

Alternative B would discontinue the designations for the Waterman Mountains ACEC, Silver Bell Desert Bighorn Sheep Management Area, Silver Bell RCA, Sawtooth Mountains CRMA, Cocoraque Butte-Waterman Mountains Multiple Resource Management Area, Agua Blanca Multiple Resource Management Area, and Avra Valley CRMA. Generally, the discontinuation of these designations may be counter to any social value specific to their designation. Such impacts would be minimized by allocation of the Waterman Mountains VHA (for the Waterman Mountains ACEC vicinity) and Desert Bighorn Sheep WHA (for the Silver Bell Desert Bighorn Sheep Management Area), which recognize the social value and provide for the protection of the resource values for which these areas were designated. The discontinuation of the Silver Bell RCA and Cocoraque Butte-Waterman Mountains Multiple Resource Management Area would have no social or economic impact. Unlike ACECs, there are not those who attach value to these specific designations. Additionally, the resources within these areas would be managed under other provisions (e.g., land tenure decisions to retain all Federal land acquire non-Federal land throughout the IFNM). The discontinuation of the Sawtooth Mountains CRMA could be perceived as a loss of recognition of the recreation value and opportunities for cooperative management in this area, but such concerns would be addressed through other management provisions (BLM would seek cooperative management of the IFNM through administrative actions such as those included in Appendix D) negating any socioeconomic impact.

Other notable aggregate effects are as follows:

- The resource management decisions pertaining to the removal and/or use of living dead and downed native plant material aligns with the social impacts of the overall conservative/restrictive nature of this alternative as noted above. In addition, Alternative B incorporates various specific social values for plant material use, but fails to recognize the social and cultural value for the collection of plant materials for other purposes (e.g., collection of firewood, non-Native American use, etc.).
- The prohibition of economic activity related to commercial plant collection within the IFNM (e.g., selling of native seeds, firewood, etc.) would potentially result in the purchasing of firewood and plant material from community vendors rather than removing it from the IFNM.
- Allocation of cultural resource sites for scientific use but not for public use recognizes the social value associated with the protection of cultural resources, but prioritizes those who value cultural resource protection and study over those who also value public access to cultural resources. This alternative would potentially deny access to cultural resource sites, including those where there is a people-place connection. Allocation and management of sites for traditional use recognizes the social value and people-place connections attached to these sites, including for affiliated Indian tribes and ongoing consultation with Native American tribes. Closing an expanded area around Santa Ana de Cuiquiburitac to motorized vehicles would provide for additional protection of socially important cultural resource sites within identified people-place connections.

Under Alternative B, the difference in the socioeconomic impact related to existing valid rights to develop energy and mineral resources centers on the designation of protected resources or areas and restrictions on use for these resources and/or areas as follows:

- The management decision to acquire non-Federal mineral estate underlying Federal surface holdings throughout the IFNM and to not acquire surface estate unless mineral estate can be acquired concurrently (or is already Federally owned), could increase the areas withdrawn from mineral development as compared to Alternative A. This alternative also includes prescriptions for acquisition of non-Federal lands for various resource protection values and within the Waterman Mountains VHA and Ragged Top VHA.

- The ongoing case-by-case review of mineral resource development actions would be subject to the management decisions of Alternative B. Some management decisions under Alternative B could place limitations on mineral or resource development actions or require a minor increase in expense to minimize or mitigate impacts from potential impacts related to a development action. These include management decisions related to the prohibition of additional ground-disturbing activity in areas of sensitive or fragile soils, prohibiting surface water diversion and groundwater pumping that removes water from the IFNM or adversely affects the monument's values, minimizing surface disturbance that results in loss of existing vegetation cover, use of native plants for all restoration projects, mitigation of site-specific impacts possibly being required where development of valid existing rights could affect priority species and/or habitats, and VRM Class I and II designations.

Alternative B would result in loss of economic activity related to livestock grazing and impacts on social value for ranching at and near the IFNM. The economic impact would be minor in context of the overall community economy, but individual livestock operators could be impacted by no longer operating on the public lands in the IFNM. The social impact would be greatest and somewhat localized to ranchers operating in the affected area, but other impacts likely would occur in the greater ranching community and among those with values or beliefs that oppose livestock grazing within the IFNM.

The major resource management decision that could result in both social and economic impacts related to livestock grazing is the decision to make all 11 allotments (only the portion within the IFNM) unavailable for grazing to maximize preservation of IFNM resources. Allotments would become unavailable for grazing upon expiration of existing leases. As the leases expire there would be a gradual loss in AUMs and fees paid to BLM for livestock grazing. When all leases expire, a total of 7,843 AUMs would be eliminated. At the current (2006) grazing fee rate (\$1.56 per AUM), the total annual loss in fees paid to BLM when all grazing leases have expired would be \$12,235. (Note that this is a representative loss based on the 2006 grazing fee, the grazing fees changes annually and has a mandated low of \$1.35 per AUM and reached as high as \$1.79 per AUM in 2004.) Ranch employees hired to manage the land and livestock would no longer be needed for the grazing operations occurring on public land; this could reduce employment by one or two persons per ranch. Depending on how these lands are managed once grazing allotments expire, BLM management responsibilities could increase and potentially result in the need for additional BLM staff.

Two grazing allotments that are located almost entirely within the decision area would become unavailable for grazing. Livestock operations in the remaining nine allotments would be forced to operate only on State Trust lands and private lands, which are interspersed with BLM-administered lands in a checkerboard pattern. The market value of the allotments could be diminished from the reduced size and increase the financial burden when ranch operators obtain credit when using livestock allotments as collateral.

Stock waters within BLM-administered lands would be abandoned and lose their economic value; ranches that continue to use interspersed non-Federal lands may need to establish new stock water on State Trust or private land. Because wildlife may also use stock waters, wildlife movement patterns or populations could be affected if the waters sources stop functioning, which would subsequently affect hunting and its related economic benefits.

Within grazing allotments, existing fences largely do not differentiate between State Trust lands, private lands, and BLM-administered lands. In order for operators to comply with the closure of grazing on the BLM-administered portions of their grazing allotments, their operations would have to be modified in such a manner as to eliminate livestock grazing on BLM-administered lands. For some of the existing small and independent operators, this management burden would likely result in the inability to continue

to graze livestock. Additionally, removal of livestock grazing from BLM-administered lands could diminish the value of State Trust or private land for ranching purposes. Livestock operators with allotments comprised predominantly of State Trust lands and that extend beyond the IFNM (e.g., Old Sasco and King allotments) would have less of an overall management burden than those allotments that are predominantly comprised of BLM-administered land and occur largely within the boundaries of the IFNM (e.g., Claflin, Agua Dulce, Tejon Pass). BLM management responsibilities would shift from an emphasis on lease administration and general range improvement projects to an emphasis on addressing trespass cattle. No range improvements would be permitted under this alternative, though additional fencing would be necessary, resulting in limited associated expenditures and earnings associated with such projects.

The social value associated with ranching on BLM-administered lands in the IFNM would be lost along with the loss of grazing in allotments. Individuals, families, and social groups are connected by the ranching that has historically occurred on the BLM-administered lands and the vicinity. Some operators live on inholdings within the IFNM and have a strong connection to ranching in how they live and work, recreate, relate to one another, organize to meet their needs, and generally cope as members of society. These impacts on values and beliefs would be felt greatest at the localized level, but also would have impacts in the greater western Tucson area livestock operator community. The opposing viewpoint is tied to the belief that ranching is inconsistent with the native ecosystem function in the Sonoran Desert or causes damage to the environment and the value for environmental protection.

The establishment of designated access/staging areas for equestrian uses could eliminate or reduce current “backyard” access to the IFNM, which is valued by some IFNM neighbors. Such impacts would be highly localized and primarily social in nature. Proximity of designated access points, group camping areas, and equine staging areas to businesses, may translate to economic gains to local businesses from visitor expenditures.

Under the lands and realty decisions for Alternative B, all Federal land (surface and subsurface) would be retained except in special instances where land exchanges could be utilized to further natural and cultural resource goals of the IFNM. Any economic activity associated with such an exchange would be expected to be relatively minor. There could be expenditures and earnings associated with exchange, purchase, and/or donation of acquired lands. As mentioned under the discussion of mineral and energy resources, the acquisition of non-Federal mineral estate would preclude mining activity and associated socioeconomic activity throughout the IFNM. The R&PP lease for the Tucson Soaring club could be renewed; therefore, associated social and economic activity may continue.

Decisions to not establish utility corridors or new rights-of way and to designate the IFNM as an exclusion area would be additive to impacts associated with promoting resource conservation through decisions for travel management, VRM, and management of areas to protect wilderness characteristics in terms for protection and enhancement of natural and cultural resources. These decisions would preclude economic opportunity for new utilities and rights-of-way within the IFNM. As a result, new utility service to the potential service population would need to be provided through alternate routings, which could potentially be at more cost to the utility company and ultimately the consumer. Minor socioeconomic impacts associated with the existing communication sites at the IFNM (e.g., site-specific gains for communication companies providing services to their clientele and localized social impacts associated with visual impacts of communication sites) would continue under this alternative.

#### **4.5.4 Alternative C**

The overall BLM expenditures and earnings associated with Alternative C would be similar to those for implementation of Alternative B. Allocation of cultural resource sites to public use and scientific study

prescribed in association with the allocation of the Santa Ana de Cuiquiburitac site to scientific use may result in minor expenditures and earnings. Collection and removal of geological resources for educational and/or scientific purposes under special use permit would be allowed under Alternative C, potentially resulting in minor expenditures and earnings associated with such research.

As compared to Alternative A, this alternative would support the values and beliefs for the protection of IFNM resources and objects to a slightly greater extent because management decisions respond to issues and concerns and place more emphasis on resource protection. Alternative C provides a mix of resource protection and human uses supporting multiple sets of values and beliefs. In sensitive resource areas, it proposes a higher level of resource protection and less public use, while opportunities for public use are emphasized in less sensitive resource areas. Social and economic impacts related to motorized use closures would be the same as Alternative B, but to a lesser extent, as OHV closure areas would encompass 10,880 acres under Alternative C rather than 38,040 acres under Alternative B and 124 miles of routes rather than 63 miles of routes would be designated for motorized travel. Similarly, the same social and economic impacts noted for management of areas to protect wilderness characteristics under Alternative B would apply to Alternative C, but reduced in scale, as 9,510 acres (areas of the West Silver Bell Mountains and the Roskrige Mountains) would be managed to protect wilderness characteristics as opposed to 36,990 acres. Unlike Alternative B, camping would be allowed within Ragged Top VHA. Visual resources would allow for more diversity of use than under Alternative B. Under Alternative C, the majority of the IFNM would be VRM Class II, Class I VRM areas would be limited to the West Silver Bell and Roskrige mountains, and there would be slightly more Class III than Alternative B. Similar to Alternative B, collection and removal of geological resources for educational and/or scientific purposes under special use permit would be allowed. This recognizes the social value for educational and/or scientific use of such resources. Alternative C would allow for dogs on public lands within the IFNM as long as they are leashed, but allows for dogs to be used off-leash for hunting or livestock operations.

