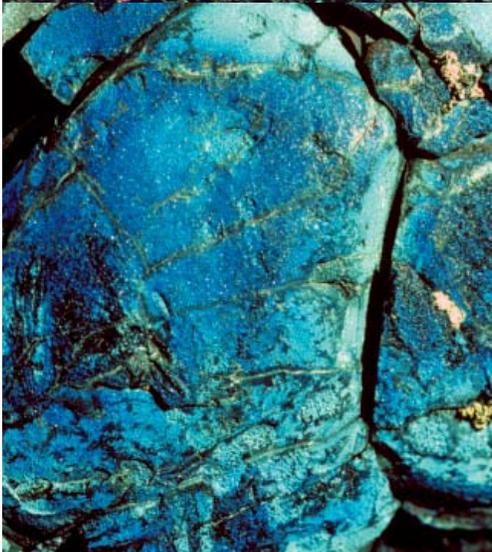


# Chapter 4

## Environmental Consequences



**Previous page, clockwise, from top left**  
**Cinder garden**  
**Lava tube**  
**Devil's Orchard walk**  
**Blue dragon lava**

# CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

## INTRODUCTION

This chapter describes the environmental consequences of implementing any of the four planning alternatives previously described. Each program or management action that could impact resources or resource uses has been analyzed, and the conclusions of those analyses are described by resource topic below. Where data are limited, professional judgment has been used to project environmental impacts. Professional judgment was based, in part, on observation, analysis of conditions, and responses in similar areas.

## ANALYSIS ASSUMPTIONS AND GUIDELINES

This document assesses the management actions proposed for implementing the proclamation and legislation creating the Craters of the Moon National Monument and Preserve (the Monument). The analysis is bounded by decisions identified in the proclamation or legislation and does not include alternatives to these decisions. These decisions are as follows:

- Land area included in or excluded from the Monument, Preserve, Wilderness Area, or Wilderness Study Areas (WSAs).
- Uses restricted or limited by the proclamations, legislation, federal regulations, or agency policy.
- Providing ongoing reasonable access to state and private land or interests.
- Continued grazing where currently permitted on BLM-administered lands.
- Regulation of hunting, fishing, and trapping by the State of Idaho, except that the Secretary of the Interior, in consultation with the state, may take certain steps to regulate hunting in the National Preserve for reasons such as public safety and protection of resources.

The following assumptions and guidelines were

used to guide and direct the analysis of environmental consequences:

- The alternatives would be implemented substantially, including “Management Guidance Common to All Alternatives.”
- The Bureau of Land Management (BLM) and National Park Service (NPS) would have sufficient funding and personnel to implement any one of the alternatives.
- The planning period for the analysis is the next 15 to 20 years.
- The planning area for the analysis of impacts for each alternative is the area including the BLM and NPS lands included in Proclamation 7373 (see Figure 2). The area of analysis for cumulative impacts is described separately for each resource type.
- Specific actions to protect human life would be taken regardless of the management criteria in the plan alternatives.
- Livestock use on the BLM-managed portion of the Monument would continue to be governed by applicable laws and regulations, including Standards of Rangeland Health and Guidelines for Livestock Grazing Management, across all alternatives.
- Motorized and mechanized cross-country travel is prohibited.
- Recreational use of the planning area will continue to be similar to use in the past.
- Appendix B contains a list of the planning criteria used to develop the alternatives, including regulations and policies that can limit the range of actions.

## INCOMPLETE OR UNAVAILABLE INFORMATION

As mandated by 43 Code of Federal Regulations (CFR) 1502.22, agencies evaluating reasonably foreseeable significant adverse effects of the human

environment in an EIS must identify incomplete or unavailable information, if that information is essential to a reasoned choice among alternatives. This Proposed Plan/FEIS is based on the best available data for each resource. However, data for many resource areas are limited. For the resources listed below, information was incomplete or unavailable.

**Cultural Resources:** Most of the planning area has not been surveyed for cultural resources. Estimates of the number, type, and significance of archaeological and historic sites were based on cultural resource inventories for approximately 5 percent of the planning area.

**Paleontological Resources:** Most of the planning area has not been surveyed for paleontological resources.

**Cave Resources:** Complete data are not available for cave resources, including location.

**Vegetation:** Complete data are not available for vegetation composition and condition.

**Wildlife:** Complete data are not available for wildlife species occurrence, habitat use, or habitat condition.

**Water Quality:** Detailed water quality data are available for Little Cottonwood Creek and Leech Creek. Limited data are available for most springs, playas, and reservoirs in the Monument.

**Noxious Weeds:** Most of the Monument has not been completely surveyed for noxious weeds.

**Visitor Use Data:** Data about visitor use are available for the original Monument, but such information for the remaining area is limited.

## TYPES OF IMPACTS

Effects (impacts) can be beneficial or adverse, direct or indirect, or cumulative. Beneficial effects are those that involve a positive change in the condition or appearance of a resource or a change that moves the resource toward a desired condition. Adverse

impacts involve a change that moves the resource away from a desired condition or detract from its appearance or condition. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later or farther away but are still reasonably foreseeable. Cumulative effects are the impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time.

Impacts are also described as to their context, intensity, and duration. Context generally refers to the geographic extent of impact (e.g., localized or widespread). Impact intensity is the magnitude or degree to which a resource would be beneficially or adversely affected. The criteria that were used to rate the intensity of the impacts for each resource topic are presented later in this section under each topic heading. Impact duration refers to how long an impact would last. For the purposes of this Proposed Plan/FEIS, the planning team used the following terms to describe the duration of the impacts (unless otherwise stated for any particular resource area).

**Short-term:** Impacts that would occur within 5 years, often during construction and recovery.

**Long-term:** Impacts that would occur beyond 5 years, often from operations.

Cumulative impacts are described at the end of the analysis for each resource by alternative. The period of potential cumulative impact is defined as the life of the plan.

## PROJECTS THAT MAKE UP THE CUMULATIVE IMPACT SCENARIO

To determine potential cumulative impacts, projects



in the area surrounding the Monument were identified. The area of primary concern is composed of the five Idaho counties in which the Monument is located: Blaine, Butte, Lincoln, Minidoka, and Power Counties. Projects outside this five-county area, however, are also considered if they have the potential to affect resources with broad regional importance. Projects included in this analysis were identified by examining other existing plans and by telephone calls to local governments and to state and federal land managers. Projects identified for the purposes of cumulative impact analyses are past actions, plans or actions that are currently being implemented, and reasonably foreseeable future plans or actions. These projects were considered regardless of what agency, organization, or person undertakes them. Projects included in the cumulative impact analysis do not affect all resources equally.

Cumulative impact analyses are presented in this document by resource topic. The projects that make up the cumulative impact scenario were analyzed in conjunction with the impacts of each alternative to determine if they would have any additive or interactive effects on a particular resource.

**The Interior Columbia Basin Ecosystem Management Project.** The ICBEMP has coordinated an extensive study of the Interior Columbia Basin. This study has determined that the sagebrush steppe ecosystem is at risk due to several past and existing impacts. These include grazing, road construction, human development, and disturbance-related invasions of exotic plant species. These disturbances will likely continue to contribute cumulatively to the impacts on vegetation communities in southern Idaho.

To address these risks to key ecosystem components, the BLM entered into a 2003 Memorandum of Understanding (MOU) to implement the ICBEMP. The implementation strategy includes direction to federal agencies to update or develop land use plans to provide direction to address the following:

- Maintain and promote a healthy, productive, and diverse ecosystem and restore, through

a system of prioritization, areas that are degraded.

- Develop an integrated mix of restoration activities to provide for re-patterning succession and disturbance regimes and achievement of sustainable landscape conditions, thereby contributing to the reduction of events such as uncharacteristically large and severe wildland fires.
- Restore natural disturbance patterns in watersheds and hydrologic process to help restore and maintain riparian, aquatic, and wetland habitat.
- Develop integrated weed management strategies.
- Develop a coordinated multiscale and interagency approach to planning and decision-making.

**Idaho Statewide Implementation Strategy for the National Fire Plan.** The Idaho Department of Lands (IDL), in conjunction with the BLM and other federal agencies, signed the Idaho Statewide Implementation Strategy for the National Fire Plan. The implementation plan focuses on fire prevention and suppression, hazardous fuels reduction, restoration of fire-adapted ecosystems, and the promotion of community assistance in fire management (IDL 2002).

During 2002, IDL, in cooperation with federal agencies, disbursed \$1.9 million to wildland-urban interface projects and development of defensible space. Additional money was used for hazardous fuels reduction programs for several communities. The development of risk assessments and mitigation plans would allow counties and communities in the district to determine their current fire hazard risk and to develop effective mitigation to minimize wildland-urban risks to persons and property. In addition, implementing community-based fuels reduction programs gives private landowners opportunities to work with public land management agencies to manage the wildland-urban interface.

**National Forest Plan Revisions.** In July 2003,

the Southwest Idaho Ecogroup, composed of the Sawtooth, Boise, and Payette National Forests, completed their revised Land Management Plans and the accompanying EIS. These Forest Plans set the course for future management of publicly owned lands within the National Forest System. Although they do not make site-specific decisions, the plans supply a path for all individual projects to follow.

The revised forest management direction responds to new initiatives such as the National Fire Plan and Healthy Forest Initiative and to concerns about listed species, habitat restoration, and commodity production. The revised Forest Plans differ from the original plans in that they emphasize restoring or maintaining vegetation and watershed conditions and focus on the condition of the forests rather than what they can produce.

More specifically, the Revised Sawtooth National Forest Plan affords direction for a strongly integrated noxious weed management program across the forest, in cooperation with other federal, state, and local agencies. The plan supports fire prevention and suppression and gives direction to reduce hazardous fuels, emphasizing actions in wildland-urban interface areas.

**Livestock Grazing.** Forty grazing allotments extend into the Monument. Much of the surrounding BLM and state lands has been and will continue to be grazed.

**Weed Management.** Cooperative weed management activities exist among the counties, private landowners, and government agencies.

**Irrigated Agriculture.** Substantial portions of the privately owned lands adjacent to the Monument are irrigated for agricultural production. Irrigated lands directly adjoin the Monument in three primary areas: east of the Wapi Lava Field, in the vicinity of the town of Carey near the west end of the Monument, and north of the Monument near the town of Arco.

**Arco-Minidoka Road.** In its comprehensive plan, Blaine County stipulates that the part of the Arco-

Minidoka Road within its jurisdiction will continue to be maintained at its current level. Furthermore, the Blaine County Commissioners have specifically stated that this part of the road will be maintained in its current condition.

**Shoshone Field Office Land Tenure Adjustment.**

In June 2002, the BLM prepared an Environmental Assessment (EA) for the Draft Amendments to Shoshone Field Office Land Use Plans for Land Tenure Adjustment and Areas of Critical Environmental Concern. These land tenure adjustments sought to facilitate a watershed approach to natural resource management, in order to improve efficiencies in the management of public lands. Under these amendments, the BLM sought to acquire high resource value lands made available by willing landowners. Acquisition priorities are established to reconnect habitats within priority watersheds. With these amendments, the BLM also proposed three previously nominated areas for designation as Areas of Critical Environmental Concern (ACECs). These areas — King Hill Creek, McKinney Butte, and Tee-Maze — support scenic values, wildlife or fish resources, and values associated with natural systems or processes. These plan amendments have been approved, and the three ACECs have been designated.

**Fire Management Direction Amendments.** Idaho BLM is proposing to amend 12 existing land use plans with direction to manage fire, fuels, and related vegetation. The area, which includes the Monument, is composed of public lands managed by the Burley, Shoshone, Upper Snake River, and Pocatello field offices, which are now part of the Twin Falls and Idaho Falls districts. The proposed land use plan amendments would form the foundation for district fire management plans and normal fire rehabilitation plans, and it would provide guidance for fuels treatments and vegetation management. Amending the land use plans would promote a more effective and economical approach to improving the health of public lands.

**Pocatello Resource Management Plan Revisions.**

The BLM is revising the Pocatello Resource



Management Plan (1988) and the Malad Management Framework Plan (1981). These revisions will incorporate the fire, fuels, and related vegetation management direction resulting from the Fire Management Direction Amendment (above). It is likely that the land-use plan revisions would result in more aggressive treatment of noxious weeds (including cheatgrass and medusahead), with associated positive effects on low- and mid-elevation shrub communities.

**South Central Idaho Visitor Center.** It has been proposed that an expanded, multi-agency regional visitor center be developed along Interstate 84 near Twin Falls.

**Little Wood River Irrigation District.** The Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture (USDA) has announced its intention to prepare an EIS for the Little Wood River Irrigation District Gravity Pressurized Irrigation Delivery System. The objectives of this project, which is in Blaine County, are to save water and energy, promote public safety, and generate energy. The project, which includes a hydroelectric generating facility, would convert the open canal irrigation delivery system to a closed gravity pressurized delivery system. The alternatives under consideration to reach these objectives are No Action, Concrete-Lined Canals, Gravity Pressurized Irrigation Delivery System, and Gravity Pressurized Irrigation Delivery System with Hydroelectric Generation.

**U.S. Highway 93 (US 93) Realignment.** The Idaho Transportation Department (ITD) plans to realign and upgrade the part of US 93 that passes through and along the boundary of the Monument.

**Idaho Standards and Guidelines for Livestock Grazing Management.** The BLM will continue to assess all livestock use allotments in Idaho with the use of the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management. These standards are designed to provide resource measures and guidance needed to ensure healthy, functional rangelands. Livestock use allotments are

evaluated to determine if standards and guidelines are being met or if significant progress toward meeting them is being achieved. If standards are not being met, the BLM is required to make changes that would help achieve these standards in the future.

**Minidoka Internment National Monument.** Minidoka Internment National Monument was established as the 385th unit of the National Park System on January 17, 2001. The Monument commemorates the hardships and sacrifices of the 120,000 people of Japanese ancestry, most of them American citizens, who were interned by the government during World War II. The 73-acre Monument, which is in Jerome County about 20 miles northeast of Twin Falls, preserves building foundations and remnant features such as the entry guard station and rock garden from the original camp. The National Park Service is in the process of developing a General Management Plan (GMP) to guide the management of the new Monument over the next 15 years. Although this management direction has not been established yet, it is anticipated the new Monument will draw increasing numbers of visitors to the area.

**Lost River Off-Highway Vehicle Management Demonstration Project.** The Idaho Department of Parks and Recreation (IDPR) has proposed a 475-mile loop ATV trail on both sides of US 93 in the Lost River Valley. The trail, which would follow existing Forest Service, BLM, and county roads, would connect the communities of Challis, Mackey, and Arco. No new road construction is proposed. As part of the proposal, IDPR is seeking exemptions from licensing requirements for off-highway vehicle (OHV) travel on the county roads and for crossing of US 93. The project is envisioned as a cooperative effort between IDPR, Salmon-Challis National Forest, BLM, and the Idaho Department of Fish and Game (IDFG). IDPR is interested in designating the route (with signs and maps) to provide a legitimate route for legal use of OHVs. In addition, the trail is seen as a way to increase tourism to the area, benefiting the local economy.

## IMPAIRMENT OF RESOURCES

In addition to determining the environmental consequences of the alternatives, NPS policy (USDI NPS 2001) requires that potential effects be analyzed to determine whether or not proposed actions would impair the resources or values of the Monument.

The fundamental purpose of the National Park System, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve resources and values. NPS managers always must seek ways to avoid or minimize adverse impacts on the resources and values to the greatest degree practicable. However, the laws do give the NPS the management discretion to allow impacts on the resources and values when necessary and appropriate to fulfill the purposes of a unit, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the NPS this management discretion, that discretion is limited by the statutory requirement that the NPS must leave the resources and values unimpaired unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible manager, would harm the integrity of the resources and values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact on any resource or value may constitute impairment. An impact would be most likely to constitute an impairment if it affected a resource or value whose conservation would be (a) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Monument, (b) key to the natural or cultural integrity of the unit or to opportunities to enjoy it, or (c) identified as a goal in the general management plan or other relevant NPS planning documents. Impairment might result from NPS activities in managing a unit (in this case, the Monument), visitor activities, or activities undertaken by concessionary, contractors, and others operating in the Monument. In this chapter, a determination about impairment

is made in the conclusion section for each natural resource and cultural resource impact topic.

## NATURAL RESOURCES

### GEOLOGIC RESOURCES

#### METHODOLOGY AND ASSUMPTIONS

Information used in this assessment of effects on geologic resources was obtained from relevant literature, geologic maps, and consultation with other geologists, as well as from interdisciplinary team meetings, field trips, and site visits. Impacts were identified with the use of best professional judgment and were assessed according to the impact intensity criteria listed below.

#### Geologic Features

**Negligible:** Impacts on geologic features would not be detectable through standard observation.

**Minor:** Actions could result in a change to a geologic feature or natural physical resource, but the change would be local or small; that is, the total volume of disturbance would be nearly indiscernible. Monitoring probably would detect changes or loss of the features, and the loss of associated contextual information would be minimal.

**Moderate:** Actions would result in a measurable change to a geologic feature or natural physical resource that would be of consequence. The total volume of disturbance could still be small, but quite noticeable in a local area, or it would involve a unique or rare feature. Monitoring would identify most affected geologic features, but some features or associated contextual information would be lost.

**Major:** Actions would result in a dramatic change to a geologic feature or natural physical resource. The change would



be measurable, and the amount of disturbance would be large. Even with monitoring, many features would be significantly altered, or associated contextual information likely lost.

### **Geologic Processes**

The following impact thresholds are based on the frequency and magnitude of changes to geologic processes in comparison to the natural range of variability (NRV).

- Negligible:** The effects on geologic processes would not be detectable based on standard scientific methodologies. Actions would result in frequencies and magnitudes of disruption that would be well within the NRV.
- Minor:** Effects would be detectable. Frequencies and magnitudes of disruption would be expected to remain within the NRV.
- Moderate:** Impacts would be detectable. The frequencies and magnitudes of disruption would be outside the NRV for short periods of time but would return to the NRV.
- Major:** Impacts would be detectable. The frequencies and magnitudes of disruption would be outside the NRV for short to long periods of time or even permanent. Disruptions within the NRV may be long-term. Disruptions of key geologic processes or ecosystems might be long term or permanent.

Because almost all of the Eastern Snake River Plain (ESRP) is covered by basaltic volcanism, the area of analysis for cumulative impacts on geologic resources was defined as the ESRP.

## **IMPACTS FROM ALTERNATIVE A**

### **Analysis**

Roads and trails provide access to geologic features.

Experience in the original NPS Monument for more than 75 years has shown that damage, theft, and vandalism are usually concentrated near roads and trails. Such impacts would occur under Alternative A, in which roads and trails would continue to be maintained per current standards.

Geologic resources would be subject to removal (theft), destruction, vandalism, graffiti, and trash. Resources affected could include lava flows, lava tubes, spatter cones, and cinder cones, as well as smaller scale features such as squeeze-ups, lava ropes, glassy crusts, and volcanic bombs. Vandalism already has caused moderate to major impacts to some caves near roads. For example, Lariat Cave has graffiti and large numbers of spent fireworks and other trash. Under Alternative A, such impacts would be site-specific, ranging broadly in intensity, depending on the attraction and ease of access to the geologic feature. Consequently, these actions would result in site-specific, long-term, and negligible to potentially major adverse impacts on individual features.

Experience has shown that foot traffic affects geologic processes such as downslope movement of unconsolidated or poorly consolidated material on cinder cones, spatter cones, hornitos, and spatter ramparts. Foot traffic also causes compaction and the formation of social trails. Comparisons of Robert Limbert photographs from the early 1900s with the present day view suggests that the spatter cones in the developed part of the original NPS Monument have lost at least 2 feet in elevation because of human disturbance (Clark 2003). This is deemed a direct long-term, major impact at these locations. Effects on geologic processes would be expected to occur under Alternative A. These site-specific, short- to long-term adverse impacts would range from negligible to potentially major.

Unpaved roads and parking lots are more vulnerable to eolian processes (wind erosion, transport, and deposition) than surrounding areas anchored by vegetation. Alternative A has 585 miles of Class B, C, and D roads inside the Monument that would be subject to eolian processes. Dust could coat geologic

formations, infiltrate into cinders, and be deposited in or fill cracks. In comparison to the aftermath of fire, these impacts would fall within the range of normal variability and therefore would cause a negligible impact on geologic processes.

The removal of vegetative cover by fire accelerates eolian processes. Erosion, transport, and deposition of sediment can be site-specific to regional in context, depending on the acreage burned. Fire, either natural or human-caused, can affect eolian processes for two or more years. Because fires can be a natural process, the effects of fire then fall within the natural range of variability. Under Alternative A, all fires except those in designated Wilderness would be suppressed, thereby limiting the area affected by fire. However, suppression involves the use of heavy equipment and the construction of fire lines, which would affect geological features locally. The acceleration of eolian processes by fire would result in a negligible adverse impact on geologic processes, but fire suppression activities could cause limited direct minor to moderate adverse impacts.

Grazing can also affect geological resources. Fencing is often lacking where young lava flows form the boundaries of Monument grazing allotments. However, experience indicates that because of limited forage and lack of water, livestock do not frequently wander onto young lava flows or features adjacent to grazing allotments. In addition, livestock may occasionally stray onto young lava flows or features during trailing, especially where the trail corridor is narrow. Under Alternative A, direct effects on lava features would be site-specific, adverse, long-term, and range from negligible to minor. Trailing livestock would also affect eolian processes (wind erosion, transport, and deposition), but in comparison to fire, such effects would fall within the range of natural variability. Therefore, the trailing of livestock would result in negligible long-term effects on geologic processes.

Removing cinders from materials sites in the Monument for road construction and maintenance would directly affect the geologic features from which they would be removed. Extraction would be

site-specific and could result in minor to moderate adverse impacts in the short term. With long-term use of a material site (i.e., more than 50 years), the total loss of the feature (e.g., a small cinder cone) could result, constituting a potential site-specific major adverse impact. However, under all alternatives, new material sites would be limited to those required for administrative purposes only, and any closed sites would be reclaimed. This would result in a long-term indirect negligible beneficial effect on the Monument's geological features.

Sagebrush steppe restoration activities would be conducted on the older soil dominated areas of the Monument and not on the exposed lava. With the exception of occasional and very limited deposition of dust during high winds, restoration activities would cause minimal impact on geologic resources.

### **Cumulative Impacts**

There are no known past or future projects outside the Monument that would affect geologic resources in the Monument. However, over the life of the plan, Southern Idaho's population could increase substantially. A visitor center also may be built in the future in the Twin Falls area, which could increase visitation and consequently increase the likelihood of impacts on geologic features in the Monument. The effects, which would be site-specific or even feature-specific, could cover a broad range from negligible to potentially major adverse impacts.

The effect of the Monument expansion on the geology of the ESRP would be beneficial and would vary little by alternative. Monument expansion has withdrawn approximately 1,100 square miles or 750,000 acres of the area surrounding the Great Rift from extractive operations (with the exception of existing authorized materials sites in the Monument). Mechanized travel in the Monument is limited to roads. Outside the Monument, rock collecting and other extractive operations are permitted and travel is not as restricted; this is not expected to change. Further, as population grows, the demand for aggregate, landscape rock, etc., is likely to increase, leading to more and more loss of ESRP geologic resources outside of the Monument.



In contrast, almost all of the Great Rift, which is the best-developed example of a volcanic rift zone on the ESRP, lies in the Monument. In addition, of the eight geologically young lava fields found on the ESRP, the Monument encompasses the three youngest and therefore the least altered by natural processes, making them the best for observing geologic features. The Monument now includes almost all of the Craters of the Moon Lava Field, the largest young basaltic lava field in the lower 48 states.

Monument designation has resulted in a long-term major cumulative beneficial effect not only by protecting and preserving a sizeable chunk of the ESRP geology for future generations to enjoy, but also by preserving and protecting the best geologic examples. Therefore, this action, added to the negligible to potentially major adverse impacts associated with specific uses and locations in the Monument and the surrounding lands in the ESRP, would result in an overall long-term moderate beneficial effect on geological resources in the ESRP region.

### **Conclusion**

Under Alternative A, geological resources would be affected by continued visitor access via roads and trails, as well as by wind erosion, fire, fire suppression, and grazing. These effects would be mainly direct and both short- and long-term in nature, ranging from negligible to potentially major levels. Indirect impacts would result from the deposition of dust and soils on geological features over time. The limitation on new mineral extraction sites would result in indirect long-term negligible beneficial effects on geological resources.

Although an individual geologic feature could suffer a major impact, in context of the entire Monument's geologic features/resources, the impacts would be quite localized (that is, the effect would cover only a small part of the entire Monument's land area or an individual type of geologic feature, of which there may be many).

Because there would be no major adverse impacts on a resource or value whose conservation is (1)

necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's geologic resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

Under Alternative B, improved roads and trails would result in greater access, development, and visitation than would occur under Alternative A. Adverse impacts such as direct damage to or removal of features caused by these changes would also be greater. Intensities, which would be site-specific (e.g., a lava tube near a road or trail) or feature-specific (e.g., a hornito) and cover the same broad range of negligible to potentially major adverse impacts, would have a greater likelihood of more severe impacts from increased visitation and access. Areas of specific concern in Alternative B would include the following:

- South Grotto already has been moderately affected under existing and past management; there are several obvious social trails that mar the landform. The increased access under Alternative B could exacerbate this degradation, resulting in a long-term, potentially major adverse impact on the spatter cone or spatter rampart feature. Squeeze-ups present in Kings Bowl Lava Field are vulnerable to collection because of their small size. Increased ease of access and higher visitation under Alternative B could increase this vulnerability, representing a direct moderate to potentially major adverse impact over time.
- The shelly pahoehoe surrounding the Pillar Butte area of the Wapi Lava Field is extremely vulnerable to damage from foot traffic. Improved access into the Wapi Park area could increase visitation and resultant impacts on the shelly pahoehoe. Without estimates of how much visitation would increase, it is

not possible to predict the exact intensity of such impacts, but moderate to possibly major impacts could occur because of the feature's vulnerability to breaking under the weight of a hiker.

- Road improvements would be likely to facilitate increased visitation to caves that are shown on maps to be close to the improved roads. This could lead to in direct and indirect minor to potentially major long-term adverse impacts on the caves due to damage, vandalism, speleothem collection, and poor caving practices.

As mentioned under Alternative A, unpaved roads and parking lots are more vulnerable to eolian processes than surrounding areas anchored by vegetation. Alternative B has 575 miles of Class B, C, and D roads inside the Monument that would be subject to eolian processes. Increased motorized traffic under Alternative B would exacerbate sediment erosion, transport, and, ultimately, deposition. In comparison to the aftermath of fire, these impacts would fall within the range of normal variability and therefore would result in a negligible effect on geologic processes.

As with Alternative A, accelerated erosion, transport, and deposition of sediment would result from the removal of vegetative cover by fire. Alternative B would include a greater potential for human-caused fire associated with improved access or more widespread visitation and a greater potential for suppression activities involving heavy equipment and fire line construction. The acceleration of eolian processes by fire and the potential direct damage to features caused by suppression activities would result in a negligible to moderate direct adverse impact on geologic resources.

Livestock use would be managed the same under all the alternatives. However, the area in the Passage Zone would be larger in Alternative B. This could lead to more livestock developments, which could cause impacts to nearby geologic features through deposition of dust or direct damage. The resulting

adverse impacts would be negligible to minor and long-term.

Short-term effects on materials sites would be the same as those of Alternative A: adverse impacts would be minor to moderate and site-specific. However, the possibility of maintaining more roads to a higher standard in Alternative B could accelerate long-term effects at individual sites, constituting a potentially major site-specific adverse impact. As with Alternative A, the limits on new mineral sites would result in long-term negligible beneficial effects on geological resources.

Alternative B would involve the use of more informational, interpretive, and educational materials. These could increase public understanding and appreciation of geologic resources, leading indirectly to their protection. This could be a long-term minor to moderate beneficial effect on geologic resources throughout the ESRP.

Developing visitor use facilities would attract more people to the Kings Bowl area. This additional visitation could result in more vandalism and unauthorized collection of geologic features and the development of social trails. Long-term direct and indirect adverse impacts on geologic resources would range from minor to potentially major, depending on site-specific conditions and accessibility. However, the informational and educational emphasis might help to mitigate these impacts, keeping impact levels to less than major in most cases.

Designating primitive campsites in the Passage Zone under Alternative B could cause direct, site-specific long-term, minor adverse impacts on geologic resources from construction or clearing. Encouraging more people to stay in the Monument overnight could cause site-specific long-term minor to moderate adverse impacts on geologic resources from theft and vandalism.

### **Cumulative Impacts**

The cumulative impacts on geologic resources from Alternative B would be similar to those described for Alternative A. Although Alternative B would involve more visitor access compared to the No



Action Alternative, the related increased effects would not be substantially different. Therefore, the overall cumulative effects, considering all ESRP related actions and the protection provided by the Monument designation, would be long-term, moderate and beneficial.

### **Conclusion**

Alternative B would have the most improved road access and the greatest number of improved roads and additional trail designations, which would result in the largest increase in visitation and/or access of all the alternatives. As a consequence, Alternative B could result in a slightly greater loss of geologic features or structures and a higher rate of degradation of geologic resources or damage from vandalism. Adverse impacts from increased access would range from negligible to potentially major, with specific concerns about direct major damage to features in the Kings Bowl and Wapi Lava Field areas. Increased fire suppression and continued grazing could result in minor to moderate adverse impacts, and small beneficial effects would result from the limits on new mineral extraction areas.

Although an individual geologic feature could suffer a major impact, in context of the entire Monument's geologic features/resources, the impacts would be quite localized (that is, the effect would cover only a small part of the entire Monument's land area or an individual type of geologic feature, of which there may be many).