With regard to special designations or natural or cultural resource allocations (i.e., the discontinuation of the Waterman Mountains ACEC, Silver Bell Desert Bighorn Sheep Management Area, Silver Bell RCA, Sawtooth Mountains CRMA, Cocoraque Butte-Waterman Mountains Multiple Resource Management Area, Agua Blanca Multiple Resource Management Area, and Avra Valley CRMA), the impacts of Alternative C would be the same as Alternative B.

The potential social and economic impacts of Alternative C related to valid existing rights to develop energy and mineral resources are similar to those described for Alternative B. Distinctions are as follows:

- Acquiring the mineral estate as available when acquiring surface estate lands under Alternative C, rather than acquiring surface estate only when mineral estate can be acquired concurrently (or is already Federally owned), could reduce the areas of mineral estate withdrawn from future exploration and development compared to Alternative B.
- Potential limitations on mineral and energy resource development that may require mitigation would potentially be less than those of Alternative B given the management decisions for fragile soils, VRM classes, and management of areas to protect wilderness characteristics associated with Alternative C.

Under Alternative C, the public lands within the IFNM for all 11 allotments would remain available for livestock grazing, with nine allotments reclassified as perennial and two remaining ephemeral. BLM could issue temporary, non-renewable leases on perennial allotments when forage conditions warrant. Expenditures and earnings associated with grazing administration and rangeland improvements would continue under this alternative, although forage conditions would be considered before temporary grazing leases would be issued on perennial allotments or grazing use would be authorized on ephemeral

allotments. If a ranch operation planned to use temporary non-renewable leases as collateral for obtaining credit, the uncertainty of forage conditions could alter cash flow. The change of nine allotments from perennial/ephemeral to perennial and maintaining two allotments as ephemeral would not increase active AUMs; therefore there would not be an obvious change in livestock grazing related socioeconomic activity as a result. The management decision to evaluate whether to reallocate allotments for livestock or wildlife use when a lease is relinquished or cancelled would potentially preclude or delay continued socioeconomic activity associated with livestock grazing. Unlike Alternative B, this alternative recognizes the social value of the continuation of traditional open range ranching at the IFNM.

Other resource management actions could reduce disturbance and increase the quantity and/or quality of forage available for livestock grazing. These include soil erosion control, prohibiting the removal of living or dead native plant material, pursuing an integrated weed management approach, using native plants and non-native plants in restoration, monitoring of invasive species and weed treatments, and establishing priority habitats for wildlife and special status species. Using active reclamation practices to stabilize and reclaim sites could result in short-term reductions in livestock use, restriction or exclusion of livestock, changes in period of use, or other management actions, but would likely increase the quantity or quality of available forage in the long-term. The overall effect of this management would be to ensure sustainable grazing opportunities to support local ranching.

Closing lambing areas to human entry could impose restrictions or exclusions on livestock grazing, changes in stocking levels, seasons of use, and timing and duration of grazing activities (including rangeland improvement projects). The impacts of such changes on the social and economic contributions of associated livestock grazing operations would be minimized in that lambing areas are generally located in upland areas that are not heavily utilized for livestock grazing and that closures would reduce surface disturbance during a portion of the growing season, which could improve forage conditions.

The potential changes in visitation under Alternative C would be the same as Alternative B, with a few notable exceptions. Unlike Alternative B, Alternative C would allow for dogs to continue to accompany visitors to public lands within the monument, although it requires that they must be leashed, except when being used for hunting. This alternative would allow for visitors to continue to have experiences that include their dogs and, therefore, no associated change in visitation would be expected. For dog owners on inholdings, the impacts of keeping dogs leashed (rather than not allowing them) while on public lands within the monument would have reduced social impacts as compared to Alternative B. Hunters and livestock operators would continue to be able to use dogs, resulting in the potential for increased success in hunting and utility in livestock operations and continued associated social and economic effects. Another notable difference between these alternatives is that Alternative C would provide for public access to group tours of cultural resource sites, including those where people-place connections have been established. Minimal to moderate economic gains could occur in association with this level of access. Allocation of the Santa Ana de Cuiquiburitac site to scientific use recognizes the social value of scientific study and would potentially result in expenditures and earnings for studies.

Under recreation, Alternative C as compared to Alternative B would allocate additional areas as Semi-Primitive Motorized and less area as Semi-Primitive Non-Motorized, providing for more of a balance between motorized and primitive recreational uses. Wood fires would be allowed with non-monument wood sources, thereby resulting in continued/potential increase in purchase of wood for campfires from local vendors. As compared to Alternative B, there would be greater options for vehicle-based camping under this alternative and, therefore, fewer impacts on people-place connections. Alternative C allows for overnight non-vehicle-based camping within both Semi-Primitive Non-Motorized and Semi-Primitive Motorized RMZs (rather than just within Semi-Primitive Non-Motorized as with Alternative B). This allows for continued people-place connections associated with non-vehicle-based camping within a larger area than under Alternative B, although such use would also be limited to identified campsites within

these zones. The impacts of restricting group camping to three identified large campsites would be similar to the impacts discussed for Alternative B, but the one additional group camping site (near the West Silver Bell Mountains) would be located more remotely than the other two and businesses near access points to this area may be potentially affected by visitor expenditures. Finally, Alternative C would allow for non-motorized, mechanized use to occur on routes open or closed to public use, thereby allowing for separation of these uses and limiting the access for non-motorized, mechanized uses to a lesser extent than under Alternative B. Social and economic activity associated with non-motorized, mechanized uses would likely be unchanged as a result of this decision, although such use may increase as a result of other trends.

The social and economic impacts of land tenure decisions for Alternative C are essentially the same as those of Alternative B, although under Alternative B surface estate could potentially be acquired without underlying mineral estate. Therefore, lands acquired could potentially be mined for economic gain, but would be subject the BLM approval process for surface access. With regard to corridors and rights-of-way, Alternative C would allow for potential future development of utilities within the designated corridor. The limitation on alignments may increase the costs for right-of-way developments if suboptimal locations are used, or due to the requirement of underground utilities within one corridor.

The decision to close routes would have the same potential impacts as described for Alternative B; however, the scale of the impact would be less under Alternative C, as 205 miles of routes rather than 266 miles of routes would be managed for non-motorized use. Decisions for grazing and range management would result in the same socioeconomic impacts associated with Alternative A. Minor economic impacts associated with expenditures and earnings would potentially result from increasing the number and variety of wildlife and livestock exclosures and maintaining yearlong water sources in all pastures for livestock and water maintenance, movement, or replacement actions. Finally, the decision that existing roads along fences would remain open (administratively at a minimum) and access to corrals, wells, and water infrastructure would be maintained ensures that access for livestock management operations would be provided and maintained, having socioeconomic impacts both for livestock operations and in minor expenditures and earning from access maintenance actions.

The decisions to reclaim abandoned mines and mitigate potential physical and chemical hazards would potentially result in minor expenditures and earnings for BLM staff or supporting contractor personnel.

The travel management implementation decision to close 205 miles of routes to motorized use could limit the development of mineral resources where valid existing rights occur and limit certain recreational opportunities. The impact to social and economic conditions would be as described for other decisions limiting or precluding energy or mineral resource development and changing recreation opportunities.

#### **4.5.5 Alternative D**

Overall BLM expenditures and earnings from Alternative D would be similar to Alternative C. A few distinctions are that Alternative D would allow the use of non-intrusive, non-native plants in limited emergency situations for reclamation. Reclamation using such plants may require less expenditure than the use of native plant species only. Alternative D generally supports the values and beliefs for the least restrictive management and places an emphasis on maintaining the existing levels of human uses in the monument. This alternative identifies areas most appropriate for various public uses and emphasizes those uses, particularly with respect to transportation and recreation. No areas within the IFNM would be managed to protect wilderness characteristics. Therefore, the social and potential non-market value associated with management of areas to protect wilderness characteristics would not be recognized and development and/or use options would not be limited via the aggregate impact of management to protect

wilderness characteristics and other management decisions for land use authorizations, transportation and access, etc.

Resource management decisions regarding removal and/or use of plant material would allow for collection of dead and downed wood for firewood use while camping within the IFNM (except where BLM has determined there would be adverse impacts on monument resources). This aligns with the social value for this outdoor recreation experience. Unlike Alternatives B and C, the VRM designations proposed under Alternative D would provide less emphasis on visual resource values and greater emphasis on potential for development and/or use and associated socioeconomic activity.

Socioeconomic impacts of Alternative D related to special designations or natural or cultural resource allocations (i.e., the discontinuation of the Waterman Mountains ACEC, Silver Bell Desert Bighorn Sheep Management Area, Silver Bell RCA, Sawtooth Mountains CRMA, Cocoraque Butte-Waterman Mountains Multiple Resource Management Area, Agua Blanca Multiple Resource Management Area, and Avra Valley CRMA), would be the same as described for Alternative B.

The potential social and economic consequence of Alternative D related to existing valid rights to develop energy and mineral resources would be as described for Alternative B. The lands and realty decision to not consider mineral estate as a factor in surface estate acquisitions could potentially allow for more economic gains for private industry as a result of mineral and energy resource development on non-Federal mineral estate.

Alternative D would have the same impacts on the social and economic aspects of livestock grazing as described for Alternative C.

No substantial changes in visitation would be expected as a result of implementation of Alternative D. Visitation use rates would continue at current levels with fluctuations in visitation primarily influenced by the trends and population growth in the area that would occur under all alternatives. Overall, social and economic impacts would correspond to changes in visitation rates.

Under recreation, the allocation of RMZs under Alternative D would align with the social value for semi-primitive motorized setting, as there would be a greater area allocated to Semi-Primitive Motorized RMZ than Semi-Primitive Non-Motorized RMZ, a greater amount of Roaded Natural RMZ, and a slightly smaller area allocated as the Ragged Top Watchable Wildlife RMZ. Designated shooting areas would be established at Avra Hill and Cerrito Represo, which would provide additional recreational opportunities and could increase visitation to IFNM for these activities compared with Alternatives B and C. Visitation association with recreational shooting could increase sales of ammunition or other sundry items in areas near the monument. Continuing to allow campfires using dead, down, and detached wood while camping at existing campsites (unless it has been identified that there are adverse impacts to the IFNM) aligns with the social value for the continuation of this opportunity on the monument. Similar to Alternative C, allowing for overnight vehicle-based camping throughout the monument (unless specifically prohibited for protection of resource values) would provide greater options for vehicle-based camping as compared to Alternative B, thereby providing a lesser effect on denying people-place connections associated with this activity. There would be fewer impacts to group camping under this alternative than under Alternatives B and C with four identified group campsites. The fourth, to be located in the Sawtooth Mountains, would potentially result in associated expenditures at businesses located near access points to this location. Any changes to visitation use associated with changes in camping policy could result in changes in associated economic activity. A wide range of people-place connections associated with equestrian use and non-motorized, mechanized use and associated economic activity would be allowed to continue under this alternative.