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's geologic resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

Of all the alternatives, Alternative C would have the

largest area of Pristine Zone, the fewest improved roads, and the greatest chance of road closures for resource protection. Therefore, it would result in slightly fewer adverse impacts on geologic resources than Alternative A. Impacts still could be caused by damage, vandalism, or theft. They would be site-specific or feature-specific and could range from negligible to potentially major. However, less access in this alternative would reduce the potential for major impacts.

There would be fewer impacts from eolian processes under Alternative C because this alternative would include fewer Class B, C, and D roads (532 total miles of B, C, and D roads inside the Monument). Impacts on geologic processes from wind erosion, transport, and deposition would be negligible and adverse.

The potential for human-caused fire would be less because of reduced access and presumably fewer visitations than in Alternative A. If fire occurred, wildland fire would occur in the Pristine Zone, which would minimize the amount of heavy equipment, fire line construction for suppression, and less damage overall related to fire. Overall, the adverse impacts on geologic resources from fire would be negligible.

Because grazing would not be managed any differently under this alternative, the same negligible to minor adverse impacts as described for Alternative A would result from the trampling of features and the development of trails.

The effects on materials sites under Alternative C would be the same as those of Alternative A: minor to moderate site-specific adverse impacts in the short term, with long-term negligible beneficial effects. However, because of fewer miles of roads and less maintenance of roads in Alternative C, there would be fewer long-term adverse impacts at individual sites; they would be only moderate because less material would be needed for road maintenance.

### **Cumulative Impacts**

The cumulative impacts on geologic resources from

Alternative C would be similar to those described for the No Action Alternative, but in Alternative C, limited access would slightly decrease the potential for major impacts compared to the No Action Alternative. Therefore, the overall cumulative effects from Alternative C (considering all ESRP related actions and the protection afforded by the Monument designation) would be long-term, moderate, and beneficial.

### **Conclusion**

Alternative C would have the largest area of Pristine Zone, which would afford the most natural protection to geologic features through difficult or remote, foot-only access. The closure of non-essential roads and limited access would lead to the smallest amount of dust-related impacts. Impacts from visitor damage, theft, or vandalism would range from negligible to potentially major locally, but the probability of major impacts would be lower because of decreased visitor access. Negligible to minor adverse impacts from fire and grazing would continue, and there would be slight beneficial effects from limits on new mineral extraction sites. Overall, Alternative C would cause the fewest adverse impacts on geologic resources of all the alternatives.

Although an individual geologic feature could suffer a major impact, in context of the entire Monument's geologic features/resources, the impacts would be quite localized (that is, the effect would cover only a small part of the entire Monument's land area or an individual type of geologic feature, of which there may be many).

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's geologic resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

Under Alternative D (Proposed Plan), roads would be maintained as needed to enable access for restoration and fire management activities. Visitors could continue to use these roads, as in Alternative A, and impacts from damage, theft, and vandalism near roads and trails would be likely to be similar to those of Alternative A. Some modifications were made to Alternative D as presented in this FEIS to reduce Passage Zone in the Laidlaw Park area and to change some zoning along the edges of lava flows from Primitive to Pristine Zone. These changes would help limit access in those areas, thus reducing the potential for damage to geologic features. Any adverse impacts from visitor use would be site-specific or feature-specific and impacts would range from negligible to potentially major if an individual feature were to be irreparably damaged.

Under Alternative D (Proposed Plan), 557 miles of Class B, C, and D roads inside the Monument would be subject to wind erosion, transport, and deposition onto geological features. The unpaved roads in Alternative D would cause the same negligible adverse impacts on geologic processes that were described for Alternative A.

The potential for human-caused fires under Alternative D (Proposed Plan) could be less than in Alternative A because Alternative D would involve less accommodation of visitors in the expanded areas of the Monument through signs, developed recreation sites, and information. However, there would be more wildland fire use, thereby reducing certain impacts of wide-scale suppression activities. Prescribed burns under Alternative D (Proposed Plan) for resource management would result in negligible effects on geologic resources. Overall, negligible to minor adverse impacts would occur, similar to Alternative A.

Grazing and associated trailing would result in the same negligible to minor adverse impacts described for the other alternatives, since grazing would not be managed any differently under this alternative.



The use of materials sites under Alternative D (Proposed Plan) would also result in the same impacts as described for previous alternatives: minor to moderate site-specific adverse impacts in the short term and slight long-term beneficial effects from limits on new sites.

Alternative D (Proposed Plan) would include more emphasis on encouraging visitors to seek licensed guides and outfitters to lead them on ventures in the Monument. Properly trained outfitters and guides might reduce impacts to geologic resources through instruction and monitoring of their clientele, resulting in regional minor to moderate long-term beneficial effects on geologic resources in the ESRP. Emphasizing off-site education under Alternative D (Proposed Plan) could decrease visitation to the Monument, thus reducing the effects on geologic resources. This could result in a long-term, site-specific to regional minor beneficial effect on geologic resources.

### **Cumulative Impacts**

The cumulative effects on geologic resources from Alternative D (Proposed Plan) would be similar to those described for the No Action Alternative. Although there would be some access improvements, generally these would not cause a great increase in visitor use, since the improvements would be limited to those needed for administrative uses. Therefore, the overall cumulative effects from Alternative D (considering all ESRP-related actions and the protection afforded by the Monument designation) would be long-term, moderate, and beneficial.

### **Conclusion**

Alternative D (Proposed Plan), because of its aggressive restoration goals and emphasis on off-site experience, would result in beneficial effects because it would limit damage from visitors and result in the restoration of many features. The erosion of roads, fires, fire suppression, and grazing would result in site-specific, negligible to minor adverse impacts.

Although an individual geologic feature could suffer a major impact, in context of the entire Monument's

geologic features/resources, the impacts would be quite localized (that is, the effect would cover only a small part of the entire Monument's land area or an individual type of geologic feature, of which there may be many).

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's geologic resources or values would not be impaired.

## **SOILS**

### **METHODOLOGY AND ASSUMPTIONS**

Information about soils and the response of soils to various actions was compiled from NRCS soil surveys, other agency maps and documentation, relevant literature, and resource experts. General soil types, erosion potential, structure, and function were discussed and impacts were analyzed. The analysis was based on reference information, anticipated effects of management prescriptions by alternative, and professional judgment.

The following threshold criteria to indicate intensity of potential impacts were established:

- Negligible: The effects on soil productivity or fertility would be at or below the level of detection.
- Minor: The effects on soil productivity or fertility would be small, as would the area affected. If mitigation was needed to offset adverse effects, it would be relatively simple to implement and would likely be successful.
- Moderate: The effect on soil productivity or fertility would be readily apparent and result in a change in the soil character

over a relatively wide area. Mitigating measures probably would be necessary to offset adverse effects and would likely be successful.

Major: The effect on soil productivity or fertility would be readily apparent and long-term and would substantially change the character of the soils over a large area in and outside of the Monument. Extensive mitigating measures to offset adverse effects would be needed, and their success could not be guaranteed.

The area of analysis for cumulative effects on soils, which was defined as approximately 50 miles beyond the Monument boundary, is referred to as South-Central Idaho. This incorporates areas of soil loss and deposition that would affect the Monument.

## IMPACTS FROM ALTERNATIVE A

### Analysis

Under Alternative A, roads would be maintained at current standards. Direct adverse impacts on soils from road maintenance and use would include road edge disturbance, isolated erosion, and compaction. The effects on soils from soil displacement and dust production would be local, minor, and long-term. Trail maintenance and construction, as well as recreational use, would involve some soil loss, compaction, and erosion, resulting in site-specific negligible to minor long-term adverse impacts on soils.

Wildland fires would be suppressed in all areas except in designated wilderness, where some fires might be allowed for resource benefit. Direct impacts on soils from wildland fires would vary, depending on soil types and fire severity, but localized major impacts would occur from suppression activities, including fire line construction. Erosion resulting from decreased vegetation cover and wildland fire suppression activities would be likely to occur on most soil types until erosion control measures or revegetation could take place. Soil

fertility could be positively affected by fire, which often increases nutrient cycling. High-intensity wildland fires in localized places could sterilize soil and reduce overall productivity; however, the overall adverse impacts would be minor.

Weed control by herbicides or by mechanical means, along with the active restoration of 40,000 acres of degraded sagebrush steppe areas, would cause negligible to minor short-term adverse impacts on soil chemistry, structure, productivity, and abundance through herbicide applications, equipment disturbance and compaction, and wind erosion. The long-term benefits of weed control and a restored sagebrush steppe community would include stabilized soils and improved or restored natural fertility, productivity, and function. Such beneficial effects would be long-term and moderate in intensity.

With continued livestock use under Alternative A, it is assumed that guidelines would be used to achieve rangeland health standards. Under this scenario, the effects on soils would include compaction, erosion, and changes to soil fertility and production. Soil compaction or soil erosion, or both, would occur in areas where livestock concentrate (e.g., watering areas, salt licks, fence lines, and corrals) and vegetation has been reduced or removed. Additional livestock developments could increase such impacts. However, some of these developments might mitigate more widespread adverse impacts on soils by concentrating livestock use in specific areas.

Livestock use could result in negative or positive effects on soil fertility and production. The nature of the effects would depend on changes in nutrient cycling (e.g., reduced litter accumulation; incorporation of manure), seedbed characteristics, abundance and type of soil biota or soil biological crusts, and soil moisture. Overall, livestock use would result in short- and long-term minor to moderate adverse impacts on soils.

Facility development, including expanding the Visitor Center, installing waysides at Kings Bowl, and maintaining kiosks, signs, and wayside exhibits would be site-specific and would cause localized



long-term minor to moderate adverse impacts on soil. Wherever distinct soil disturbance and excavation would occur, best management practices (BMPs) such as those listed under “Mitigating Measures” in Chapter 2 would be implemented. For example, topsoil would be set aside and replaced to help retain the structure and fertility of soils and minimize impacts.

### **Cumulative Impacts**

In the area surrounding the Monument, agricultural practices, including dryland farming, grazing, and ranching, have led to the erosion of soils by removing native vegetation and replacing it with plants not always suited to the local environment. This, along with tilling of the soil, periodic drought, and frequent wildfires, has left soils in the vicinity of the Monument exposed to erosion by wind. Agricultural and other land use activities, as well as development of homes, roads, and other developments, alter soil structure, productivity, and function.

Soil loss and movement resulting from the effects of these land management activities are the most notable adverse impacts inside and outside of the Monument. Stabilization and revegetation efforts by land management agencies and some private individuals help mitigate what could otherwise be described as major cumulative impacts for South Central Idaho during drought and wildfire years. Typically, however, such impacts, along with the effects of Alternative A, would be regional, moderate, adverse and long-term.

### **Conclusion**

Soil disturbance, erosion, and compaction would be the primary adverse impacts associated with most management actions under Alternative A. Wildland fire and suppression, restoration activities, road and trail maintenance and use, and livestock use are the management activities most likely to affect soils. Overall, short- and long-term adverse impacts on soils would be minor to moderate in intensity, with long-term moderate beneficial effects from the restoration program.

Because there would be no major adverse impacts on a resource or value whose conservation is (1)

necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument’s soil resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

In addition to the effects discussed for Alternative A, improved road and trail access and more recreational and interpretation facilities or structures in Alternative B could result in increased direct adverse impacts on site-specific soils. It is assumed that improved roads, trails, and facilities would lead to increased public use and recreation. The adverse effects would be similar to those described for Alternative A; predominantly, they would comprise minor increases in soil disturbance, erosion, and compaction. Off-trailing due to more public use probably would affect additional areas.

The extent of the effects would vary, and quantifying the impacts exactly is not possible because the specific roads to be improved and the number of recreational facilities have not yet been specified. However, under Alternative B, Class B (gravel surface) roads in the Passage Zone would increase from 45 miles in Alternative A to 67 miles in Alternative B. Class C roads would increase from 14 miles to 156 miles inside the Monument. The resulting road improvements and use in the Passage Zone would result in direct long-term minor to moderate adverse impacts and indirect adverse impacts related to greater access to areas along roadways.

Restoring 45,000 acres in the Monument would be 5,000 acres more than in Alternative A. This would not result in a substantial change in the characterization of the impacts described for Alternative A. Mechanical disturbance, compaction, herbicide use, and wind erosion would negatively affect soils in the short term at minor levels; however, weed management and restoration activities would improve

and restore soil conditions, resulting in moderate long-term beneficial effects. Under Alternative B, suppression activities would likely increase, causing minor to potentially major localized short-term adverse impacts on soils.

Because livestock management use would be similar in all alternatives, the effects on soils would be the same as those described for Alternative A. However, in Alternative B there would be a potential for more livestock developments in the Passage Zone due to the increase in access, and this would likely increase the magnitude of soils disturbance. This would result in short- and long-term minor to moderate adverse impacts on soils from grazing.

Facility development would be enhanced under this alternative, with a trail system and day use area in Kings Bowl and the potential to add to the Visitor Center facility. These actions would result in minor to moderate short-term construction-related adverse impacts, with the removal of soils and/or soil productivity in very limited areas, resulting in long-term localized moderate impacts.

### **Cumulative Impacts**

As in Alternative A, the most notable long-term cumulative impact on soils from Alternative B would be soil erosion and displacement from the area in and around the Monument. There also would be a potential for more impacts from increased public use of the area, but the intensity of impacts still would be moderate.

Similar to Alternative A, in the area surrounding the Monument, agricultural practices, periodic drought, and frequent wildfires have left soils in the vicinity of the Monument exposed to erosion by wind. Agricultural and other land use activities, as well as the development of homes, roads, and other developments, can alter soil structure, productivity, and function and contribute to adverse soil impacts. The cumulative effects of these land management activities, in conjunction with the impacts of Alternative B, would be regional, moderate, adverse and long term.

### **Conclusion**

Improved road and trail access, the development of recreation facilities, and increased visitor use of the Monument might increase the amount of soil area directly and indirectly affected. Additional construction of unpaved roads, trails, and day use areas and more extensive use of fire suppression would cause direct loss of soils locally, resulting in minor to moderate local adverse impacts. Grazing also would cause additional minor to moderate adverse impacts. Overall, the short- and long-term adverse impacts on soils from Alternative B would range from minor to moderate; the restoration program would result in long-term moderate beneficial effects.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's soil resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

An increase in short-term adverse impacts and long-term beneficial effects on soils would result from Alternative C from a larger proposed restoration area (55,000 total acres, compared to 40,000 acres in Alternative A). Mechanical disturbance, compaction, herbicide, and wind erosion all would negatively affect soils in the short term at minor levels. However, the weed management and restoration activities would stabilize soils and improve their structure and function, resulting in moderate long-term benefits.

There would be potential for more wildfire-influenced acreage under Alternative C because of reduced road access and increased response time on fewer miles of maintained roads. There would be less use of suppression and more emphasis on the use of fire for resource benefit, with fewer direct



impacts from these activities. More soils could potentially be exposed to the effects of wildfire, including adverse impacts such as the erosion of exposed soil and sterilization in hot spots. There also could be typically beneficial effects such as increased soil fertility and nutrient cycling. Direct soil disturbance from roads and access would be reduced by a reduction in road maintenance, less recreation and other visitor uses, and potential road closures.

Effects from livestock use such as compaction and soil nutrient alteration would be similar to those of Alternative A: short- and long-term minor to moderate adverse impacts on soils. Developments in Alternative C would be minimal, so short-term adverse impacts on soil from construction and long-term adverse impacts from the removal of soil would be negligible to minor.

### **Cumulative Impacts**

As with Alternative A, cumulative soil erosion and displacement in and around the Monument would be the most notable long-term impacts. There is potential for increased cumulative impact intensity from increased restoration acreage and wildfire potential, but the intensity level would still be considered moderate.

Periodic drought, frequent wildfires, agricultural practices, and development have left soils in the vicinity of the Monument exposed to erosion by wind and have affected structure, productivity, and function. The cumulative effect of these activities, in conjunction with affects of Alternative C, would result in regional moderate adverse long-term impacts on soils.

### **Conclusion**

The effects of Alternative C on soils would be substantially the same as those of Alternative A, with slightly more short-term erosion potential and slightly fewer long-term soil impacts. Impacts from facility construction maintenance and fire suppression would be reduced, and adverse impacts from grazing would remain minor to moderate. Overall, the intensity of the short- and long-term adverse

impacts would be minor to moderate, with more long-term beneficial effects from a slightly expanded restoration program.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's soil resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

The effects on soils from Alternative D (Proposed Plan) would be similar to those described for Alternative A, with the exception of the effects from doubling the proposed restoration acreage (from 40,000 acres in Alternative A to 80,000 acres in Alternative D). The exposure of the soils over this acreage would result in increased wind erosion and potential nutrient loss, resulting in short-term minor to moderate adverse impacts. However, as described for Alternative A, the long-term effects on soils would be beneficial at a moderate to potentially major level under this alternative.

Roads would mostly be maintained at current standards in Alternative D (Proposed Plan), but improvements could be made to allow access for resource management. The effects would be similar to those of Alternative A, in that direct adverse impacts on soils from road maintenance and use would include road edge disturbance, isolated erosion, and compaction. These impacts would be minor and long-term. Trail maintenance and construction would involve site-specific negligible to minor long-term adverse impacts on soils such as compaction and altered fertility. Emphasis on off-site programs and commercial outfitters would help limit the impacts on soils.

Adverse impacts such as soil loss resulting from wildland fire, wildfire use, and any suppression activities under Alternative D (Proposed Plan) would be minor because sufficient road access would be available in all areas, which would minimize response time and burned acreage. With wildland fire use in the Pristine Zone, the effects on soils exposed to fire typically would be beneficial - increased soil fertility and nutrient cycling.

As in Alternative A, livestock use under Alternative D (Proposed Plan) would cause short- and long-term minor to moderate adverse impacts on soils. Developments under Alternative D would include a possible center run by multiple agencies at the southern end of the Monument. Expanding the Visitor Center, adding interpretation and trails in Kings Bowl, and installing wayside exhibits and signs would result in local minor to moderate long-term adverse impacts on soils, including direct soil loss, soil erosion, and local compaction.

### **Cumulative Impacts**

The cumulative impacts on soils from Alternative D (Proposed Plan) would be similar to those described for Alternative A. Agricultural practices, periodic drought, frequent wildfires, and development in the area would leave soils exposed to wind erosion, altering soil structure, productivity, and function. However, the greatly expanded restoration efforts of Alternative D (Proposed Plan) would contribute substantial benefits in the long run, helping to balance the many smaller-scale adverse impacts in the area of analysis. Overall, the cumulative effects of all actions outside the Monument, in conjunction with the actions of Alternative D, would result in regional minor to moderate long-term adverse impacts.

### **Conclusion**

The effects of Alternative D (Proposed Plan) on soils would be similar to those of Alternative A, with more short-term erosion potential from road and trail use and maintenance, facility development, and fire. Long- and short-term minor to moderate adverse impacts could result from grazing and fire suppression. Overall, the short- and long-term

adverse impacts would be minor to moderate. However, there would be moderate to major long-term beneficial effects on soils in the Monument, assuming successful restoration of the entire proposed acreage under this alternative.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's soil resources or values would not be impaired.

## **VEGETATION, INCLUDING SPECIAL STATUS SPECIES, AND FIRE MANAGEMENT**

Vegetation is a fundamental and vitally important element among the Monument's biological resources. The effects on vegetation resulting from any of the alternatives under consideration would also affect other resources. Adverse impacts can result in weed invasion and soil surface disturbance and can lead to changes in the composition of vegetation communities. These changes, in turn, can influence animal populations. Where vegetation cover is reduced and soil erosion results, archaeological, paleontological, and historic resources, as well as water and air quality, could be adversely affected.

### **METHODOLOGY AND ASSUMPTIONS**

Effects on vegetation were assessed with the use of data about vegetation communities in the Monument and professional judgment. Effects on special status plants would be limited to BLM sensitive species, as there are no federally listed plants present in the Monument. The following categories were used to evaluate the potential impacts on vegetation:

Negligible: No native vegetation would be affected, or some individual native plants could be affected as a result of the alternative,



but there would be no effect on native plant communities. The effects would be on a small scale. No special status plants would be affected.

**Minor:** The action would affect some individual native plants and would also affect a relatively minor portion of the plant community. The use of standard operating procedures to offset adverse impacts, including special measures to avoid affecting special status plants, would be required and would be effective.

**Moderate:** The action would affect numerous individual native plants and would also affect a sizeable segment of the plant community over a relatively large area. The use of standard operating procedures to offset adverse effects could be extensive but the procedures probably would be successful. Special status plants could be affected.

**Major:** The action would cause a considerable effect on native plant populations, including special status plants, and the effects would cover a relatively large area inside and outside of the Monument. The extensive use of standard operating procedures to offset the adverse effects would be necessary, and their success would not be guaranteed.

Direct effects on vegetation generally are caused by any construction activities; by the establishment, use, maintenance, closing, or removal of roads and trails; by livestock trampling and herbivory; and by fire ignitions and suppression actions, including blading of fire lines, herbicide treatments, as well as by seeding treatments and the introduction, spread, and treatment of noxious and invasive weeds. Indirect impacts can be lowered vigor or death of plants immediately adjacent to roads from dust accumulation; changes in plant abundance and/or species composition resulting from modified nutri-

ent cycling due to soil compaction; the accumulation of urine and feces; erosion associated with livestock; and nutrient modification and soil loss or deposition associated with fire.

The area of analysis for cumulative effects on vegetation was defined as the Monument and a zone of approximately 50 miles radius extending out from the perimeter. This was considered to be the distance within which wind-blown weed seed dispersal, soil removal and deposition, or fire-related impacts would be most likely to affect vegetation resources in the Monument. This influence would be greatest on the west side of the Monument because of the prevailing wind patterns.

## **IMPACTS FROM ALTERNATIVE A**

### **Analysis**

Under Alternative A, no new roads or trails would be constructed, and maintenance would continue at current standards. Maintenance would result in minor adverse impacts resulting from dust deposition and occasional plant removal, with only the vegetation immediately adjacent to roads being affected. The maintenance of 585 miles of unpaved roads (Class B, C, and D) would continue.

The use of roads and trails would result primarily in short-term seasonal indirect minor adverse impacts on vegetation (which could include special status plants) primarily from the deposition of dust. This could cause a decrease in vigor and possibly result in the mortality of the affected plants. Trail users veering off the trail to avoid obstacles could cause long-term negligible to minor impacts by trampling vegetation and widening the trail. Long-term negligible to minor adverse impacts could result from soil compaction and erosion caused by illegal off-trail use. Road and trail use and maintenance could spread noxious weeds, with minor to moderate short- and long-term adverse impacts on native plant communities.

About 40,000 acres of degraded rangeland (31,000 acres of annual grassland and 9,000 acres of low-elevation sagebrush steppe, all currently in Fire

Condition Class [FCC] 2 or FCC3) would be treated for proactive sagebrush steppe restoration and/or post-fire rehabilitation following wildland fire. This process involves a combination of methods, usually herbicides, prescribed fire, and drill-seeding or aerial or broadcast seeding with churning or harrowing, to control invasive and noxious weeds and then re-establish shrubs, perennial grasses, and forbs through seeding. The management goal would be to move the treated areas from FCC2 or FCC3 towards FCC1.

Sagebrush steppe restoration activities would result in a short-term minor adverse effect on some native plants and special status species due to mortality from prescribed burning, herbicide, or seeding treatments. Successful projects would lead to long-term moderate to major beneficial effects. Project-level design would help limit off-site impacts such as effects on non-target vegetation. Herbicides would be selected for specific target species and applied in limited areas by certified applicators. Prescribed fire operations would follow pre-approved burn plans that would restrict when and where fire could be used.

Livestock use would not vary by alternative. There would be no change in the management of livestock use from the current situation. Livestock developments such as fences and watering troughs guide the movement of livestock and result in long-term minor to moderate adverse effects, including localized removal and trampling of vegetation and the spread of invasive and noxious weeds. Indirectly, soil erosion and compaction and the deposition of urine and feces result in alteration of nutrient cycles and negatively affect vegetation causing a minor long-term impact.

Impacts caused by livestock use can include the mortality of long-lived native plants due to changes in the soil environment and the enhancement of conditions that support exotic annual species such as cheatgrass, the removal of native species, and an abundance of excess nitrogen. However, all allotments must meet or be making progress toward meeting Idaho Standards for Rangeland Health,

which would minimize these impacts by ensuring that the effects on vegetation and soils would not result in a downward trend. Livestock management in any allotment not meeting the standards would have to be changed to improve the health of soils and vegetation.

Wildland fire management under Alternative A would consist of full suppression in all parts of the Monument except in the designated Wilderness. The existing NPS Monument Fire Management Plan (USDI NPS 2000) allows for limited wildland fire use. Aggressive suppression would minimize the loss of key sagebrush communities and vegetation that protects the Little Cottonwood Creek watershed, but it would result in short-term moderate local impacts from fire line construction, including the use of heavy equipment.

Visitor facilities would remain in the current condition, except that the existing Visitor Center would be expanded and some modest trail rehabilitation would be carried out, and safety information would be posted in the Crystal Ice Cave and Kings Bowl area. Expanding the Visitor Center would result in negligible adverse impacts on native vegetation, because the area has already been altered from the natural state. However, plans to convert existing exotic lawn to landscaping with the use of native, drought-tolerant plants (xeriscaping) would result in a long-term indirect minor beneficial effect by educating the public on the values of water conservation and native vegetation and the hazards of invasive and noxious weeds.

### **Cumulative Impacts**

Activities affecting vegetation outside the Monument could negatively affect vegetation resources both in and outside of the Monument. Noxious weed populations, including rush skeletonweed, diffuse knapweed, Russian knapweed, and leafy spurge are well established to the west of the Monument. Increased visitor use could increase the migration of noxious and invasive weeds into the Monument. This would necessitate extensive cooperation with county weed cooperatives and IDL, as well as educating users about noxious weed manage-



ment. Aggressive weed management outside the Monument, in addition to the actions proposed in Alternative A, would result in a long-term negligible to moderate beneficial effect on vegetation by controlling the spread of noxious weeds.

Areas surrounding the Monument are affected by agricultural practices, including irrigated and dryland crop farming and livestock ranching. The primary impacts associated with agricultural use are (1) eliminating native vegetation through livestock grazing or by replacement by crops, (2) the drift of weeds; and (3) agricultural trespass, including the deposition of garbage or the removal of vegetation and planting crops on public lands adjacent to the Monument. The effects on vegetation from all the actions of Alternative A would be relatively minor, and overall, these actions would result in short- to long-term negligible to moderate adverse impacts.

Under Alternative A, direction from the Fire Management Direction Amendments (FMDA) would be used to guide treatment of lands both inside and outside of the Monument to convert areas dominated by cheatgrass to sagebrush with a perennial grass and forb understory. The restoration/rehabilitation treatments proposed in Alternative A could result in short-term negligible to moderate adverse effects from herbicide, prescribed fire, and seeding treatments. This would result in the loss of some native vegetation and possibly increased erosion. However, successful projects placed strategically over the landscape to protect and enhance vegetation in the Monument would result in a healthier, more resilient ecosystem, constituting long-term, large scale minor to major beneficial effects.

Overall, the benefits of the FMDA initiative, combined with the adverse impacts from various actions outside the Monument and all actions associated with Alternative A, would result in minor long-term cumulative adverse impacts on vegetation. The restoration program under Alternative A would contribute a sizeable amount to regional beneficial effects that would help offset various long-term adverse impacts.

## **Conclusion**

Alternative A would result in both short- and long-term negligible to moderate adverse impacts on vegetation from continued use and maintenance of roads and trails, plus illegal off-road use, spread of noxious weeds, fire suppression and fire, and continued grazing. Restoration activities and construction of facilities would cause short-term negligible to minor direct adverse impacts, but they would result in long-term indirect minor to major beneficial effects as a result of vegetation restoration and public education.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's vegetation resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

Under Alternative B, Passage Zone acreage would increase from 4,700 to 68,900 acres and Primitive Zone acreage would decrease from 290,200 to 226,900 acres. There would be a corresponding increase in the mileage of roads that would be upgraded or maintained. Road and trail maintenance in the enlarged Passage Zone north of U. S. Highway 20/26/93 (US 20/26/93), in Laidlaw Park, and in the vicinity of the Wapi Lava Field could cause the fragmentation of vegetation communities, including special status plant populations.

Depending on the density of roads, road and trail improvements under Alternative B would cause direct long-term minor to moderate adverse effects from the removal of vegetation. Maintenance would cause negligible to minor adverse impacts on vegetation adjacent to roads. Depending on the density of roads and the number of users, the use of roads and trails would result primarily in seasonal indirect

short-term minor to moderate impacts on vegetation, including special status plants, primarily from the deposition of dust. This could cause a decrease in vigor and possibly result in mortality of the affected plants. Trail users that might veer off trails to avoid obstacles could trample vegetation and widen trails, causing long-term negligible to minor adverse impacts. Such impacts would be exacerbated by the use of trails by motorized vehicles such as OHVs. Long-term negligible to minor adverse impacts on vegetation could result from soil compaction and erosion caused by illegal off-trail use. Increased road and trail construction could result in the spread of noxious weeds, with minor to moderate short- and long-term adverse impacts on native plants.

Under Alternative B, about 45,000 acres of degraded rangeland (31,000 acres of annual grassland and 14,000 acres of low-elevation sagebrush steppe, all currently in FCC2 or FCC3) would be treated for proactive sagebrush steppe restoration and/or post-fire rehabilitation following wildland fire, a 5,000-acre increase over Alternative A. This process involves a combination of methods, usually herbicides, prescribed fire, and drill-seeding or aerial or broadcast seeding with churning or harrowing, to control invasive and noxious weeds and then re-establish shrubs, perennial grasses, and forbs through seeding. The management goal would be to move the treated areas from FCC2 or FCC3 towards FCC1. Fragmentation due to the greater density of roads and trails and increased access and maintenance would result in smaller blocks of restored vegetation than in Alternative A.