The social and economic impacts of land tenure decisions would be the same as Alternative B. Impacts with regard to corridors and rights-of-way would be the same as Alternative C, except that Alternative C would provide for greater flexibility for potential routings (i.e., more options for placement of facilities or corridor development), thus decreasing potential expenses (limitations may not allow for options that could reduce development costs). Alternative D also allows for additional development at the Confidence Peak communication site, which (if developed) would have moderate socioeconomic impacts for the communications company and provide services to the community.

The implementation decision to designate routes would have the same potential impacts as described for Alternative B; however, the scale of the impact would be less under Alternative D, as more miles of routes would remain designated for motorized use (226 miles of routes would be designated for motorized use under Alternative D as compared to 63 miles designated for motorized use under Alternative B).

#### **4.6 IMPACTS ON PUBLIC SAFETY**

This section describes the potential impacts of hazardous materials on public safety resulting from management actions related to other resources and resource uses. It includes a discussion of the risks associated with hazardous wastes and solid wastes potentially found within IFNM, and potential threats to public safety posed by natural as well as manmade hazards.

Risks associated with hazardous materials and wastes, including solid wastes, are directly proportionate to the level and frequency of resource use as well as the type of use within IFNM. Typically, the presence of hazardous materials and wastes is due to vehicular travel through the IFNM, and can occur as a result of a vehicular accident, either from the vehicle itself or from hazardous materials and/or wastes that the vehicle might be transporting. Similarly, activities related to recreation can result in releases or spills of hazardous materials or wastes. Trash and other solid waste left in areas where recreational activities occur, and personal items discarded by undocumented immigrants traveling through the IFNM, also can pose hazards. Hazardous materials and chemicals used to suppress fires can create a hazard in the event materials are accidentally spilled during application, and unexploded ordnance and abandoned hazardous wastes from military operations also can pose threats to public safety.

Apart from the potential dangers of hazardous materials, public safety also can be threatened by a wide spectrum of issues, most of which are subject to change and circumstance. As with hazardous materials, impacts on public health and safety occur in proportion to the level and frequency of resource use and the type of activities or uses that occur. Typically, threats to public safety on the IFNM arise from the use of motor vehicles (including ATVs and motorcycles), recreational target shooting, active and abandoned mines and prospects, the proximity of military operations, the presence of unexploded ordnance, activities related to smuggling and undocumented immigrants, wildfires, and natural hazards associated with the desert.

The following assumptions were used when assessing the impacts related to hazardous materials and public safety:

- The IFNM is protected from commercial development of facilities that would be likely to use, generate, store, treat, or dispose of hazardous materials. Facilities on public land within the IFNM that might use some forms of hazardous materials, such as utilities or recreational facilities, would be managed under the specific authorization process for such facilities.
- When the use of hazardous materials becomes necessary, such as for the suppression of wildfires or the elimination of noxious weeds, chemicals would be handled and applied in accordance with the manufacturers' directions. However, spills and/or releases of hazardous materials or

## Impacts on Public Safety (cont.)

deposition of wastes can occur under other circumstances, such as during transportation of chemicals, from vehicular accidents, or illegal dumping.

- Public safety assessments are evaluations of risk associated with any circumstance. There are no absolute measures of safety.
- Precautions mitigate risk, but accidents and injuries are bound to occur to some extent when human activity takes place.
- In areas where construction or maintenance of motorized routes, fences, campsites, non-motorized trails, and trailheads, or where any other activity is undertaken, or where the use of hazardous chemicals would be required, appropriate protocol would be followed, thereby decreasing the risk of accident or injury.
- The safety of workers, firefighters, or emergency management teams would be the primary consideration at a rescue site.
- Emergency access may occur throughout the IFNM to protect public safety, though such access would be minimal.

Impact analyses with regard to hazards and public safety are based on the distribution of risk sites or areas, the potential consequences of an accident or incident, and the factors mitigating the risk of an accident or incident. Available literature regarding recreational activities and trends has been reviewed, and BLM specialists were consulted. All conclusions are based upon a consideration of available information using best professional judgment.

### **4.6.1 Impacts Common to All Alternatives**

Safety risks and hazards would exist to some degree under all alternatives. No management or implementation-level decision can eliminate risk, though some varying degree of risk can be realized. Emergency and rescue operations would be available on an as-needed basis regardless of the level of risk allowed under any of the alternatives.

The use and transport of hazardous materials and wastes would be handled and disposed of according to State and Federal requirements under all alternatives. Spills or releases of hazardous materials or wastes could occur in various degrees of risk under any of the alternatives. In the event of spills or releases, cleanup activities would be undertaken in accordance with all applicable procedures and reporting requirements. In addition, a framework for BLM's hazardous materials management policies is provided in Manual Section 1703 (MS-1703), and these policies would be applicable across all alternatives. Compliance with these regulations and policies would minimize potential impacts related to hazardous materials.

The IFNM designation withdrew all public lands within the IFNM from mineral entry, eliminating a majority of the risk of accidents associated with mining and mineral entry. However, mining activity within the IFNM would continue to be administered on a case-by-case basis for valid mining claims, with the associated risk of accidents or injury.

BLM would continue to administer programs to reduce ignitions and to maintain full fire suppression in all areas of the IFNM. Maintaining full suppression would reduce the risk of burned area hazards such as falling trees and the possibility of debris flows resulting from erosion reduction. However, the use of hazardous materials, vehicles, or an aircraft to suppress fires could result in an unintended spill or release of hazardous materials.

## Impacts on Public Safety (cont.)

Continuing the R&PP lease for the glider park could affect public health and safety; hazardous material spills or accidents related to aircraft or glider crashes during operation and gliding activities at or near that site.

Under all alternatives, the management of air quality, geological and cave resources, vegetation, special status species, cultural resources, paleontological resources, scenic and visual resources, and special designations is not expected to have any impact on public safety or contribute to the presence of hazardous materials or waste on public land.

### **4.6.2 Alternative A (No Action)**

Under Alternative A, the current BLM programs and policies for management of hazardous materials and public safety would remain in place. Risk would continue to be a factor in any activities taking place in the IFNM, and the level of risk would change with the level of activity. Risks to public safety and the potential for deposition of hazardous materials would primarily result from management decisions concerning travel and recreation. To a lesser extent, management of lands and realty also would potentially impact risks. Implementation-level decisions concerning soil and water resources, livestock grazing, and wildlife and wildlife habitat would result in minimal impacts. Management impacts on public safety or risks associated with hazardous materials would not be anticipated under Alternative A from decisions for areas managed to protect wilderness characteristics (since none would occur under this alternative).

Under Alternative A, existing access for dispersed vehicle-based and non-motorized camping would continue. The risk of vehicle-related or recreation-related accidents or injuries on approximately 346 miles of roads and primitive roads in generally poor condition would continue. The risk of users becoming stranded by unmaintained, washed out, eroding roadways will continue. Though non-motorized camping holds no potential for vehicular accidents traveling to campsites, accidents and injuries related to camping and recreational activities could still occur. The permissible collection of dead and downed wood for use in campfires on public lands would increase the potential for accidents and injury related to camping, campfires, and other recreational activities.

Dispersed recreational shooting throughout the IFNM would continue to create a public health and safety risk. Over time, lead contamination from the increased presence of spent bullets could contaminate surface water near where recurring shooting areas are located near water. Spent bullets and target debris would contribute to solid waste, and pose hazards from misfired live ammunition cartridges or shells. Some people are more likely to litter in areas that are already littered, which has proven to be true within IFNM where more than 30,000 pounds of garbage have been removed from shooting areas during 15 trash cleanup events that BLM has hosted since 2001. The litter can attract wildlife that may carry disease and create a public health nuisance. In addition, items containing hazardous materials are often used as targets on the IFNM, as well as items whose remnants pose a risk to wildlife. With the occurrence of shooting dispersed throughout the IFNM, cleanup would be difficult.

Through a GIS analysis of the terrain within IFNM, BLM also determined that 47,017 acres of the 128,000 acres of public land within IFNM includes terrain with a steep enough slope to serve as a potential target-shooting backstop. However, slope is not the only criterion, as the backstop surface should be predominantly unconsolidated loose soil to minimize the risk of ricochet, and the dimensions of the backstop should ideally be large enough to accommodate a horizontal shooting fan of more than 45 degrees and a vertical shooting fan of more than 20 degrees. These factors, particularly when combined with BLM's responsibility to protect resources and the objects of the monument, significantly reduce the acreage in which recreational shooting can be safely accommodated within IFNM. Therefore, there are

potential safety risks from stray bullets with allowing the continuation of dispersed recreational shooting throughout the IFNM.

Construction activities within existing utility corridors, communication sites, and as a result of granting rights-of-way throughout the IFNM, could result in injuries or hazardous material spills resulting from construction activities, but risks would be confined to localized areas. Similarly, decisions concerning soil and water resources, livestock grazing, and wildlife and wildlife habitat decisions would increase the potential for accidents or injuries from construction or maintenance of facilities on public lands (e.g., installation of livestock and/or wildlife water sources, fences, or erosion control), in addition to increasing the introduction of hazardous materials or wastes during installation or construction.

Travel management designations allowing public vehicle use on approximately 346 miles of roads and primitive roads would present a risk vehicle related accidents which could cause injury or death from collision, or due to narrow, rough travelway conditions.

### **4.6.3 Alternative B**

Under Alternative B, risks regarding public safety and hazardous materials would primarily result from management of travel and recreation. To a lesser extent, the level of risk also could be affected by management of lands and realty and areas managed to protect wilderness characteristics. Implementation-level decisions regarding soil and water resources, livestock grazing, and wildlife and wildlife habitat decisions would have minimal impacts in this respect.

Approximately 38,040 acres (30 percent) of public lands in the IFNM would be closed to motorized travel, which could decrease the risk of injury from vehicle accidents compared with Alternative A. It also could decrease the potential for exposure to hazardous materials contamination that could occur with a spill or release in the event of an accident compared with Alternative A.

Travel management designations in support of RMZs under this alternative would reduce public motorized travel from 346 miles to approximately 63 miles of road or primitive road, concentrating use and increasing potential encounters among users, also increasing the risk for automobile accidents (which can cause injury or the release of hazardous substances) compared with Alternative A. Fewer routes in remote locations would reduce the risk of visitors becoming stranded in areas less accessible for search and rescue. Road maintenance under this alternative would reduce safety deficiencies on the designated routes, and the risk of accidents.

Allowing charcoal fires and camp stoves would reduce the potential for accident or injury related to wood gathering, and also would likely decrease the ignition of wildland fires. However, the use of charcoal and camp stoves could increase the potential for spills and release of hazardous materials in very localized areas.

Under Alternative B, overnight non-motorized-based camping would be allowed on public land at identified sites only. This would limit the areas use for camping since fewer camping opportunities would be provided on public land compared to Alternative A, and as a result, the risk of injuries or accidents or hazardous material spills would be reduced. Similarly, limiting group camping to the two identified campsites would limit health and safety issues as well as hazardous materials accidents to localized areas.

Prohibiting firearm use, except for authorized hunting, would eliminate or substantially decrease the public health and safety risks compared to those identified for Alternative A, including reduced risk of stray bullets and hazards from less waste generated from recreational shooting. Restricting equestrian uses to routes designated for motorized and non-motorized travel would increase the opportunity for accidents

## Impacts on Public Safety (cont.)

and injuries involving collisions with automobiles (on motorized routes) that would injure people or result in the spill or release of hazardous materials. It also could increase the potential for a conflict between recreationists.

Continuation of the R&PP lease would have the same impacts as those described under Alternative A. Since no utility corridors would be designated and only very few rights-of way would be allowed on BLM-administered land (as a result of allocating the IFNM as an exclusion area), minimal impacts on public safety would result from construction, though the types of impacts would be similar to those described under Alternative A. Similarly, prohibiting additional facilities at designated communication sites would decrease the risk of injuries or hazardous materials spills resulting from construction activities. However, accidents still could occur during operation and maintenance of the existing facilities.

Approximately 36,990 acres would be managed to protect wilderness characteristics, which would reduce potential for spills of hazardous substances and the risk of injury that could result from automobile accidents, since no motorized vehicles would be allowed within these areas.

Road maintenance under this alternative would reduce safety deficiencies on the designated routes, but not eliminate the risk of vehicle related accidents. Implementation decisions from soil and water resources, livestock grazing, and wildlife and wildlife habitat decisions would result in the same impacts described under Alternative A.

The decision for lands and realty to allocate acquired land within the IFNM as exclusion areas for rights-of-way could reduce the potential for accidents and injuries to occur during construction and maintenance since very few facilities would be constructed.

### **4.6.4 Alternative C**

Under Alternative C, risks to public safety and the potential for presence of hazardous materials would primarily result from management decisions under travel management and recreation. To a lesser extent, decisions for managing lands and realty and areas managed to protect wilderness characteristics also would potentially impact risks. Implementation decisions for soil and water resources, livestock grazing, and wildlife and wildlife habitat decisions would result in minimal impacts.

Approximately 10,880 acres (8 percent) of public lands in the IFNM would be closed to public travel, which would decrease the potential risks of injury from automobile accidents compared to Alternative A, but increase risks compared to Alternative B. Similarly, the closure of this area would decrease the potential for exposure of hazardous materials contamination that could potentially occur as a result of a spill or release in the event of an accident compared to Alternative A, but increase the potential compared to Alternative B.

Travel management designations in support of RMZs under this alternative would reduce public motorized vehicle travel from 346 to approximately 124 miles of road or primitive road, concentrating use and increasing potential encounters among users, and increasing the risk for vehicle accidents that could cause injury or the release of hazardous substances compared to a lesser extent than under Alternative B, More vehicle routes in remote locations would increase the risk of visitors becoming stranded in inaccessible areas compared to Alternative B, but less than under Alternative A.

Allowing for charcoal fires, camp stoves, and wood fires (as long as wood was from a non-monument source) would result in the same impacts as those described for Alternative B, except the likelihood for wildland fires would be increased because of the provisions for wood fires and dispersed non-motorized-based camping throughout the IFNM. In addition, allowing dispersed non-motorized camping would

## Impacts on Public Safety (cont.)

increase the number of visitors resulting in an increased probability for more accidents on public land, compared to Alternative B. Impacts associated with group camping would be similar to Alternative B, though would occur at three identified sites instead of two. Prohibiting firearm use, except for authorized hunting, would result in the same impacts as those described under Alternative B.

Allowing equestrian uses on routes designated for motorized travel and non-motorized travel, as well as cross-country uses, would reduce potential collisions and/or conflicts with motorized uses compared to Alternative B, as opportunities for equestrian uses would be dispersed throughout the IFNM, rather than concentrated on routes designated for motorized travel (as it would be under Alternative B).

Continuation of the R&PP lease would have the same impacts as those described under Alternative A. The designation of utility corridors and granting of rights-of-way would result in impacts similar to those described under Alternative A, though reduced given the narrower width of the corridors (200-300 feet wide under this alternative, compared to 1-mile wide under Alternative A), and because of the allocation of the IFNM as an avoidance area for future rights-of-way. Management actions with regard to communication sites would have the same impacts as those described under Alternative B.

Approximately 9,510 acres would be managed to protect wilderness characteristics, significantly decreasing the amount of IFNM managed area from the 36,990 acres under Alternative B. Due to the smaller amount of area closed to motorized vehicles under Alternative C, resource destruction (from hazardous substances) and the risk of injury that could result from vehicle accidents would be slightly increased compared to Alternative B.

Road maintenance under this alternative would reduce safety deficiencies on the designated routes, but not eliminate the risk of vehicle related accidents. Implementation decisions from soil and water resources, livestock grazing, and wildlife and wildlife habitat decisions would result in the same impacts described under Alternative A.

The decision for lands and realty to allocate any acquired land within the IFNM as avoidance areas for rights-of-way could reduce the opportunity for accidents and injuries to occur during construction and maintenance in those areas, though risks would be increased compared to Alternative B, which would allocate lands as exclusion area for future rights-of-way.

### **4.6.5 Alternative D**

Under Alternative D, risks to public safety and the potential for presence of hazardous materials would primarily result from management decisions under travel management and recreation. To a lesser extent, decisions for managing lands and realty also would potentially impact risks. Implementation decisions for soil and water resources, livestock grazing, and wildlife and wildlife habitat decisions would result in minimal impacts. No impacts on public safety or risks associated with hazardous materials would be anticipated from decisions for areas managed to protect wilderness characteristics (since more are proposed under this alternative).

Motorized vehicle travel would be limited to routes designated as open for such use on all 128,400 acres of public land within the IFNM, which would result in impacts similar to those described for Alternative A (though route designations under implementation decisions would reduce the potential risks).

Travel management designations in support of RMZs under this alternative would reduce motorized vehicle travel from 346 miles to approximately 226 miles of road or primitive road, concentrating use slightly. The increase in potential encounters among users will increase slightly, and the increased risk of

## Impacts on Public Safety (cont.)

potential accidents would be negligible. Since a greater amount of vehicle routes would be designated in remote locations, the risk of visitors becoming stranded in relatively inaccessible areas will be greater than under Alternatives B and C, but less than under Alternative A.

Allowing for charcoal fires, camp stoves, and wood fires (including monument sources of dead and downed wood) would result in the same impacts as those described under Alternative C, except that individuals could be injured during wood collection. Allowing dispersed non-motorized camping would result in the same impacts as those described under Alternative C. Impacts associated with group camping would be similar to Alternative B, though would occur at four identified sites instead of two.

Eliminating dispersed recreational shooting and establishing two designated shooting areas would reduce public health and safety concerns (described for Alternative A) throughout most of IFNM. However, the health and safety concern in the designated shooting areas would increase even though. Avra Hill and Cerrito Represo have suitable natural backstops for bullets. If the current volume of recreational shooting within IFNM did not change but was instead concentrated into two areas of approximately 629 acres, there could be a greater risk of crossfire among shooting parties that attempt to spread out within the designated shooting areas because the terrain of the backstops may not reliably stop bullets and/or prevent ricochet; this could particularly be a problem at the Cerrito Represo site because there are roads accessing almost the full radius of the hill's base. An administrative route that accesses two water facilities is located within a half-mile shooting fan of the Cerrito Represo site, and another administrative route accessing a communications site is located within a two-mile shooting fan. At the Avra Hill site, pedestrian/equestrian trails are located within half-mile and mile shooting fans, and administrative routes and public roads are within a two mile shooting fan, which could increase the potential for accidental shootings. As noted in Section 4.3.3.5, there is some risk of soil and groundwater contamination from the lead used in bullets and that risk would tend to be higher in areas of concentrated shooting. The concentration of use in the designated shooting areas would also lead to an accumulation of spent bullets and target debris, although the concentration of waste materials into designated areas would make clean-up operations more efficient and effective than with the dispersed shooting associated with Alternative A. If items containing hazardous materials are used as targets, the designated shooting area may become less safe as the hazardous material accumulate. Establishing designated recreational shooting areas at Avra Hill and Cerrito Represo would, in effect, preclude most other types of land uses and recreational opportunities because of safety concerns for persons not participating in the shooting activities. Other activities could occur, particularly when the areas are not used for shooting activities, but the characteristics of the area would be expected to change with concentrated shooting activity and the resulting bullet damage and target debris. These changes may make these areas less appealing to other types of land use and recreational activities.

Allowing equestrian uses on routes designated for motorized travel and non-motorized travel, as well as cross-country uses, would have the same impacts as those described under Alternative C.

Continuation of the R&PP lease would have the same impacts as those described under Alternative A. The designation of utility corridors and granting of rights-of-way would result in impacts similar to those described under Alternative A, though slightly reduced given the narrower corridor widths (1/4 mile wide under this alternative, compared to 1-mile wide under Alternative A) that would be established, and because of the allocation of the IFNM as an avoidance area for future rights-of-way. Management actions with regard to communication sites would have similar impacts as those described under Alternative B, though with slightly increased risks given the additional facilities that would be allowed under this alternative.

Road maintenance under this alternative would reduce safety deficiencies on the designated routes, but not eliminate the risk of vehicle related accidents. Implementation decisions from soil and water

resources, livestock grazing, and wildlife and wildlife habitat decisions would result in the same impacts described under Alternative A.

The decision for lands and realty to allocate any acquired land within the IFNM as avoidance areas for rights-of-way would result in the same impacts as those described under Alternative C.

#### **4.7 CUMULATIVE IMPACTS**

Cumulative impacts are those effects on the environment that result from incremental impacts of management direction contained in this plan when added to the effects of other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal, tribal, State, or local) or private entity undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508). Analysis focuses on the cumulative impacts of the alternatives for this plan and other actions both within and outside the IFNM. Potential cumulative impacts, projects, and actions in or near the IFNM were determined by examining other plans in the region, discussions with local governments and State and Federal land managers, and from information provided by the BLM. None of the alternatives propose or authorize broad-scale surface disturbance. All alternatives are consistent with the Proclamation designating the IFNM and its intent of protecting objects within the IFNM. Cumulative impacts are addressed based on the incremental effects of BLM management in addition to the other past, present, and reasonably foreseeable actions on the IFNM.