Sagebrush steppe restoration activities would result in some vegetation mortality from prescribed burning, herbicide, or seeding treatments, a short-term minor adverse effect on some native plants and special status species. Successful projects would lead to long-term moderate to possibly major beneficial effects. Project-level design, as described for Alternative A, would minimize adverse impacts.

Limited prescribed fire (less than 500 acres over the life of the plan) would be used to improve areas in FCC2 or maintain areas in FCC1 in aspen, conifer,

and mountain shrub vegetation types north of US 20/26/93. These projects would cause short-term minor effects consisting of vegetation removal by fire. The long-term results of this action would be a lower fuel load and plant communities with a greater diversity relative to structure and species composition, a moderate to major effect.

Since livestock use would not vary by alternative, there would be no change in the management of livestock use from the current situation under Alternative B. Having the Passage Zone larger could lead to more livestock developments, which would result in long-term minor to moderate adverse effects, including localized removal and trampling of vegetation and the spread of invasive and noxious weeds. Other effects, including soil erosion and compaction, the alteration of nutrient cycles, and the enhancement of conditions that support exotic annual species would be the same as described for Alternative A, generally minor to long-term. As previously discussed, all allotments must meet or be making progress toward meeting the Idaho Standards for Rangeland Health, which would minimize these impacts.

Wildland fire management under Alternative B would consist of full suppression in all parts of the Monument except in the Wilderness and Preserve. Aggressive suppression would minimize the loss of key sagebrush communities and vegetation that protects the Little Cottonwood Creek watershed. The larger Passage Zone, which would allow better access to the interior of the Monument, could result in more visitors, which in turn could increase the risk of fire from the ignition of vegetation adjacent to roads or in the center of two-track roads. This could be mitigated by education and by patrols during high-risk periods. The greater level of suppression under Alternative B would result in direct minor to moderate local adverse impacts from fire line construction and the use of heavy equipment.

Expanding the Visitor Center would cause negligible effects on native vegetation because the area already has been altered from the natural state, and converting the existing exotic lawn to native xeriscaping would educate the public about the value of water



conservation and native vegetation and the hazards of invasive and noxious weeds, resulting in an indirect beneficial effect. Adding kiosks and signs would cause little disturbance or removal of vegetation, resulting in negligible effects. Interpretive signs could cause a minor to moderate long-term beneficial effect by minimizing visitor impacts, including the trampling or removal of vegetation and the frequency of human-caused fires.

### **Cumulative Impacts**

The cumulative effects on vegetation from Alternative B would be similar to those described for Alternative A. Impacts related to the agricultural practices in areas surrounding the Monument would be the same as those described for Alternative A, including the elimination of native vegetation, the drift of weeds, and agricultural trespass. These actions would result in short- to long-term negligible to moderate adverse impacts. The movement of soil due to wind would have negligible cumulative long-term effects.

As in Alternative A, under Alternative B the direction from the FMDA would be used to guide the treatment of lands outside of the Monument to convert areas dominated by cheatgrass to sagebrush with a perennial grass and forb understory. This would result in associated short-term negligible to moderate adverse effects and long-term large scale minor to major beneficial effects. Overall, all the above-described actions, combined with the effects of actions specific to Alternative B, would result in minor long-term cumulative adverse impacts. The restoration program would contribute a sizeable amount to cumulative benefits that would offset the various adverse impacts on vegetation in the region.

### **Conclusion**

Alternative B would result in a greater possibility of fragmentation, increased risk of noxious weed spread, and greater risk of human-caused fire because of increased visitation and access and more road and trail maintenance. The effects on vegetation would be both short- and long-term, ranging from negligible to moderate, but they would be more widespread than in Alternative A. Facility develop-

ment would cause some long-term negligible to minor negative impacts on vegetation, but increased public education would result in minor to moderate long-term beneficial effects. Restoration acreage would be slightly greater than in Alternative A, with short-term minor adverse impacts and long-term moderate to major beneficial effects.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's vegetation resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

The Passage Zone acreage in Alternative C would decrease from 4,700 to 3,200 acres; the Primitive Zone would decrease from 290,200 to 201,000 acres; and the Pristine Zone would increase from 448,800 to 539,500 acres. There would be a corresponding decrease in access due to expansion of the Pristine Zone, with a higher potential for road closures and a reduced number of better-maintained roads.

Road and trail maintenance would cause negligible to minor impacts on vegetation adjacent to roads. The deposition of dust from the use of roads and trails would result in short-term, seasonal indirect minor to moderate impacts on vegetation, including special status plants. This could cause a decrease in vigor and possibly result in the mortality of the affected plants adjacent to roads and trails. The roads that are open to travel might be used more because there would be fewer opportunities for dispersal. Trail users might veer off the trail to avoid obstacles, possibly trampling vegetation and widening the trail, causing long-term negligible to minor impacts. Such impacts would be exacerbated by motorized vehicles such as OHVs being used on trails. Long-term negligible to minor adverse impacts could result

from soil compaction and erosion caused by illegal off-trail use. Decreased road density would reduce the opportunity for noxious weed dispersal, but it also would reduce the probability of detection and treatment by Monument staff. This would result in a minor to moderate adverse impact on the Monument's vegetation.

Under Alternative C, about 55,000 acres of degraded rangeland (31,000 acres of annual grassland and 24,000 acres of low-elevation sagebrush steppe, all currently in FCC2 or FCC3) would be treated for proactive sagebrush steppe restoration and/or post-fire rehabilitation, an increase of about 38 percent over the area targeted under Alternative A. This process involves a combination of methods, usually herbicides, prescribed fire, and drill-seeding or aerial or broadcast seeding with chaining or harrowing, to control invasive and noxious weeds and then re-establish shrubs, perennial grasses, and forbs through seeding. The management goal would be to move the treated areas from FCC2 or FCC3 towards FCC1. Under this alternative the restoration would occur more slowly than in the other alternatives because lower-impact methods (such as reduced use of herbicides and seeding methods that reduce soil surface disturbance) would be used.

Sagebrush steppe restoration activities could cause mortality from prescribed burning, herbicide, or seeding treatments, resulting in short-term negligible to minor adverse impacts on some native plants and special status species. Successful projects would cause long-term minor to major beneficial effects. It is unlikely that all acreage would reach FCC1 within the 15- to 20-year life of the plan because of slower implementation of projects and use of lower impact methods. Project-level design, as described for Alternative A, would minimize impacts.

Limited prescribed fire (less than 500 acres over the life of the plan) would be used to improve areas in FCC2 or maintain areas in FCC1 in aspen, conifer, and mountain shrub vegetation types north of US 20/26/93. These projects would cause short-term minor effects consisting of vegetation removal by fire. The long-term results of this action would be a

lower fuel load and plant communities with a greater diversity relative to structure and species composition, a moderate to major effect.

Since livestock use would not vary by alternative, there would be no change in the management of livestock use from the current situation under Alternative C. Because developments such as fences and watering troughs guide the movement of livestock, such developments could result in long-term minor to moderate adverse effects, including localized removal and trampling of vegetation and the spread of invasive and noxious weeds. Other effects, including soil erosion and compaction, the alteration of nutrient cycles, and the enhancement of conditions that support exotic annual species also would occur. However, new facilities in Alternative C would be limited to those necessary for resource protection; therefore, the impacts from concentrations of livestock would be less widespread than in Alternative B. All allotments must meet or be making progress toward meeting Idaho Standards for Rangeland Health, which would minimize these impacts.

Wildland fire management under Alternative C would consist of full suppression in all parts of the Monument except in the Wilderness and Preserve. Aggressive suppression would minimize loss of key sagebrush communities and vegetation that protects the Little Cottonwood Creek Watershed. However, with more Pristine Zone acreage and less access, the chance of larger wildland fires would be greater in Alternative C.

In this alternative the enhancement of visitor facilities would be limited to expanding the Visitor Center. This would cause negligible impacts on native vegetation because the area has already been altered from the natural state. However, as in Alternative A, plans to convert existing exotic lawn to native xeriscaping would educate the public on the values of water conservation and native vegetation and the hazards of invasive and noxious weeds, an indirect beneficial effect. The interpretive displays in the Visitor Center, along with brochures and off-site signs, could help to minimize visitor



impacts, including trampling or the removal of vegetation and the frequency of human-caused fire. This would be in a minor to moderate long-term beneficial effect.

Designating a 10,500-acre ACEC in North Laidlaw Park would eliminate future livestock water developments in that area, thus maintaining livestock use at a low level (Appendix F). This would be a long-term negligible to minor beneficial effect. An implementation-level management plan would have to be prepared following designation of the ACEC. Such a plan would specifically guide proactive management for the vegetative community. This could offer a greater level of protection than imposing the same management without the ACEC designation. Livestock management associated with the ACEC could result in the use of new or existing water facilities elsewhere in the Monument, thus concentrating that use in areas other than North Laidlaw Park, resulting in a negligible to minor negative effect on vegetation in those areas.

### **Cumulative Impacts**

The cumulative impacts on vegetation from Alternative C would be similar to those described for Alternative A, but the adverse impacts would be fewer because accessibility and visitation would be less and there would be more restoration efforts. Impacts related to agricultural practices in areas surrounding the Monument would be the same as those described for Alternatives A and B, including the elimination of native vegetation, the drift of weeds, and agricultural trespass. These actions would result in short- to long-term negligible to moderate adverse impacts. The movement of soil by wind would cause negligible cumulative long-term adverse impacts.

As in Alternatives A and B, under Alternative C the direction from the FMDA would be used to guide the treatment of lands outside of the Monument to convert areas dominated by cheatgrass to sagebrush with a perennial grass and forb understory. This would result in associated short-term negligible to moderate adverse impacts and long-term large-scale minor to major beneficial effects. Overall, the benefits of the FMDA initiative, combined with

other impacts of actions inside and outside the Monument and the expanded restoration program in the Monument under Alternative C, would result in long-term cumulative negligible to minor adverse impacts on vegetation. The restoration program described for Alternative C plus the limits on access to more areas would contribute a sizeable amount to regional beneficial effects.

### **Conclusion**

Alternative C would involve less opportunity for extensive visitor access, less access for fire suppression, less active management of noxious weeds, and a slower rate of restoration over a larger area than any other alternative. Adverse impacts on vegetation from access would be minor and limited, with few impacts from facility development and maintenance. Restoration efforts would cause long-term minor to major beneficial effects, but these would occur more slowly because fewer herbicides and low-impact methods would be used. Fires, fire suppression, and continued grazing would lead to minor to moderate adverse impacts.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's vegetation resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

The size of the Passage Zone in Alternative D (Proposed Plan) would increase from 4,700 to 6,700 acres; the Primitive Zone would decrease from 290,200 to 218,700 acres; and the Pristine Zone would increase from 448,800 acres to 518,300 acres, as compared to Alternative A. There would be a slight increase in access from some expansion of the Passage Zone; however, the modifications made

to Alternative D in the FEIS would reduce Passage Zone and add more Pristine Zone in some of the more sensitive areas of the Monument, such as the Laidlaw Park area and edges of the lava fields. Removal of vegetation for road and trail construction that could occur under the designated zoning in Alternative D would cause direct minor to moderate adverse effects, depending on the density of roads.

Road and trail maintenance would cause negligible to minor impacts on vegetation adjacent to roads. The deposition of dust from road and trail use would result primarily in short-term, seasonal indirect minor to moderate impacts on vegetation, including special status plants. This could cause a decrease in vigor and possibly result in mortality of the affected plants. Trail users might veer off trails to avoid obstacles, trampling vegetation and widening the trail; this could cause long-term negligible to minor adverse impacts. The use of motorized vehicles on trails, such as OHVs, would exacerbate these adverse impacts. Long-term negligible to minor adverse impacts could result from soil compaction and erosion from illegal off-trail use. Greater road density would increase the potential for the dispersal of noxious weeds, but this also would increase the probability of detection and treatment by Monument staff. This would result in minor to moderate short- and long-term negative impacts on native plants.

Under Alternative D (Proposed Plan), approximately 80,000 acres of degraded rangeland (31,000 acres of annual grassland and 49,000 acres of low-elevation sagebrush steppe, all currently in FCC2 or FCC3) would be treated for proactive sagebrush steppe restoration and/or post-fire rehabilitation, a 100 percent increase over the area targeted under Alternative A. This is the most proactive restoration program of all the alternatives - all available methods would be used, and large areas would be treated within short timeframes. This process involves a combination of methods, usually herbicides, prescribed fire, and drill-seeding or aerial or broadcast seeding with chaining or harrowing, to control invasive and noxious weeds and then re-establish shrubs, perennial grasses, and forbs through seeding. The management goal would be to move the treated

areas from FCC2 or FCC3 towards FCC1. Sagebrush steppe restoration activities could cause mortality from prescribed burning, herbicide, or seeding treatments, resulting in short-term minor adverse impacts on some native plants and special status species. Successful projects would lead to long-term moderate to major beneficial effects. Project-level design, as described for Alternative A, would minimize impacts.

Limited prescribed fire (less than 500 acres over the life of the plan) would be used to improve areas in FCC2 or maintain areas in FCC1 in aspen, conifer, and mountain shrub vegetation types north of US 20/26/93. These projects would cause short-term minor effects consisting of vegetation removal by fire. The long-term results of this action would be a lower fuel load and plant communities with a greater diversity relative to structure and species composition, a moderate to major beneficial effect.

Since livestock use would not vary by alternative, there would be no change in the management of livestock use from the current situation under Alternative D (Proposed Plan). Because developments such as fences and watering troughs guide the movement of livestock, such developments could result in long-term minor to moderate adverse effects, including localized removal and trampling of vegetation and the spread of invasive and noxious weeds. Other effects, including soil erosion and compaction, the alteration of nutrient cycles, and the enhancement of conditions that support exotic annual species also would be the same as those described for Alternative A, generally minor and long term.

In Alternative D (Proposed Plan), future livestock water developments would not be permitted in North Laidlaw Park or Bowl Crater; thus, livestock use would be maintained at a low level in those areas. This could result in the placement of new facilities or increased use of existing watering facilities elsewhere in the Monument, thus concentrating that use in other areas. However, all allotments must meet or be making progress toward meeting Idaho Standards for Rangeland Health, which would minimize grazing-related impacts.



Wildland fire management under Alternative D (Proposed Plan) would consist of full suppression in all parts of the Monument except in the Wilderness and Preserve. Aggressive suppression would minimize the loss of key sagebrush communities and the vegetation that protects the Little Cottonwood Creek Watershed. Good access, particularly in remote areas, would reduce the response time and keep fires small to the highest degree in this alternative.