The timeframe for this cumulative impact analysis encompasses past activities in the planning area since as early as 1860, but generally focuses on activities that occurred in the 1900s. It also includes present activities and future activities that may extend 20 years into the future, which is the estimated life of the RMP. Table 4-19 presents the cumulative impact assessment area for the resources, resource uses, and socioeconomic conditions.

**Table 4-19: Cumulative Impact Analysis Areas**

<b>Resource/Resource Use</b>	<b>Cumulative Impact Boundary</b>
Air	IFNM boundary and areas within 50 miles
Soil and water resources	IFNM boundary and watershed boundaries that intersect the IFNM
Vegetation	IFNM and watershed boundaries that intersect the IFNM
Wildlife and wildlife habitat	IFNM and the home ranges of species (varies by species)
Special status species	IFNM and the home ranges of species (varies by species)
Fire ecology and management	IFNM boundary and areas within 50 miles
Cultural resources	IFNM and neighboring lands with a high potential for connected resources
Paleontological resources	IFNM and neighboring lands with a high potential for connected resources
Scenic and visual resources	IFNM
Wilderness characteristics	IFNM boundary and Wilderness within 50 miles
Livestock grazing	IFNM and allotments that extend into adjacent management areas
Recreation	IFNM boundary and areas within 50 miles
Lands and realty	IFNM and major rights-of-way that extend beyond the IFNM boundary
Travel management	IFNM and State, county, and local access roads
Social and economic conditions	IFNM and Pima and Pinal Counties

#### 4.7.1 Past, Present, and Reasonably Foreseeable Future Actions

Past, present, and potential future actions are considered in the analysis to identify whether the environment has been degraded or enhanced and to what extent, whether ongoing activities are causing impacts, and trends for activities and impacts in the area. Projects and activities are evaluated based on: proximity, connection to the same environmental systems, potential for subsequent impacts or activity, similar impacts, and if the project is reasonably foreseeable. A description of projects and activities are included in Table 4-20. The areas of primary concern for cumulative impacts related to this plan are Pima and Pinal Counties in Arizona, and Table 4-20 contains a description of the cumulative impact boundary for each resource or resource use. Projects outside these areas also were considered if they have the potential to affect resources in the region. Additional information was obtained through discussions with agency officials and review of publicly available materials and websites.

Actions undertaken by private individuals and entities are assumed to be captured in the information made available by the agencies. Effects of past actions and activities are manifested in the current condition of the resources, as described in Chapter 3, Affected Environment.

Reasonably foreseeable future actions are those future actions that have been committed to or that are known proposals that could take place within the 20-year planning period. 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 best professional estimates. 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.

Table 4-20 provides a description of the past, present, and potential future actions that are reasonably foreseeable over the life of the RMP.

**Table 4-20: Past, Present, and Reasonably Foreseeable Future Actions**

Name	Description of Action
<b>Past Actions</b>	
Historical mining	Numerous small mines and mine prospects were located in places throughout the planning area in the 1800s and early 1900s. Mining booms in the area began in the 1860s with the opening of the Silver Bell Copper Mine (1860s-1920s). Records identifying mining claims indicate that mining locatable minerals within the decision area has not been an economically viable industry, copper notwithstanding. Salable minerals such as sand and gravel have been economically viable. Metals recovered at Silver Bell Mine include copper, molybdenum, lead, zinc, and silver, along with small amounts of gold. The abandoned Silver Hill Mine on the south flank of Waterman Peak was a high-grade lead-zinc-copper mine.

<b>Name</b>	<b>Description of Action</b>
Historical ranching activities	<p>Ranching has long been prevalent throughout the planning area. Free grazing on the public domain brought ranchers west, and they built their operations around it. Prior to 1934, no governing regulations per se applied to grazing activities on public land, and much of the land was heavily grazed. Fluctuations in precipitation and temperature affect the growth of natural rangeland vegetation; this combined with heavy grazing caused many areas to become unsuitable for grazing. Additionally, as more and more people moved into the area to settle, the number of cattle increased and disputes over grazing uses grew.</p> <p>A major drought in 1891 to 1893 killed large proportions of the livestock and many areas experienced major topsoil erosion after loss of vegetative cover. Heavy livestock grazing continued after the drought, but animal numbers had peaked in 1891. Wagoner (1952 appendix I) lists numbers of cattle for Pima County, Arizona, as 11,741 in 1880, 121,377 in 1891, and 49,599 in 1893 (Milchunas 2006).</p>
Taylor Grazing Act of 1934	<p>Late in the nineteenth century, the number of livestock on the public lands of the southwest increased dramatically until a combination of drought and harsh winters decimated herds. The effects of this historic grazing use severely degraded millions of acres of marginal, semi-arid lands. Congress enacted the Taylor Grazing Act to regulate the grazing use that was damaging resources and to stabilize the livestock industry. The Act vested the Secretary of the Interior with authority to create grazing districts after public hearings. The Grazing Service was required to issue grazing permits or leases to ranchers and supervise and regulate the grazing authorized. Allotments within the IFNM are leased under Section 15 of the Act, which applies to grazing leases on public lands outside the original grazing district boundaries.</p>
Community settlement and development	<p>Associated with changes in agricultural practices and land use, the Santa Cruz River underwent a period of pronounced arroyo entrenchment during the late 1800s. Human manipulation of the Santa Cruz River channel for irrigation is one of the primary reasons for the extensive erosion that occurred in the Tucson area. This downcutting created a dependence on groundwater for irrigation, domestic, and industrial uses. Subsidence was first detected in Arizona in 1948 near Eloy in the lower Santa Cruz basin (Gelt 1992). The population of Arizona in 1905 was 105,000, and in 1940 the population increased to 489,000. The population of Tucson increased from 22,818 in 1910 to 72,838 in 1940. Associated with these population increases and military installations in 1942 near present day Marana, residential development increased in the area.</p>
Indian Reservations	<p>Between 1859 and 1939, Indian Reservations containing approximately 3.2 million acres were created in southeastern Arizona. Tribes associated with these reservations are from the Piman Indian group of tribes. The largest reservation, the Tohono O’odham Indian Reservation borders the IFNM along its southern and western boundary. The Gila Indian Reservation is located approximately 30 miles north of the IFNM and the Ak Chin Indian Reservation is about 30 miles northwest of the IFNM. Establishment of these reservations and change in access to irrigation water altered land use patterns in the area surrounding the IFNM.</p>
Coronado National Forest	<p>Between 1902 and 1907, 1,780,000 acres were designated as a U. S. Forest Reserve forming the Coronado National Forest in southeastern Arizona and southwestern New Mexico. The Coronado National Forest boundary is approximately 30 miles east of the IFNM.</p>
<b>Present Actions</b>	
Current ranching and agricultural activities	<p>Agricultural and ranching continues to take place within the planning area. Management of the rangeland in the last 50 years also has placed regulations on grazing allotments classified as perennial, perennial/ephemeral, and ephemeral to protect resources. Prices for agricultural products, cattle and changing social and land values have affected the viability of farming and ranching businesses.</p>

Name	Description of Action
City of Tucson Water Department	The City of Tucson Water Department is now operating a pilot Central Avra Valley Water Storage and Recovery Project on City-owned land near Sandario Road and Mile Wide Road. The Central Avra Valley Storage and Recovery Project results from the passage of Proposition 200, the Water Consumer Protection Act, which prevents the delivery of Central Arizona Project (CAP) water directly to customers and requires that overpumping in the Central Wellfield be eliminated to prevent the land in the overpumped area from sinking (known as subsidence).
Western Army National Guard Aviation Training Site (WAATS)	The Western Army National Guard Aviation Training Site (WAATS) is located at the Silver Bell Army Heliport (AHP) in Marana, Arizona, on the northwest side of Pinal Airpark. The heliport is 5 miles east of the IFNM boundary. The WAATS mission is U.S. Army Directed Aviation Training. Training is conducted on the AH64A Apache helicopter, and the WAATS program is the only U.S. Army flight school that trains on this aircraft. There are currently about 500 employees at the WAATS training center and is expected that the student load will double over the next 5 years. Due to encroachment, particularly between the Silver Bell AHP and the Picacho Peak area on the helicopter transition routing area and beyond, training has become more restricted. Most missions near the Silver Bell AHP are conducted 1,000 feet above and 2,000 feet lateral of neighboring communities. "Dusty landings," conducted to train for landing in dusty environments, are conducted in the Waterman Mountains, Sawtooth Mountains, and near Silver Bell Mine within the planning area.
Wilderness	Wilderness created by acts of Congress within approximately 50 miles of the planning area include South Maricopa Mountains Wilderness (in Sonoran Desert National Monument); Table Top Wilderness (in Sonoran Desert National Monument); Pusch Ridge Wilderness (in Coronado National Forest); West Saguaro Wilderness (in Saguaro National Park); East Saguaro Wilderness (in Saguaro National Park); Rincon Mountain Wilderness (in Coronado National Forest); Coyote Mountain Wilderness (on BLM-administered public land); Baboquivari Peak Wilderness (on BLM-administered public land); Buenos Aires Wilderness (in Buenos Aires National Wildlife Refuge).
Saguaro National Park establishment and General Management Plan	On October 14, 1994, Saguaro National Park was established. A general management plan provides a foundation to help park managers guide programs and set priorities for resource stewardship, visitor understanding and appreciation, partnerships, and facilities and operations for the next 15 to 20 years. The planning process focuses on why the park was established and results in a vision shared by NPS managers and the public about the kinds of resource conditions and visitor experiences that will best fulfill the purpose of the park over time. In prescribing the conditions and experiences to be achieved and maintained in the park, general management planning takes the long view, which may be decades into the future when dealing with the time frames of natural and cultural processes.

Name	Description of Action
Vehicle-based recreation	<p>The growth of outdoor recreation in the area probably began after World War II as Arizona's population grew, disposable income increased, and civilian four-wheel drive vehicles emerged. Historic recreation activities have included hunting, camping, hiking, sight-seeing, four-wheel driving, and general exploring. Public lands in the vicinity of towns such as Tucson probably received some of the earliest attention for outdoor recreation. Development of civilian off-road-capable vehicles in the 1950s allowed the public to take vehicles to areas previously inaccessible by vehicular travel, beginning perhaps in the 1940s, with the Jeep Willys starting the revolution of off-roading that continued to grow as vehicles went from a standard four-wheel drive to highly-modified, more powerful and capable machines. Vehicle-based recreation has become the norm in the decision area for most recreational outings including camping, hunting, and exploring.</p> <p>As vehicle-based recreation grew and modified OHVs adapted to become more capable, the 1980s saw the birth of ATVs. ATVs were smaller and able to reach areas that larger, more cumbersome truck-like vehicles could not access. ATVs transformed OHV use from having multiple persons per vehicle to one person per vehicle, increasing OHV use on public lands dramatically. The trend continues to grow as ATVs become more and more affordable and popular.</p>
AGFD management activities including Arizona's Comprehensive Wildlife Conservation Strategy	<p>The Comprehensive Wildlife Conservation Strategy is designed to address the needs and requirements for managing wildlife in Arizona. It focuses partnership efforts on conservation at the landscape level, to address stressors that constrain wildlife conservation and wildlife-related recreation opportunities. This strategy provides a 10-year vision for achievement, subject to adaptive management and improvement along the way. The strategy covers the entire State, from low desert to alpine tundra.</p>
U.S. Border Patrol activities and illegal undocumented immigrant and drug smuggler entry to the United States	<p>The U.S. Border Patrol monitors and interdicts illegal undocumented immigrant and drug smuggler entries to the United States along the entire Arizona/Mexico border. Unauthorized roads and distinct foot trails in the Tohono O'odham Nation and the IFNM have been and continue to be created by border crossers. U.S. Border Patrol mission also includes search and rescue services for stranded migrants. Impacts from illegal off-road driving and foot traffic, authorized Border Patrol off-road driving for interdictions and search and rescue, abandoned vehicles and personal belongings, trash, use of wildlife waters, and some damage to facilities occur regularly. Interdiction activities and infrastructure are being increased.</p>
State and county parks	<p>There are several State and county parks within 50 miles of the IFNM, including Picacho Peak State Park; Tucson Mountain County Park; Picture Rocks County Park, Tortolita Mountain County Park; and Catalina State Park. These parks also draw recreational users and provide opportunities for recreation.</p>
Arizona State Parks Arizona Trails 2000 and 2005 Plans	<p>These statewide plans provide information and recommendations to agencies for their management of motorized and non-motorized trails. The plan guides the expenditures from the Arizona Off-highway Vehicle Recreation Fund, Arizona Heritage Fund Trails Component, and Federal Recreational Trails Program (1999). The 2005 plan incorporated survey results, focus group workshops, and public comments into the final plan to address the needs and concerns of resources and the public.</p>
Pima County Trails Plan	<p>The purpose of the Pinal County Trails Plan is to facilitate a planning framework to create a countywide system of non-motorized trails and a system of motorized trails. In principle each system will complement and enhance the other and provide a wide range of recreational opportunities for all ability levels. Designated non-motorized trails will be used exclusively for non-motorized recreation. Motorized trails can be used for multiple purposes. Public safety, environmental constraints, and wildlife protection are a few examples of factors that may support special uses on some trails. Pinal County is currently developing a revised Open Space and Trails Master Plan.</p>

Name	Description of Action
Pima County Plans	<p>The Pima County Comprehensive Plan translates community values and goals into a framework for decision-making on growth, land use, the natural environment, traffic circulation, and water resources. It expresses a long-range vision of how a community is to look and function in the future. The goals, objectives and policies section sets forth those values and goals, giving guidance for achieving that vision. One of these ordinances is the Buffer Overlay Zone Ordinance. The purpose of this ordinance is to preserve and protect the open space characteristics of those lands in the vicinity of the public preserves while at the same time permitting the economically reasonable use of lands and to protect and enhance existing public preserves in Pima County as a limited and valuable resource.</p> <p>Additional plans in Pima County include the Conservation Lands System (CLS) Regional Plan Policy and the Sonoran Desert Conservation Plan. These plans were prepared by Pima County land use planning and include the Pima County Multiple Species Conservation Plan.</p>
City of Tucson Habitat Conservation Plan	<p>This Preliminary Draft Habitat Conservation Plan (HCP) has been prepared in support of the City of Tucson's application for an Incidental Take Permit (Permit) in conformance with Section 10 of the Federal Endangered Species Act of 1973 (ESA). Through this HCP, the City is committing to implement certain actions that will minimize and mitigate the impacts of any take of certain specified species that could occur as a result of planned urban development, future Tucson Water Department water supply projects, and associated capital improvement projects. It is anticipated that the permit length will be 50 years. The HCP addresses proposed development activities in three City of Tucson planning sub-areas: Southlands, Avra Valley, and Santa Cruz River.</p>
City of Marana Habitat Conservation Plan	<p>The Town is creating a draft HCP, the purpose of which is to protect threatened and endangered species in areas affected by growth and development.</p>
Sonoran Desert National Monument	<p>Established by Presidential Proclamation on January 17, 2001 the Sonoran Desert National Monument encompasses approximately 496,337 acres of land, approximately 408,646 acres of which are owned by the Federal government and managed by the BLM and approximately 77,957 acres of which are under the joint jurisdiction of the BLM and the Department of Defense. The Sonoran Desert National Monument is approximately 30 miles west of the IFNM boundary.</p>
Utilities	<p>Additional transmission lines are located east of the IFNM along I-10 and associated with Saguaro Power Plant operated by Arizona Public Service. Smaller-scale electrical distribution lines and pipelines are located in and around the IFNM, generally associated with industrial, commercial, and residential development.</p>
Urban development	<p>Although agriculture remains important, the area's economy has long been diversified and includes military bases, multiple industries, recreation, and, most recently, explosive urban development both on the urban fringe of Tucson and rural Pima, and Pinal counties. Agricultural land has rapidly been converted to residential and commercial development purposes as new communities/subdivisions emerged in a matter of years. Growth and development spurred expansion, upgrades, and other changes to the surface transportation system within the planning area. In recent years, arterial roads and local street networks of the Tucson metro-area have expanded into Avra Valley and the vicinities of Oro Valley, Marana, Florence, and Arizona City. While growth has slowed, urban development continues.</p>
Closure of recreational target shooting in NF	<p>Parts of Coronado NF have been closed to recreational target shooting. Currently, there are seven shooting ranges available to the public for a fee, including indoor ranges. Five are located in Tucson, one in Casa Grande, and one in Coolidge.</p>

Name	Description of Action
Groundwater withdrawal	The IFNM is located within parts of two Active Management Areas (AMAs) for groundwater: Pinal AMA and Tucson AMA. The Pinal AMA is managed as an area of “planned groundwater depletion,” meaning that use of groundwater in excess of estimated recharge is acceptable under Arizona law. According to studies by Arizona Department of Water Resources, the overdraft within the Pinal AMA could reach over 300,000 acre-feet by 2025, resulting in lowered groundwater levels. Management of the Tucson AMA is expected to maintain existing groundwater levels. Declining groundwater levels could affect groundwater-dependent resources on public land such as vegetation.
<b>Reasonably Foreseeable Future Actions</b>	
CANAMEX Corridor	Interstate 8, Interstate 10, and State Route 85 have been identified as components of the CANAMEX Corridor in Arizona. The CANAMEX Corridor is one of 43 national high priority corridors identified in the Intermodal Surface Transportation Efficiency Act of 1991 (Public Law 102-240), the 1995 National Highway System Designation Act (Public Law 104-59), and the 1998 Transportation Equity Act for the Twenty-First Century (Public Law 105-78). The National Highway System Designation Act provides that the CANAMEX Corridor will extend from Nogales, Arizona, to Las Vegas, Nevada, to Salt Lake City, Utah, to Idaho Falls, Idaho, to Montana, and to the Canadian border. In Arizona, the corridor is described as extending from Nogales to Tucson to Phoenix to Nevada. The Maricopa Association of Governments and ADOT initiated a study in Fiscal Year 2000 to designate the route for the CANAMEX Corridor through the Maricopa Association of Governments region to connect Interstate 10 from Tucson and U.S. Highway 93 northwest of Phoenix to Nevada. If approved, the CANAMEX Corridor may result in the widening of I-10.
Future highways/roads	Arizona Department of Transportation is undertaking an Access Management Study to assess existing and future access points and potential widening and other improvements to I-10. Other freeway/highway developments are also currently being proposed. The Regional Transportation Authority (RTA) has established a plan that is a working document showing a 20-year, multi-modal transportation blueprint for the Pima County region. The 20-year RTA plan addresses cross-town mobility, reduced travel congestion, improved safety and security, improved travel modes and improved bicycle and pedestrian options, for which funding of \$2.1 billion was approved on May 16, 2006, along with a separate request for a 1/2-cent excise tax to fund the plan.
Renewable energy	There is potential for renewable energy resources such as solar to occur in the decision area, and BLM has received an application for a solar energy generation station on 1,600 acres of land located about 3 miles north of the monument. There is some small-scale commercial solar energy testing activity on private land in Arizona. A renewable energy production plant has been proposed for construction in west Pinal County.
Utilities	Southwest Transmission Cooperative has constructed the Sandario Substation and will be rebuilding (upgrading) an associated transmission line between the Sandario Substation and Avra Valley. Transmission upgrades in this area are expected to be completed in late 2011 through mid-2012. In addition, Tucson Electric Power maintains a right-of-way in the IFNM which could be developed in the future. The UDSI BLM together with the U.S. Departments of Energy, Agriculture, and Defense completed a Final Programmatic EIS in November 2008 that designated more than 6,000 miles of energy transport corridors on Federal lands in 11 western states; those corridors are collectively called the West-wide Energy Corridor. Though under litigation, a settlement is pending as of August 2011.

Name	Description of Action
Regional population changes	New municipalities have been developed around the Tucson area as the demand for land available for housing continues to grow. While growth has slowed since the 2007 recession, Arizona has experienced unprecedented rates of population growth and development affecting increasingly widespread areas; many of which were, until recently, remote from existing urban areas. The number of the retired populations increasing, including those who are part-time residents of southeastern Arizona. With more time and disposable income to actively pursue leisure activities, increases in use of public lands by the retired population can be expected. Development has been converting both agricultural and open desert areas to residential and other urban purposes with the consequences of lost habitat, disrupted or severed habitat connectivity, disrupted/rerouted surface water hydrology; increased demand for water, roads and utilities, landfills, sewage disposal, sand and gravel, landscaping rock and outdoor recreation; loss of open space; and increased fugitive dust among other effects.
Borderlands rescue beacons	The U.S. Border Patrol has recommended placement of rescue beacons within the IFNM boundaries. Specific locations are yet to be determined; however some could be located on public land.

#### 4.7.2 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 following resource and resources uses is discussed below: air quality, soil and water resources, vegetation, wildlife and wildlife habitat, special status species, fire ecology, cultural resources, paleontological resources, scenic and visual resources, recreation, lands and realty, social and economic conditions, and public safety. Cumulative impacts are not anticipated to geological resources, energy and minerals, and special designations; therefore, these topics are not discussed.

##### 4.7.2.1 Air Quality

Cumulative impacts on air quality could result when the geographic areas experiencing direct effects from different activities overlap. 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. Ground-disturbing activities in the vicinity of IFNM contribute to effects on air quality; these include agricultural activities (such as plowing), utility and highway construction, and urban development and associated construction activities. Other activities that contribute to these types of effects include the increased popularity of vehicle-based recreation using OHVs and ATVs, U.S. Border Patrol and BLM operations and maintenance activities using unpaved roads within the monument, and “dusty landing” training conducted by the Army National Guard in the vicinity. These cumulative impacts would generally be from increased inhalable particulate matter such as PM<sub>10</sub> concentrations, which could contribute to continued nonattainment status for air quality in portions of the IFNM.