In Alternative D (Proposed Plan), the enhancement of visitor facilities would be limited to expanding the Visitor Center and some minor development in the Kings Bowl and Crystal Ice Caves areas. Expanding the Visitor Center would result in negligible effects on native vegetation because the area has already been altered from the natural state. However, as in Alternatives A and C, plans to convert existing exotic lawn to native xeriscaping would educate the public on the values of water conservation and native vegetation and the hazards of invasive and noxious weeds, an indirect beneficial effect.

The interpretive displays in the Visitor Center, along with brochures and off-site signs, could help to minimize visitor impacts, including trampling or the removal of vegetation and the frequency of human-caused fire. This would be a minor to moderate long-term beneficial effect. Constructing trails and installing a vault toilet and other primitive visitor facilities in the Kings Bowl area would cause minor adverse impacts. Increased visitor use could have minor adverse effects that could be mitigated by interpretive signs focused on resource protection.

### **Cumulative Impacts**

The cumulative impacts from Alternative D (Proposed Plan) would be similar to those described for Alternative A, but with a much greater beneficial effect from the expanded restoration program (80,000 acres). As with the other alternatives, there would be impacts related to agricultural practices in Alternative D (Proposed Plan), including the elimination of native vegetation, the drift of weeds, and agricultural trespass. The long-term effects from the movement of soil by wind would be negligible.

As in the other alternatives, the direction from the FMDA would be used to guide the treatment of lands outside of the Monument to convert areas dominated by cheatgrass to sagebrush with a perennial grass and forb understory. This would result in short-term negligible to moderate adverse impacts and long-term large-scale minor to major beneficial effects. Overall, the benefits of the FMDA initiative, plus the impacts from various actions outside the Monument combined with the restoration program and all other actions under Alternative D (Proposed Plan), would result in long-term cumulative minor beneficial effects on vegetation in the region. The restoration program, plus the educational emphasis that would accompany the program, would contribute a large part to the overall cumulative beneficial effects.

### **Conclusion**

In Alternative D (Proposed Plan), there would be more access for fire suppression and more aggressive noxious weed control programs. This would result in short-term minor to moderate adverse impacts but long-term moderate to major beneficial effects, occurring in a shorter time than in the other alternatives. Strategically placed restoration projects would increase the size and continuity of healthy vegetation patches and reduce the extent of poor quality vegetation. Adverse impacts from visitor access, fire and fire suppression, grazing, and facility development would be similar to those described for Alternative A, with both short- and long-term minor to moderate adverse impacts. Impacts from increased access in more sensitive areas of the Monument, including Laidlaw Park, would be limited by the reduction in Passage Zone and increase in Pristine Zone designations made in response to public comments on the Draft Plan/EIS.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant

NPS planning documents, the Monument's vegetation resources or values would not be impaired.

## **WATER RESOURCES**

### **Methodology and Assumptions**

To assess the magnitude of water quality impacts on Monument waters under the various alternatives, state water quality standards governing the waters of the Monument were examined and baseline water quality data (where available) were examined. The effects on water resources were assessed with the use of available data and best professional judgment. The impact intensity thresholds used are as follows:

- Negligible:** Any chemical, physical, or biological effects would not be detectable, would be well below water quality standards or criteria, and would be within historical or desired water quality conditions.
- Minor:** Chemical, physical, or biological effects would be detectable but would be well below water quality standards or criteria and within historical or desired water quality conditions.
- Moderate:** Chemical, physical, or biological effects would be detectable but would be at or below water quality standards or criteria; however, historical baseline or desired water quality conditions would be altered on a short-term basis.
- Major:** Chemical, physical, or biological effects would be detectable and would be frequently altered from the historical baseline or desired water quality conditions and/or chemical, physical, or biological water quality standards or criteria would be slightly and singularly exceeded on a short-term basis.

For water resources, impact duration was defined as follows:

**Short-term:** An effect that occurs in a short period of time (generally one or two days but no more than seven days).

**Long-term:** A change in a resource or its condition that lasts longer than seven days.

The area of analysis for cumulative impacts on water resources was defined as the surface water bodies both in the Monument and extending into or out of the Monument.

## **IMPACTS FROM ALTERNATIVE A**

### **Analysis**

The relative scarcity of surface water in the Monument means the effects of management actions would usually be localized to individual water bodies. Where surface waters do exist, recreational uses, livestock use, and facility developments would be the primary management activities affecting water resources in the Monument. Alternative A represents a continuation of most existing management activities that could affect water resources. Maintaining access and facilities in the current condition would not be likely to substantially increase recreational use or its effects on water resources beyond current levels, and new construction or maintenance would include measures to limit erosion and protect water quality where appropriate.

Recreational uses could contaminate waters or compete with wildlife at water sources found in ice caves. Easily accessible ice caves have been found to have higher levels of nutrients than caves located in remote areas. Fecal coliform bacteria and nutrient contamination of ice caves has been documented in heavily visited caves located in the original Monument (Falter and Freitag 1996). However few ice caves are accessible to this degree, and recreational use of the vast majority appears to be very limited. Maintaining access and facilities in the current condition would not be likely to substantially increase recreational use or its effects on water resources beyond current levels. The effects on water quality from recreational use would be expected to remain



short-term and range from negligible to moderate intensity in localized circumstances.

Livestock often concentrate in the vicinity of water sources. Livestock would contaminate surface water bodies with fecal coliform bacteria and nutrients from manure deposited in or near water bodies. Smaller water bodies have little capacity to dilute added nutrients. Most water bodies affected by livestock in the Monument would be ephemeral water bodies known as playa lakes located on BLM-administered areas. Many of the naturally formed playas have been modified to increase their storage capacity for livestock watering.

Effects on water quality from livestock use would be expected to be long-term with intensity ranging from negligible to potentially major in local sites, depending on the concentration and duration of livestock use.

### **Cumulative Impacts**

Past actions to divert portions of Little Cottonwood Creek to provide potable water for the development of recreational facilities, diversions of water from the Little Wood River, and modifications of many of the playas to enhance stock watering opportunities all have affected water resources up to the present time. In some instances, such as the Little Wood River, the effects of upstream water diversions are major and long-term. However, the limited extent of this surface stream in the Monument results in impacts that are localized to very small segments (total less than 400 yards) of the stream on the edge of the Monument boundary.

A future action that may affect Monument water resources is a proposed project to replace irrigation channels that carry water from the Little Wood River to agricultural fields near Carey with an enclosed pipeline delivery system. The effect this action would have on wetlands or water resources just inside the western boundary of the Monument (parallel and in some cases including portions of the Little Wood River channel) is unknown.

The past, present, and future actions relating to water diversions, grazing and agricultural areas

continue to result in adverse impacts on water quality. Impacts on the water quality in creeks and playas in the Monument that are related to these actions, in conjunction with the actions of Alternative A, would result in long-term minor adverse cumulative impacts. The actions of Alternative A would contribute a minuscule increment to the overall adverse impacts.

### **Conclusion**

Implementing Alternative A would continue the current local long-term effects on water resources at intensity levels generally ranging from negligible to potentially major, although any major effects would be localized to small areas. The effects of intense recreational use of ice cave pools or from livestock watering on individual playas could create minor to moderate changes in nutrient concentrations, bacteria levels, and turbidity. The duration of effects would depend on the intensity of recreational use at each site. The effects would tend to be localized to the individual water bodies, because no surface waters connect them. The overall effect of livestock use on playas would be widespread and long-term and could range from minor to potentially major intensity, depending on the location.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's water resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

The effects on water quality from Alternative B would be similar to those described for Alternative A, with localized effects at negligible to potentially major intensities depending on the location and concentration of activity and livestock. The relative scarcity of surface water in the Monument means

the effects of management actions would be limited to certain areas. Where surface waters do exist, recreational uses, livestock use, and facility developments would be the primary management activities affecting the Monument's water resources.

In addition to the effects discussed for Alternative A, improved road and trail access and potential new recreational facilities in Alternative B could result in an increase in recreational use of the area, which would lead to higher intensity impacts on ice cave water resources. These effects would be most likely to occur at ice caves more easily reached by improved roads. Class B (gravel surface) roads in the Passage Zone would be increased from 45 miles inside the Monument in Alternative A to 67 miles in Alternative B. Depending the numbers of people coming to ice caves and other water bodies via newly improved roads, the impacts would be likely to be short-term and of negligible to moderate intensity.

Because the management of livestock use would not vary among alternatives, the effects on water resources from Alternative B would be similar to those from Alternative A; that is, minor to moderate local impacts on ephemeral ponds and playas from trampling of shorelines and aquatic vegetation and from contaminants from fecal coliform and nutrients from manure. The larger area in the Passage Zone in Alternative B might accommodate new livestock developments. If developed, these water sources could distribute livestock to areas currently too remote from water to be grazed substantially, adversely affecting the water quality of any nearby playas. Proposed road improvements in this alternative (intended to facilitate recreation) could also facilitate recreational access or water hauling for livestock.

### **Cumulative Impacts**

The cumulative effects on water quality from Alternative B would be similar to those described for Alternative A. The offsite actions related to diversions and agricultural use, combined with the impacts expected from the actions of Alternative B, would result in long-term minor adverse impacts on

water quality. The actions of Alternative B would contribute slightly more to the cumulative impact than under the No Action Alternative because this alternative would lead to increased visitation and possibly to more livestock development.

### **Conclusion**

The effects of Alternative B would be substantially the same as those of Alternative A, but with a somewhat higher likelihood of more indirect adverse effects on local ice caves and playas resulting from road improvements and increased recreational use, plus a possible increase in livestock developments. Impacts would generally range from negligible to potentially moderate, but they would be localized. Depending on the site-specific circumstances, the effects could be either short term or long term.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's water resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

Alternative C, which would involve fewer maintained access roads and less facility development than Alternative B, could limit recreational use. The effects on water resources from recreational use and livestock use in this alternative would be similar to those described for Alternative A (negligible to potentially moderate adverse impacts from bacterial and nutrient contamination and from trampling of wetland/water resources). However, because of the reduced recreational access, moderate impacts could be less frequent. Class B (gravel surface) roads inside the Monument in Alternative B would total 37 miles, compared to 45 for Alternative A. With much less scheduled maintenance and reduced road standards, the indirect impact of recreational uses on



water resources in the immediate vicinity of those roads might increase under Alternative C.

The larger area zoned as Primitive could affect the number and type of new livestock developments allowed in the Primitive and Pristine Zones. Within these zones, the tendency of livestock to concentrate near livestock developments would reduce the adverse effects on nearby surface waters.

### **Cumulative Impacts**

The cumulative effects on water quality from Alternative C would be similar to those described for Alternative A. The offsite actions related to diversions and agricultural use, combined with the effects caused by the actions of Alternative C, would result in long-term minor adverse impacts on water quality. The reduced road access under Alternative C possibly would limit the direct impacts on ice caves and other water bodies.

### **Conclusion**

The effects of Alternative C could be substantially the same as those of Alternative A because there still would be a chance that recreational use could affect ice caves, and there could be limited impacts from grazing. However, moderate adverse impacts would potentially be less widespread or frequent because road access would be reduced.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's water resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

The effects on water resources from recreational use and livestock use under Alternative D (Proposed

Plan) would be similar to those of Alternative A. Road improvements intended to facilitate response to wildfires and vegetative restoration projects in this alternative also could facilitate recreational access or water hauling for livestock. Increased recreational use would not be as likely in this alternative as in Alternative B because few other recreational facilities would be added in this alternative. Improved access roads could facilitate water hauling for livestock, indirectly leading to a greater percentage of allowable AUMs than the current number.

Having a larger area of Passage Zone than in Alternatives A and C could accommodate more livestock water developments. If developed, these water sources could distribute livestock to areas currently too remote from water to receive substantial livestock grazing; this would adversely affect water quality in any nearby playas. The reduction in Passage Zone in the Laidlaw park area done in response to public comment on the Draft Plan/EIS would help to limit indirect adverse impacts on water resources in that area, since livestock development occurs mainly along Passage Zone corridors.

### **Cumulative Impacts**

The cumulative impacts on water quality from Alternative D (Proposed Plan) would be similar to those described for Alternative A. The off-site actions related to diversions and agricultural use, combined with the impacts from Alternative D, would result in long-term minor adverse impacts on water quality. The actions under Alternative D (Proposed Plan) would contribute slightly more to the cumulative adverse impacts than would those of the No Action Alternative because the road maintenance for administrative purposes would also allow visitor access to many areas, and livestock development could be greater in the Passage Zone.

### **Conclusion**

The effects on water resources from Alternative D (Proposed Plan) would be much the same as Alternative A, with localized long-term effects at negligible to major intensities, depending on site location (proximity of ice caves to roads) or concentration of

livestock. Implementing Alternative D (Proposed Plan) could cause local long-term effects on water resources at intensity levels ranging from negligible to potentially major. Intense recreational use could affect ice cave pools, and livestock watering could affect individual playas, causing minor to moderate changes in nutrient concentrations, bacteria levels, and turbidity. The effects would tend to be localized to individual water bodies because no surface waters connect them.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's water resources or values would not be impaired.

## **WILDLIFE, INCLUDING SPECIAL STATUS SPECIES**

### **METHODOLOGY AND ASSUMPTIONS**

The available information used in this analysis was obtained from relevant scientific literature, wildlife databases, consultation with other biologists, interdisciplinary team meetings, and site visits. The impacts were assessed with the use of this information, knowledge of the Monument, and professional judgment.

The following impact thresholds were used for analyzing the intensity of effects on wildlife-related resources:

**Negligible:** Wildlife would not be affected, or the effects would be at or below the level of detection, and the changes would be so slight that they would not be of any measurable or perceptible consequence to the population of any wildlife species.

**Minor:** The effects on wildlife would be detectable but localized, small, and of little

consequence to the population of any species. Mitigating measures, if needed to offset adverse effects, would be simple and successful.

**Moderate:** The effects on wildlife would be readily detectable and localized, with consequences at the population level. Mitigating measures, if needed to offset adverse effects, would be extensive and probably would be successful.

**Major:** The effects on wildlife would be obvious and would result in substantial consequences to the populations in the region. Extensive mitigating measures would be needed to offset adverse effects, and their success would not be guaranteed.

For wildlife, impact duration was defined as follows:

**Short-term:** An effect that generally would last less than a single year or season.

**Long-term:** A change in a resource or its condition that would last longer than a single year or season.

The area of analysis for cumulative effects on wildlife was defined as the Monument and the five-county area surrounding the Monument, which contains habitat that may be used by Monument wildlife and may also support the same species of special concern.

## **IMPACTS FROM ALTERNATIVE A**

### **Analysis**

Four classes of roads would be maintained in the Monument under Alternative A. This use and related maintenance activities could continue to disturb wildlife species. The use of some higher standard roads such as US 20/26/93 would continue to result in road-killed animals and could adversely affect migration corridors for some species, including mule deer, pronghorn, and sage-grouse. The use of secondary roads, especially Class B roads adjacent to sensitive wildlife areas, could cause periodic



disturbance ranging from minor to moderate intensity.