In cases where commodity production or industrial projects qualify for air quality permitting, the assessments required to obtain the permit would identify the possibility for cumulative impacts. If such impacts may violate regulatory criteria, then the permit could impose mitigation as appropriate. The locations most at risk for cumulative impacts would be areas surrounding the commodity production or industrial projects, particularly if those areas were located within the nonattainment area for PM<sub>10</sub>.

##### 4.7.2.2 Soil and Water Resources

BLM management actions combined with the proposed construction of additional urban and residential development, the West-wide Energy Corridor, and Southwest Transmission Cooperative’s Sandario Project, together with infrastructure developments (including new and upgraded highways, utility lines, and renewable energy production plants) and agricultural activities, could increase localized erosion and

sediment loading. Comprehensive management plans for habitat and species conservation combined with city and county plans and ordinances that include surface-disturbing restrictions could mitigate the increased potential for soil erosion and the resulting degradation of water quality that could occur.

#### **4.7.2.3 Vegetation**

Past actions that may have affected the density and diversity of vegetation in the planning region include mining activities, community settlement and development, conversion of native land for agriculture, and past ranching activities that may have included overgrazing, particularly in times of drought. Some of these effects were offset by the practices established through the Taylor Grazing Act and the resource management and protection that often accompanied special land designations, such as national forest, national park or monument, etc.

Some of these same types of activities continue to influence vegetation today. Ongoing development continues to be a major force in converting vegetated areas to other uses, including communities, utility corridors, and transportation systems. Increases in recreation resulting from the proximity of larger populations to undeveloped areas and increases in UDI access and apprehension activities also affect vegetation. However, for the lands that remain undeveloped, more parks and wilderness areas have been established with better defined management plans to protect resources, including vegetation. These broad-scale protective measures help to protect vegetation, including ironwood trees and other drought-adapted vegetation, as well as other natural features that provide habitat for threatened, endangered, and rare species and thus these and other objects of the monument. BLM management actions combined with the proposed construction of additional urban and residential development (and associated increased recreational activities), increased roads and highways, the West-wide Energy Corridor and the Southwest Transmission Company's Sandario Project, and any other land-disturbing activities could increase localized removal of or disturbance to vegetation. State, county, and city comprehensive management plans and HCPs, as well as the IFNM RMP, would restrict surface-disturbing activities, resulting in some mitigation of the vegetation removal or disturbance. Land acquisitions by BLM, or other jurisdictions with interest in maintaining vegetation and wildlife habitat could increase the potential to mitigate removal and/or disturbance of vegetation, especially where such acquisitions by BLM would result in large contiguous blocks of public land. Integrated weed management would reduce the spread and potential for noxious weeds and invasive species establishment, but the continued potential for spreading non-native seeds attached to vehicles that travel from place to place on road networks would continue to make weed management a challenging issue.

#### **4.7.2.4 Wildlife and Wildlife Habitat**

The cumulative impact boundaries for wildlife and wildlife habitat vary by species. Mobile species and species with a large home range include areas both within and outside the monument boundary. Cumulative impacts on the wildlife and wildlife habitat would result from surface disturbance and disruptive activities in and near the IFNM, such as land development, road construction, and increased recreational activities associated with an increasing population. Cumulative impacts from surface-disturbing activities or added barriers (fences, highways, canals, etc.) could include fragmentation of habitat, including important movement corridors, as well as overall degradation of habitat. State, county, and city comprehensive management plans and HCPs, as well as the IFNM RMP, would restrict surface-disturbing activities, resulting in some mitigation of the habitat degradation. However, the quantity and quality of habitat available for wildlife would be expected to decline over time. Actions taken by Federal, State, and county governments to set aside land that will be minimally developed—including IFNM, Sonoran Desert National Monument, Saguaro National Park, State and county parks, and zoning ordinances that promote land conservation—will contribute to the preservation of wildlife habitat, an object of the monument. Land acquisitions by BLM, or other jurisdictions with interest in maintaining vegetation and wildlife habitat could increase the potential to mitigate degradation of wildlife habitat,

especially where such acquisitions by BLM would result in large contiguous blocks of public land. On a regional scale, the actions to preserve and protect large blocks of habitat would help to offset the development activities that remove or degrade habitat. Because actions within IFNM are more likely to enhance than degrade the quantity of wildlife and the quality of wildlife habitat, these objects of scientific interest would be protected at the scale of the monument.

#### **4.7.2.5 Special Status Species**

The cumulative impact boundaries for special status plants and wildlife vary by species. Mobile species and species with a large home range include areas both within and outside the IFNM boundary. Cumulative impacts on special status species would result from surface disturbance and disruptive activities in and near the IFNM, such as land development, road construction, new fences, and increased recreational activities associated with the increasing population. State, county, and city comprehensive management plans and HCPs, as well as the IFNM RMP, would restrict surface-disturbing activities, resulting in some mitigation of the habitat degradation. However, the quantity and quality of habitat available for special status species would be expected to decline over time. Actions taken by Federal, State, and county governments to set aside land that will be minimally developed—including IFNM, Sonoran Desert National Monument, Saguaro National Park, State and county parks, and zoning ordinances that promote land conservation—will contribute to the preservation of wildlife habitat, including habitat important to the special status species (objects of the monument) found within IFNM. Land acquisitions by BLM, or other jurisdictions with interest in 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 BLM would result in large contiguous blocks of public land.

#### **4.7.2.6 Fire Ecology**

Increased residential development on private lands adjacent to the IFNM would increase the amount of wildland-urban interface (WUI) areas in the IFNM over the long term. Residential development and increasing recreational use adjacent to the IFNM would increase the potential for accidental human caused ignitions, which could spread into or out of the IFNM. Other potential fire ignition risks within IFNM include campfires, fires used by UDIs for heat or cooking, fires started by hot catalytic converters on vehicles contacting dry vegetation, and construction-related activities (such as welding) for proposed utilities. These potential ignition sources are not synergistic, but each contributes to the need for wildfire planning.

#### **4.7.2.7 Cultural Resources**

Proposed construction and additional residential development, infrastructure and utility improvements and expansions could disturb cultural resources. In addition, the continued urban growth in the Tucson and Marana metropolitan areas and surrounding communities has created increased demand for recreational and other uses on public land, which also could disturb cultural resources. The loss of cultural resources resulting from development on non-public land adjacent to the IFNM, such as subdivisions, is likely to occur. In addition, the potential for degradation of cultural resources within the IFNM would increase given the increased visitation and recreational uses that are expected. Comprehensive management plans, as well as city and county plans, may include provisions to protect and conserve cultural resources. State, county, and city comprehensive management plans, as well as the IFNM RMP, would restrict surface-disturbing activities, resulting in some mitigation of the degradation of cultural resources of scientific interest (objects of the monument) within and outside the monument. However, disturbance and degradation of cultural resources would be expected to occur over time. Land acquisitions by BLM, or other jurisdictions with interest in maintaining cultural resources, could increase

the potential to mitigate degradation of these resources, especially where such acquisitions by BLM would result in large contiguous blocks of public land.

#### **4.7.2.8 Paleontological Resources**

Proposed construction and additional residential development, infrastructure and utility improvements and expansions could disturb paleontological resources, if significant resources were discovered. In addition, the continued urban growth in the Tucson and Marana metropolitan areas and surrounding communities has created increased demand for recreational and other uses on public land, which also could potentially disturb paleontological resources. The loss of paleontological resources resulting from development on non-public land adjacent to the IFNM, such as subdivisions, could occur. In addition, the potential for degradation of paleontological resources, if discovered within the IFNM, would increase given the increased visitation and recreational uses that are expected, combined with any new surface-disturbing features within the monument that are developed to accommodate changes in land use. Surface-disturbing activities within areas containing significant fossils have the potential to damage this fragile, nonrenewable resource. Therefore, disturbance and degradation of paleontological resources would be expected to occur over time.

#### **4.7.2.9 Scenic and Visual Resources**

Visual resources within the boundaries of the IFNM have been, and would continue to be affected by projects and activities that occur on lands that are not administered by the BLM, but which could be visible from public lands due to proximity and topography. Varied land use on private inholdings and parcels of land adjacent to the boundary of the IFNM tend to create visual contrasts along the borders of the IFNM. Road construction, farming, mining, utility lines, fences, and residential development are examples of the types of activities that have created these 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. Future projects likely would involve increased residential development and road construction, which would continue to create visual contrasts with the landscape. Structures and roads that occur near the borders of the IFNM that are taller than existing vegetation and do not match colors commonly found in the monument landscape would have a cumulative impact because they would be visible in concert with those projects and activities that have, and would continue to occur on inholdings and parcels of land adjacent to the IFNM. However, Pima County's Buffer Overlay Zone Ordinance, if applicable to the IFNM, could require projects to "provide for an aesthetic visual appearance from and to Pima County's public preserves," resulting in some mitigation of the cumulative impacts on scenic and visual resources, including views of the Sonoran Desert. In addition, because most development tends to occur in valleys or areas with more level terrain, the rugged mountains (an object of the monument) are protected on a broad scale.

#### **4.7.2.10 Wilderness Characteristics**

Major mining complexes immediately adjacent to the IFNM could diminish lands with wilderness characteristics such as naturalness and opportunities for primitive recreation within the decision area if these operations were in direct view from localized portions of the IFNM. In addition, vehicle traffic to and from the mine sites may pass through the IFNM, which would add to traffic impacts to lands with wilderness characteristics. Mining activities that have occurred within the decision area in the past are generally numerous but small. Historic mine shafts and associated barriers, structures, and disturbances could reduce naturalness and opportunities for primitive recreation within the IFNM. Lands with wilderness characteristics could be impacted by projects that occur outside the planning area due to the visibility of outside projects from within the IFNM. The development of residential housing on private lands to the north and east of the IFNM, for example, could be visible from higher elevations in the IFNM such as the Sawtooth Mountains and the Samaniego Hills and would diminish naturalness, and

opportunities for solitude in the IFNM. Utility developments on lands adjacent to the IFNM or activation of utility rights-of-way within IFNM would have similar cumulative impacts as residential lands. Despite the potential for degradation of areas managed to protect wilderness characteristics within the IFNM, the designated wilderness within 50 miles of the IFNM would remain protected in perpetuity and such values in those areas would be preserved. Therefore, though some degradation to lands with wilderness characteristics could occur in the IFNM, the regional cumulative impacts on lands with wilderness characteristics would be very limited in nature.

#### **4.7.2.11 Livestock Grazing**

Removal of vegetation as a result of surface-disturbing activities, the presence and abundance of grazing wildlife, and general human disturbance including illegal undocumented immigrant travel would result in diminished potential for livestock grazing within and outside the IFNM. Increased recreation use, urban development, and the conversion of private or Arizona State 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.

Under Alternative B, managing the BLM-administered lands as unavailable to livestock grazing after existing leases expire in conjunction with increased population growth and recreation demands could reduce the number of livestock operators. This could reduce the demand for livestock grazing on Arizona State Trust lands and private lands or potentially increase demand for use of State Trust or private lands for grazing, since BLM-administered lands would not allow that use.

#### **4.7.2.12 Recreation**

Various past, present, and reasonably foreseeable future actions affect, or could affect, the supply of and demand for recreational opportunities within the planning area. In addition to the IFNM, the existence of the Coronado National Forest, wilderness areas within 50 miles, Saguaro National Park, State and county parks, various State and regional trails, and the Sonoran Desert National Monument each provide various recreational opportunities. The increased number of students in the next five years at the Western Army National Guard Aviation Training Site, increasing vehicle-based recreation, closure of shooting ranges, and the growing urban development and associated population growth all contribute to increased demand for recreational opportunities in the region. Because parts of the Coronado National Forest have been closed to recreational shooting and BLM proposes to close IFNM to recreational shooting, other regional facilities that provide this opportunity are likely to experience an increase in demand, and there may be environmental effects from increased use of those facilities. As demand for other types of outdoor recreational opportunities grows, the IFNM 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, utilities, or rescue beacons within or near the IFNM could degrade certain recreational settings, resulting in diminished recreational opportunities and experiences.

#### **4.7.2.13 Lands and Realty**

Restrictions on rights-of-way and utilities near the IFNM could result from implementation of the City of Tucson HCP, City of Marana HCP, and Pima County Plans (including the Pima County Comprehensive Plan, Sonoran Desert Conservation Plan, and Pima County Conservation Lands System), as well as within areas protected as open space, such as Saguaro National Park, Coronado National Forest, and other State and county parks. This could result in increased concentration of rights-of-way for utilities in areas around, but outside the IFNM. Utility projects outside the IFNM, such as Southwest Transmission Cooperative's Sandario Project could reduce demand for land use authorizations (e.g., rights-of-way) as

this may reduce the need for a right-of-way within the IFNM, but overall the same types of facilities would be required within the surrounding area. Similarly, the West-wide Energy Corridor Programmatic EIS would not establish additional corridors within the IFNM, but could result in major utilities being located in areas outside the monument, where such facilities would be concentrated. This would result in fewer impacts on the IFNM and the objects for which it was established to protect.

Sales (or exchanges, if permitted in the future) of Arizona State Trust land by the Arizona State Land Department could result in extensive changes to surface management within the IFNM boundaries. If BLM acquired non-Federal land within the IFNM, the demand for both major utilities and smaller-scale distribution utilities within the IFNM could decrease over time, because the potential for development of those lands (and the associated need for utilities) would decrease. In contrast, BLM likely would need to issue increased rights-of-way to new areas if State Trust lands were sold to private parties for future development.

#### **4.7.2.14 Travel Management**

Past, present, and reasonably foreseeable future actions have affected, and continue to affect travel management within the IFNM and surrounding area. Urban development patterns and areas protected from development have guided the location and development of many highways and roads near and within the IFNM. The continuing growth of vehicle-based recreation, urban development, planned road and highway projects, and population growth are expected to increase demand and construction of transportation routes near the planning area.

In contrast, travel within the IFNM would be restricted to certain roads and trails, and very few, if any, additional routes would be developed. However, UDI and drug smugglers passing through IFNM have contributed to the proliferation of new roads and trails. BLM has rehabilitated more than 10 miles of new roads in which the creation of the road was attributed to UDI and drug smuggler traffic. Observations of numerous vehicle intrusions into washes and other areas that have been made during management activities within IFNM would indicate that this is only a fraction of the roads established by UDI and drug smuggler traffic. BLM also has documented the creation of more than 35 miles of new foot trails that were attributed to UDI and drug smuggler traffic. In certain circumstances, such as search and rescue operations for UDIs and apprehension efforts to protect public safety, law enforcement agencies also may travel off established roads. The cross-country travel done by UDIs and law enforcement agencies should not be interpreted as an opportunity for new access within the IFNM, as public use of these cross-country paths will not be allowed. UDI traffic into the United States has recently decreased substantially, which may allow for some natural restoration of scarred areas if the trend continues.

While there could be increased concentrations of vehicles within the IFNM from population growth and recreational demand in the area, the cumulative increase in vehicle use would be expected to be minimal compared to the increase that would result from the travel management restrictions imposed under each alternative. That is, restricting the miles of roads open for motorized travel would be expected to increase vehicle concentrations more in the IFNM than the increased regional access and population growth.

#### **4.7.2.15 Social and Economic Conditions**

Trends such as population growth, increasing non-labor income, and the increasing importance of open space and preserved land to the regional economy (as evidenced by the number of conservation plans and HCPs developed) are largely independent of the alternatives, but have potential for additive or interactive effects with them. Cumulative impacts are evaluated in terms of the affected communities' capacity for change, which is interactive with the diversity of the economy and opportunities elsewhere locally and regionally. As statewide and local economies shift towards the services sector and non-labor sources of income, BLM-administered lands take on a greater role in community economic development because

they provide recreational opportunities and land/open space preservation to some extent. The increasing role of BLM-administered lands for recreation is covered above under Section 4.2.12.

Because of the small magnitude of the socioeconomic impact of BLM's proposed actions relative to the increasing development trends in Pima and Pinal Counties, the alternatives are unlikely to impact tax revenues, employment, population growth, and development of the area overall; however, the existence of the IFNM may cause long-term increases in property values for adjacent landowners. In addition, if BLM acquired non-Federal land within the IFNM boundaries over time, there could be increases in the PILT payments and a loss of property taxes to the respective jurisdictions.

#### **4.7.2.16 Public Safety**

In the past and at present the BLM does not limit an individual's ability to carry a firearm within the IFNM. Under the current conditions (No Action Alternative A), recreational shooting is allowed within the monument outside of developed areas in accordance with 43 CFR 8365. However, under Alternatives B and C, the use and discharge of firearms would be prohibited, except for permitted or authorized hunting activities conducted in accordance with AGFD hunting regulations. This would not preclude individuals and public safety officers from carrying firearms. Public safety is a concern, with target shooting in the IFNM occurring more frequently and closer to populated areas because these areas have become more accessible. While there have been no reports of injury or death resulting from target shooting in the IFNM, as populations grow closer to the monument and as visitation increases, this may present a greater concern.

BLM acknowledges that not all recreational shooters contribute to the litter problem in the IFNM, but that the issues of trash and shooting are often interrelated and have accumulated to a serious public safety concern. BLM has rules prohibiting littering (43 CFR 8360 and 8365.1(1)). Furthermore, in accordance with 43 CFR 8365.1-4(a)(2), "No person shall ... create a risk to other persons on public lands by engaging in activities which include ... creating a hazard or nuisance." Shooting items that are not intended to be used as targets, including glass bottles, paint containers, appliances, vehicles, computer monitors, televisions, propane tanks, gas cans, aerosol cans, and furniture creates several hazards, including potential bullet ricochets, broken glass, and release of hazardous substances into the ground and air. Jagged metal, splintered wood, and broken glass are dangerous hazards to BLM employees and volunteers engaged in cleaning these dumping and shooting sites. Shooting these items turns one large piece of trash into many smaller pieces of trash that are more easily spread over a larger area, making cleanup a considerably more difficult task and increasing the safety risk to wildlife and permitted livestock. Shooting natural objects and vegetation is a violation of 43CFR 8365.1-5(a)(1) and (2).

Litter problems are exacerbated by recreationists who do not use provided trash receptacles or carry out trash and by undocumented immigrants who often travel through more remote areas and leave behind dirty diapers, water bottles, and other litter. Public lands also may be subject to wildcat dumping because the lands are vast and remote enough that the illegal dumping may not be observed by law enforcement officers. Wildcat dumping may potentially become a greater problem with the increasing urban population on land near the monument.

The BLM will continue its ongoing program of identifying and remediating hazardous mine sites. This program includes lands within the IFNM. The first step in this program is to identify and post physical hazards such as open shafts and pits. The BLM prioritizes the remediation of hazardous mine sites based on a relative risk ranking; mine sites with higher risks are addressed first. Risk factors include physical hazards such as open shafts and pits as well as chemical exposure factors such as the presence of hazardous materials. Risks to human health and the environment are considered in the prioritization of sites.

BLM has coordinates with agencies such as the U.S. Border Patrol, AGFD, Pima County Sheriff's Department, and Tohono O'odham Community for law enforcement and resource management in the IFNM, which includes illegal immigration. No management decisions are made in the plan related to illegal activities (including immigration) and associated law enforcement activities; however, there are public safety concerns about human and drug smugglers who use the IFNM to enter the United States. As a potential countervailing effect, the U.S. Border Patrol has recommended placement of rescue beacons within the IFNM boundaries. These rescue beacons, if installed, may be used by persons feeling threatened by smugglers as well as by persons who are lost or in need of medical attention.

#### **4.8 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

Section 102(2)(C) of NEPA requires discussion of any irreversible or irretrievable commitments of resources that would be involved in the plan if it were implemented. An irretrievable commitment of a resource is one in which the resource or its use is lost for a period of time. An irreversible commitment of a resource is one that cannot be reversed.

Implementation of the any of the management plan alternatives would not result in impacts that could be characterized as irreversible and irretrievable commitments as the RMP would provide objectives for resource management and guidance for future activity and implementation-level decisions that minimize the potential for irreversible and irretrievable impacts. Some localized disruption to resources might occur, but could be mitigated, as appropriate.

#### **4.9 UNAVOIDABLE ADVERSE IMPACTS**

Section 102(C) of NEPA requires disclosure of any adverse environmental effects that cannot be avoided if the any of the management plan alternatives were implemented. Unavoidable adverse impacts are those that remain following implementation of mitigation measures or impacts for which there are no mitigation measures. Some unavoidable adverse impacts would occur as a result of increased visitation and recreational use of the IFNM, in addition to surface disturbance. The alternatives were developed to respond to these impacts and to be protective of the resources while allowing land use to be as diverse as possible; however, some localized unavoidable adverse impacts could occur.

#### **4.10 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES AND LONG-TERM PRODUCTIVITY**

Section 102(C) of the National Environmental Policy Act requires discussion of the relationship between local, short-term uses of the human environment and maintenance and enhancement of long-term productivity of resources. "Short-term" is defined as expected to occur within 1 to 5 years of implementation of the plan. "Long-term" is defined as after the first 5 years of implementation but within the life of the RMP.

Any of the alternatives would result in various short-term effects, such as decreases in visual resource quality and recreational opportunities. The long-term productivity of resources within the IFNM would not be diminished, however, because these short-term uses would be minimized by management actions to effect the opposite change over the long term. (Refer to Section 2.3.5.)