Substantial vehicle traffic in mornings in April and early May could continue to adversely affect sage-grouse through disturbance and road kill. Many large mammals, including cougar, deer, elk, pronghorn, and bears, respond negatively to vehicle traffic. The presence of higher standard roads could lead to increased use and disturbance. There could be higher losses of some species, including marmots, near these roads. Better access could also lead to greater hunting pressure on animal populations in those areas. Most of these adverse impacts would be seasonal and of negligible to minor intensity. There is a potential for short-term moderate adverse impacts on some species in high use areas. Under the current management scenario, sage-grouse leks, and presumably sage-grouse populations, have declined 36 percent over the past 25 years. Sage-grouse are generally considered an indicator species for sagebrush steppe habitat and sagebrush-obligate species health. The decline of sage-grouse indicates management that is not only detrimental to sage-grouse, but also to their habitat and the other species which also use that habitat.

While there are numerous factors contributing to the range-wide decline of sage-grouse and sagebrush steppe habitat throughout the western United States, there are two primary contributing factors within the Monument. The first is livestock grazing. Heavy historical use by sheep and consistent early-season (pre-July) grazing use are primarily responsible for the declines in forb production and declines in native perennial grass production and composition. Additionally, the use of sage-grouse leks as sheep bedding grounds (as observed by IDFG) contributes to decreased sage-grouse recruitment. These issues are major contributors to much of the area not meeting BLM Rangeland Health Standards. The second primary factor affecting the health of the Monument's sagebrush steppe is wildfire and the invasion of cheatgrass. While it is difficult to determine which of these (fire or cheatgrass) originally preceded the other, it is clear that the combination is self-perpetuating in the absence of substantial

intervention. Fire creates ideal conditions for cheatgrass establishment, and cheatgrass is a highly flammable fuel. The spread of cheatgrass is also exacerbated when the native perennial grass and forb community is weakened as a result of excessive livestock grazing. These issues are addressed in the Desired Future Conditions statements applicable to all alternatives.

The goals of establishing and maintaining a plant community that reflects site potential and protecting sage-grouse leks from disturbance will each assist in improving habitat conditions for sage-grouse and sagebrush steppe obligates. Additionally, the goal of rehabilitating 40,000 acres (under Alternative A) of degraded habitat (mostly cheatgrass) will provide for the long-term improvement of habitat conditions. Habitat restoration depends on the successful implementation of Rangeland Health Standards and Guidelines as well as this plan's Desired Future Conditions.

This alternative would involve the implementation of statewide sage-grouse habitat guidelines for vegetation management. The State of Idaho's sage-grouse guidelines have been implemented throughout the state, and their implementation should improve the habitat in the Monument. These guidelines include protecting quality grouse habitat and restoring potential habitat where feasible. Existing high-quality habitat would be a priority for protection.

To achieve a mosaic of shrubs, forbs, and grasses capable of sustaining native animal populations, 40,000 acres of degraded sagebrush steppe habitats would be restored. Although there would be short-term minor adverse impacts on certain species from the clearing and burning associated with the initial stages, sagebrush steppe restoration should eventually provide an increase in forage and cover for many wildlife species. Shrub steppe-associated animal populations should eventually increase in areas of habitat restoration. This would be especially beneficial for 19 sensitive sagebrush steppe species that are declining throughout the region. The long-term effect of habitat restoration would be the re-establishment of a healthy native perennial

herbaceous understory under a canopy of sagebrush. Sagebrush obligate species in general, and sage-grouse in particular will benefit from achieving this desired result. Pygmy rabbits may also benefit from such restoration where other habitat factors, such as soil depth and friability, are also present. Under optimal conditions, benefits to pygmy rabbits would take 20 to 40 years to be realized because of their unique habitat requirements.

Alternative A would use Integrated Weed Management principles to control or eradicate existing populations and to prevent the establishment of new populations of exotic and invasive plants. Communities of such plants are generally used by a significantly smaller complement of animal species than are native habitats. Eliminating invasive plant species would have a negligible short-term adverse affect on a few animal species, but would benefit most animal species found in the Monument. The long-term effects of invasive species control would be a reduction or elimination of competition with native plant species thereby allowing the later to achieve higher levels of vigor and ultimately providing increased amounts of wildlife forage and cover.

Fire management under this alternative would involve suppression of wildland fires in most areas, with wildland fire use limited to the Wilderness and Preserve Areas. Outside of Wilderness, fire would be managed to maintain vegetative communities in their current successional state. Suppression would protect habitat for species that occupy climax habitats, including most shrub steppe species. Allowing wildland fire use would supply habitat for species that need early successional habitat and species that use burned habitats. Regardless of whether a fire was suppressed or allowed to burn for resource benefit, some species would be affected adversely and others would benefit.

Many sensitive sagebrush steppe species (pygmy rabbits, sage-grouse, sage sparrow, and others) would benefit from fire suppression in sagebrush steppe (Welch 2002). Some sensitive woodland species (Lewis' woodpecker, red-naped sapsucker, and others) would be adversely affected by the same activity

in aspen or pine habitats. Some sensitive species that use grasslands (grasshopper sparrow, long-billed curlew, and others) might also be negatively affected by suppression if open grasslands were not created or maintained (Welch 2002). The degree of the adverse effects can range from negligible to moderate, depending the size of fires in a given year. Rehabilitating burned sagebrush steppe should result in long-term beneficial effects in a manner similar to the restoration efforts discussed previously.

Riparian areas and wetlands in the planning area would be maintained, restored, or enhanced. Riparian woodlands, shrubs, and wetland vegetation used by animals for food and shelter would be maintained or increased, increasing forage and cover for riparian and wetland species. This would result in minor to moderate long-term beneficial effects on many riparian/wetland species, including 11 BLM sensitive species and many species of migratory birds.

Livestock use would continue, but the distribution of livestock could change, depending on the distribution of any new livestock developments. Where livestock developments encourage use in areas previously not used or rarely used by livestock, like the edges of Laidlaw Park, effects on native wildlife, including but not limited to sage-grouse, can be expected. Impacts would take the form of increased disturbance, loss of forage, and loss of hiding cover.

Another impact of livestock to wildlife is the use of ephemeral spring water. There are numerous natural playas across the area that capture winter water. These are used as water sources by the spring grazing sheep flocks. The herders use these waters as bedding areas and often do not move until the water is substantially used. Although this water would dry up naturally each year, it would be available for longer periods without the sheep use. This is perhaps most important to species like pronghorn that could use the water at fawning times.

Water development associated with livestock grazing might also affect wildlife. New water developments would increase animal density around the water source. Increased density would change



the normal distribution of desert animals. Birds and bats might suffer direct mortality from drowning in developments with open water troughs and open tanks. The migration routes of large animals might be altered if the animals used the artificial water sources. These adverse impacts would be minor to moderate and long-term.

Livestock use would be managed in accordance with the Idaho Standards for Rangeland Health and Guidelines for grazing management. Adverse effects on wildlife resulting from competition for forage would be long-term. Many species of migratory birds and small mammals would be adversely affected by the removal of cover and forage, and grazing could remove nesting cover for sage-grouse (Connelly et al. 2000). Several ground-nesting species could be trampled when grazing coincides with the breeding season.

Wildlife habitat would continue to be fragmented by roads, trails, and facilities, and wildlife habits and movements would continue to be altered by employees and visitors. People concentrate at the developed area in the original Monument, disturbing wildlife by their physical presence and associated noise. These intermittent adverse impacts would continue to be minor, but long-term. Visitors to less-used sites, such as Carey Kipuka Trail, Wapi Park, Wood Road Trail, and backcountry areas, would continue to cause intermittent minor disruption of wildlife. If the increases in visitation were only modest, this intermittent adverse impact would be long-term but of negligible intensity. The intensity of this impact would increase if the increases in visitation were greater.

The adverse impacts on wildlife from the management of geologic features would be negligible. For many species, the disturbance would be negligible to minor and short-term. For other species, including five species of bats and the blind cave beetle (which are sensitive species and regionally or nationally declining), the effects could be moderate to potentially major if the disturbance occurred at a sensitive time or place, such as during hibernation or at maternity sites, disrupting breeding or other

life-cycle functions. However, the adverse impacts would be reduced or eliminated by restricting access to certain important caves either permanently or seasonally during the times of the year when particular sites are important. This could reduce the adverse impacts to minor levels, at most.

Two species listed as threatened or endangered are in the Monument area. Both the bald eagle and the gray wolf, which are occasionally found in the Monument, are peripheral species, and the impacts on them from any actions of Alternative A probably would involve short-term minor disruption of their activities in the Monument, resulting in negligible to minor adverse effects.

### **Cumulative Impacts**

Agriculture, including both irrigated and dryland farming and ranching, has greatly reduced native animals in the area around the Monument. Animals perceived as pests have been displaced or killed, and habitat has been lost through agriculture and the introduction of nonnative animals.

Future development of private lands such as those near Carey for residential, tourist-related, or other uses could alter wildlife habitat and habits and cause a loss of wildlife in areas adjacent to the Monument. Habitat loss due to conversion to agriculture or residential and urban development has been identified as one of the leading causes of declines in sagebrush steppe wildlife in the region (Wisdom et al. 2000). Such habitat modifications are expected to continue at a regional level. Water use in these developments (or for other purposes) could reduce the amount of water available to wildlife, particularly in the Little Wood River or Huff Creek. Road kill of small mammals, large mammals, and birds would increase because the expected development of private lands would increase traffic.

Under direction from the ICBEMP and the BLM Sagebrush Steppe Restoration Program, lands both inside and outside of the Monument would be treated to convert areas dominated by cheatgrass to sagebrush with a perennial grass and forb understory. This could cause short-term negligible to

moderate adverse effects from herbicide, prescribed fire, and seeding treatments, which could cause the loss of some native habitat. Successful projects placed strategically over the landscape, resulting in a healthier, more resilient ecosystem, would constitute long-term, large scale, minor to major beneficial effects on many sagebrush steppe species. BLM is developing a national and an Idaho Sage-grouse Habitat Conservation Strategy. When these plans are finalized and implemented, they should lead to a long-term beneficial effect on grouse throughout the region, including the Monument. Many other sagebrush steppe species, including several sensitive species, should benefit from these strategies.

Agriculture and ranching can adversely affect wildlife in large areas of the Monument. Competition for forage from domestic livestock and past and continuing use of water from Lava Lake, Huff Creek, and the Little Wood River have contributed to adverse impacts on wildlife. Many habitats for native species have been lost or highly fragmented as lands have been converted to agricultural or other uses. The effects on wildlife from current and anticipated future actions outside the Monument, along with the actions of Alternative A, would be moderate, long-term, and adverse. Most of the impacts would result from development outside the Monument, and the impacts might or might not be mitigated. The actions of Alternative A would contribute a small increment to the overall cumulative impact.

### **Conclusion**

Under Alternative A, which would continue current conditions, the effects on wildlife would continue to result primarily from conflicts with human uses of the Monument, including disturbance by people and vehicles and conflicts and competition with livestock use. Access and roads and associated visitor recreation would result in minor long-term adverse impacts, plus short-term moderate local adverse impacts on some species in high use areas. Sagebrush steppe restoration and weed management actions would cause some short-term minor impacts, with minor to major beneficial impacts over the long-term, depending on the species involved.

Similarly, fire and suppression of fire would benefit some species but adversely affect others. The 50 sensitive species, which all use major habitats in the Monument and have a variety of life histories, would experience the same range of impacts as other wildlife.

The bald eagle and the gray wolf, which are listed as threatened and endangered, are occasionally found in the area of the Monument, but both are peripheral species, and the impacts on them would be negligible to minor.

Current livestock use and potential new livestock developments, which would be authorized in accordance with the Idaho Standards for Rangeland Health and Guidelines, could result in minor to moderate adverse impacts on sagebrush steppe habitat and/or sagebrush obligate wildlife species. In the long term, the restoration of 40,000 acres of degraded sagebrush steppe would mitigate a portion of any adverse effects on wildlife resources.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's wildlife resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

Anticipated increased use in the Passage Zone, which includes prime quality Key sage-grouse habitat in North Laidlaw Park, would (1) increase disturbance near lek sites which could depress sage-grouse breeding success resulting in decreased sage-grouse population levels, (2) increase disturbance in sage-grouse nesting habitat which could decrease nesting success directly as well as indirectly through increased predation of nests (it is common for predators to observe and/or track humans to



nest sites), and (3) increase the likelihood of human caused fires which would degrade sagebrush steppe habitat for all sagebrush obligate species, including sage-grouse.

Protection of active leks would assist in maintaining sage-grouse populations; however, it would not assist in enlarging sage-grouse populations to historic levels. Additionally, this level of protection would be minimized in North Laidlaw Park as a result of the expanded Passage Zone and increased use.

The effects on wildlife from Alternative B generally would be similar to those from Alternative A. Some activities, such as transportation and vegetation management, would take place at different levels in this alternative, leading to corresponding changes in the impacts.

More roads in the Monument would be maintained under Alternative B, which would result in greater use and more visitor access. This use would continue to disturb wildlife species in the manner described for Alternative A. There would potentially be high numbers of road-killed animals along high-use highway corridors. Secondary roads, especially Class B roads adjacent to sensitive wildlife areas, could cause periodic minor to moderate disturbance. The presence of more high quality roads would increase disturbances not directly resulting from motor vehicles, and there probably would be greater hunting pressure on animal populations in those areas under this alternative. These effects would be seasonal and negligible to minor, with a potential for moderate impacts on some species in high use areas. A larger Passage Zone and the possibility of improved access and more motor vehicles in that zone could result in more adverse impacts than those described for Alternative A.

The effects of shrub steppe restoration should be similar to those described for Alternative A. With about 5,000 more acres targeted for restoration under Alternative B, there would be a corresponding increase in beneficial effects on wildlife habitat.

Fire management under this alternative would involve suppression of fires in most areas, with

fire for resource benefit in the Pristine Zone. The greater emphasis on suppression to ensure public safety would protect existing habitat for species that occupy climax sagebrush habitats. Allowing burning for resource benefit would provide habitat for species that need early successional habitat and species that use burned habitats.

As described under Alternative A, regardless of whether a fire would be suppressed or allowed to burn for resource benefit, there would be adverse effects on some species and beneficial effects on others. Greater emphasis on rehabilitating burned sagebrush steppe would result in long-term beneficial effects, as was discussed previously. The possibility of burns for resource benefit in the Pristine Zone would allow greater flexibility for case by case habitat improvement than in Alternative A.

Livestock use would be managed in accordance with the Idaho Standards for Rangeland health and Guidelines for Grazing Management, as described under Alternative A, but a larger Passage Zone in Alternative B could lead to more concentrated livestock developments. The effects from competition for forage, removal of cover, and water distribution would be minor to moderate, long term, and limited to areas heavily used for grazing.

As in Alternative A, wildlife habitat would continue to be fragmented by roads, trails, and facilities, and wildlife habits and movements would continue to be altered by employees and visitors. People would concentrate at the developed area in the original Monument, disturbing wildlife and degrading habitat. Newly developed areas in Kings Bowl and at designated primitive campsites would cause more disturbances. These adverse impacts would be minor and generally long-term, with short-term minor to moderate impacts during the construction and development of new visitor use areas.

### **Cumulative Impacts**

The cumulative effects from Alternative B would be essentially the same as those from Alternative A, with a slightly higher possibility of visitor-related disturbances and road kills. The cumulative effects

of agricultural use and ranching and other actions outside the Monument, along with the actions of Alternative B, would be moderate, long-term, and adverse. Most of the impacts would result from development actions outside the Monument, which might or might not be mitigated. The actions of Alternative B would contribute a small increment to the overall cumulative impact.

### **Conclusion**

The impacts on wildlife from Alternative B would largely be the same as those of Alternative A, but the slight increase in acres restored would result in a related increase in improved habitat for sagebrush steppe species, a long-term minor to major beneficial effect. There could be a modest increase in adverse impacts from traffic disturbance in the larger Passage Zone area and the potential for increased or improved access to motor vehicles in that zone, as well as the development of a visitor use area in Kings Bowl and multiuse trails. The effects on wildlife would vary from species and species, but most effects would be long-term, minor to moderate, and localized.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's wildlife resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

The protection of both active and historic leks from disturbance during the breeding season as well as the closure of all roads in Key habitat during this same period would have a maximum effect (of all alternatives) leading to increasing sage-grouse breeding success and subsequent expansion of sage-grouse population levels. When combined with other management actions that assist in achieving site potential in Key sage-grouse habitat, this

alternative could have a significant effect on regional sage-grouse populations by increasing the number of birds available for expansion into nearby habitats (the basic definition of source or stronghold habitat).

The effects on wildlife from Alternative C would generally be similar to those described for Alternative A. Some activities, including transportation and vegetation management, would occur at different levels, with corresponding changes to the impacts.

Alternative C would involve the fewest miles of maintained roads, with most in the Primitive Zone. Any use of roads and trails would continue to disturb wildlife species, but the disturbance from road use and associated visitor access would be less than in Alternative A. Hunting pressure might decline in certain areas not served by highly maintained roads. These effects would be seasonal and negligible to minor, with the potential for moderate impacts on some species in high use areas and with a modest decrease in adverse impacts from those described for Alternative A because the Primitive Zone would be larger in Alternative C, with a corresponding decrease in the potential for more motor vehicle access in that zone.

About 55,000 acres would be targeted for restoration in Alternative C (15,000 more acres than in Alternative A), with less intrusive methods being used than in Alternative A. Thus, there could be fewer initial adverse impacts from site clearing and preparation; they could be reduced to minor levels. The greater acreage to be restored in Alternative C would lead to a related increase in improved habitat for sagebrush steppe species, but the time in which the beneficial effect would be achieved might be extended.

Fire management in Alternative C would involve suppressing wildfires in all areas except the Pristine Zone, where fire might be used for resource benefit. This is the same policy as in Alternative B, so the effects should be similar. As with Alternative A, wildlife habitat would continue to be fragmented by roads, trails, and facilities, and wildlife habits and movements would continue to be altered by employees and visitors. However, this impact would



be less under Alternative C because it would have the fewest maintained roads, with a corresponding decrease in visitor use. People would continue to concentrate at the developed area in the original Monument, disturbing wildlife somewhat. These intermittent adverse impacts would be minor and long-term.

### **Cumulative Impacts**

The cumulative impacts from Alternative C would be similar to those from Alternative A, with slightly more beneficial effects from the expanded reclamation program and the limited access to many areas. The cumulative impacts on wildlife from current and anticipated future actions outside the Monument, along with the actions under Alternative C, would be moderate, long-term, and adverse. Most of the impacts would result from development actions outside the Monument, which might or might not be mitigated. The actions of Alternative C would contribute a small increment to the overall cumulative effects.

### **Conclusion**

The effects on wildlife from Alternative C would largely be the same as those described for Alternative A, but 15,000 more acres would be restored in Alternative C, resulting in more improved habitat for sagebrush steppe species. There would be fewer adverse impacts from traffic disturbance because the Passage Zone would be smaller in Alternative C, and the Primitive Zone would be larger. These designations would include the potential for decreased access for motor vehicles and related recreational use overall, resulting in fewer direct and indirect adverse impacts on all wildlife species.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's wildlife resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

The effects to sage-grouse would be only slightly reduced from those described in Alternative C. The exact amount of difference would depend on the number of permits issued for morning road use (effectively sage-grouse breeding observation) during the sage-grouse breeding season.

The effects on wildlife from Alternative D (Proposed Plan) would generally be similar to those of the other alternatives, but an expanded restoration program in Alternative D (Proposed Plan) would lead to a greater benefit. Some activities, including transportation and vegetation management, would occur at different levels, with corresponding changes in the effects.

Selected roads in the Passage Zone would be upgraded and maintained for restoration and administration use under Alternative D (Proposed Plan). Minor rerouting of roads could lessen site-specific known wildlife impacts. The use of these roads would continue to disturb wildlife species, possibly severing some migration corridors for some species, including mule deer, pronghorn, and sage-grouse, and there would be road kill along high use corridors. Better access would lead to greater hunting pressure on animal populations in those areas. These seasonal impacts would be negligible to minor with a potential for moderate impacts on some species in high-use areas. Modest changes in the adverse impacts should result from changes in the Passage Zone and in the potential for increased or improved access for motor vehicles in that zone.

An aggressive program to restore 80,000 acres of sagebrush steppe habitat would be carried out in Alternative D (Proposed Plan). The effects on wildlife from this program would be similar to those from Alternative A, but with a substantially larger acreage slated for restoration, there also would be more improved habitat for sagebrush steppe species, a major long-term beneficial effect. Fire management under this alternative would involve suppressing fires in all areas except the Pristine Zone,

where fires might be allowed to continue burning for resource benefit. This is largely the same as Alternative B, and the effects should be similar.

As in Alternative A, wildlife habitat would continue to be fragmented by roads, trails, and facilities, and wildlife habits and movements would continue to be altered by employees and visitors. People would concentrate at the developed area in the original Monument, disturbing wildlife and degrading habitat. However, emphasizing the use of outfitters and guides might educate visitors, reducing widespread human-caused impacts, a beneficial effect. Adverse impacts would be minor but long-term.

### **Cumulative Impacts**

The cumulative effects of Alternative D (Proposed Plan) would be similar to those described for Alternative A, but the overall intensity would be slightly lower because the effects of the restoration would be highly beneficial. The cumulative effects on wildlife from current and anticipated future actions outside the Monument, along with the actions of Alternative D (Proposed Plan), would be minor, long-term, and adverse. Most of the impacts would result from development actions outside the Monument, which might or might not be mitigated. The actions of Alternative D (Proposed Plan) would contribute a substantial amount to the beneficial cumulative effects.

### **Conclusion**

The effects on wildlife from Alternative D (Proposed Plan) would be largely the same as those described for Alternative A, but twice as much acreage would be restored in Alternative D, resulting in more improved habitat for sagebrush steppe species, a major long-term beneficial effect. Modest changes in the adverse impacts could result from increases in the Passage Zone roads for restoration and administration uses and in the potential for increased or improved access for motor vehicles in that zone.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of

Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's wildlife resources or values would not be impaired.

## **AIR RESOURCES**

### **METHODOLOGY AND ASSUMPTIONS**

To assess air quality impacts, air quality standards and designations for the surrounding area were determined, and the results from nearby air monitoring sites were examined. Any reductions in pollutants resulting from implementing control strategies were taken into account. The effects on air quality from each alternative were assessed by considering existing air quality levels and the air quality related values present, with the use of available data and best professional judgment, and with modeling where possible.

For assessing emissions from fires, the quantity of particulate matter was based on the First Order Fire Effects Model. The annual area treated with prescribed fire was based on an annual average of total area targeted for restoration over a period of 15 years and an assumption that burning sagebrush produces 62.5 pounds per acre (lbs/acre) of PM10 particles and 53.0 lbs/acre of PM2.5 particles (First Order Fire Effects Model 5.1 2002).

The following impact thresholds were used for analyzing the intensity of effects on human health and air quality related values.

- Negligible: No changes would occur, or changes in air quality would be below or at the level of detection and if detected, the effects would be considered slight.
- Minor: Changes in air quality would be measurable, although the changes would be small and local. No air quality mitigating measures would be necessary.
- Moderate: Changes in air quality would be



measurable and would have appreciable consequences, although the effect would be relatively local. Air quality mitigating measures would be necessary, and they probably would be successful.

**Major:** Changes in air quality would be measurable, would have substantial consequences, and would be noticed regionally. Air quality mitigating measures would be necessary, and their success would be uncertain.

For air quality, the duration of impacts was defined as follows:

**Short-term:** An effect that would last a short period of time (generally one or two days but no more than seven days).

**Long-term:** A change in a resource or its condition that would last longer than seven consecutive days.

The area of analysis for the cumulative effects on air quality was defined as the Monument and BLM's Twin Falls District, including Southeast and South Central Idaho.

## **IMPACTS FROM ALTERNATIVE A**

### **Analysis**

Under Alternative A, the primary air pollutants would come from fires and from vehicles using roads and trails. The continued use and management of roads at current standards would result in the creation of fugitive dust. There would be 585 miles of unpaved roads inside the Monument, and road disturbance would result in soil displacement and dust production, which could adversely affect air quality and selected air quality related values such as visibility.

The amount of particulate matter emissions (smoke) produced from both prescribed fire and wildland fire use was predicted for Alternative A. The prediction was based on an annual average area burned with prescribed fire over the previous 15 years and the estimated number of acres in Craters of the Moon

Wilderness burned in the previous 15 years (Table 38). The actual amount of PM10 and PM2.5 particles produced from fire would be higher in areas where limber pine or junipers are interspersed with brush. This applies only to wildland use fires because no restoration treatments are proposed in areas with limber pine or juniper. The actual acreage burned annually would vary depending on the severity of wildland fire conditions and available funding. Fugitive dust could be generated from burned areas until sufficient vegetation recovered to hold the soil in place. Fugitive dust from wildland use fire probably would be negligible because soil development in the lava fields is limited to small areas such as those found within kipukas.

As shown in Table 38, Alternative A would produce the fewest emissions of smoke from prescribed and wildland use fires of all the alternatives considered. With the exception of the Wilderness Area, wildfires would be suppressed through the Monument. Prescribed fires to meet restoration objectives would continue, but at the lowest acreage level of all the alternatives.

The effects from road-related fugitive dust would be short-term, negligible, and limited to areas near roads and vehicle traffic. Impacts due to smoke from planned burns for restoration would be short-term (1 to 2 days) but could be of moderate intensity in areas in the immediate vicinity of the fire, diminishing rapidly downwind. The effects on air quality from wildland use fires would potentially be of longer duration (up to 7 days) than planned ignitions, depending on the vegetation types involved. Smoke impacts would be an important factor in decisions to initiate or terminate a wildland use fire; therefore, the effects on air quality would also be of moderate to potentially major intensity in areas in the immediate vicinity of the fire, but diminishing rapidly downwind. In Alternative A, wildland fire use could be used only for natural fire ignitions (such as lightning) in the designated Wilderness Area, which would limit potential major impacts.

**Table 38**  
**Summary of Emissions Produced from**  
**Prescribed and Wildland Use Fires by Alternative**

| Type of Fire Burning in Sagebrush   | Average Area Burned/year (acres) | PM10 Emissions Produced (lbs) | PM2.5 Emissions Produced (lbs) |
|---|----------------------------------|-------------------------------|--------------------------------|
| <b>Alternative A</b>  |                                  |                               |                                |
| Prescribed Fire (maximum potential)   | 2,666                            | 166,666                       | 141,333                        |
| Wildland Use Fire   | 200                              | 12,500                        | 10,600                         |
| <b>Alternative B</b>  |                                  |                               |                                |
| Prescribed Fire (maximum potential)   | 3,000                            | 187,500                       | 159,000                        |
| Wildland Use Fire (maximum potential should all fires within Pristine Zone be managed for resource benefit) | 1,250                            | 78,125                        | 66,250                         |
| <b>Alternative C</b>  |                                  |                               |                                |
| Prescribed Fire (maximum potential)   | 3,666                            | 229,166                       | 194,298                        |
| Wildland Use Fire (maximum potential should all fires within Pristine Zone be managed for resource benefit) | 1,250                            | 78,125                        | 66,250                         |
| <b>Alternative D</b>  |                                  |                               |                                |
| Prescribed Fire (maximum potential)   | 5,333                            | 333,333                       | 282,649                        |
| Wildland Use Fire (maximum potential should all fires within Pristine Zone be managed for resource benefit) | 1,250                            | 78,125                        | 66,250                         |

**Cumulative Impacts**

Other sources of smoke and dust in the region are wildfires and prescribed fires on public and private lands, fugitive dust from nearby roads, recently burned lands, and agricultural fields after tilling. Wildfires have burned a total of 730,800 acres in the Twin Falls District since 1996. BLM fire management activities (fire for resource benefit and prescribed fire) alone could produce up to 52,512 tons of PM10 particulate matter in the Twin Falls District over a 10-year period (BLM FMDA 2004). Other haze-causing pollutants (mostly fine particles) are emitted into the atmosphere by activities such as electric power generation; various industrial and manufacturing processes; truck and auto emissions; forest fires’ and construction at considerable distances from the Monument. Off-site sources, added to the sources of air pollution caused by the actions

of Alternative A, would create negligible to minor long-term adverse effects and moderate short-term adverse effects over the entire area. This would be similar for all alternatives.

**Conclusion**

Prescribed fire, wildland use fire, and fugitive dust from roads result in smoke or dust containing particles that adversely affect human health and air quality related values such as visibility. The effects on air quality from smoke and dust caused by the management activities of Alternative A typically would be short-term and local. The intensity of effects could range from negligible to moderate, depending on weather conditions and the location and size of fires. Most prescribed and wildland use fires would cause minor short-term effects. Fugitive dust from roads with current traffic use



would produce short-term local adverse effects of negligible intensity.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's air resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

The effects on air quality from Alternative B would be similar to those described for Alternative A, but with somewhat greater intensity. Under Alternative B, higher standard roads would be added to the expanded the Passage Zone. Therefore, vehicle traffic and vehicle speed could increase, resulting in a proportional increase in fugitive dust, a negligible to minor short-term local adverse impact.

The particulates (smoke) that would be produced by prescribed fire and wildland fire use was predicted for Alternative B with the use of the same assumptions as were described for Alternative A. More emissions of smoke would be produced under Alternative B than in Alternative A because a slightly larger area would be burned in Alternative B (see Table 29). Some naturally ignited fires in the Pristine Zone would be managed for resource benefit; these would be more likely to generate smoke over a longer period of time than if the fire was suppressed aggressively. Prescribed fires to meet restoration objectives could increase to a maximum of 45,000 acres over the life of the plan.

The effects from road-related fugitive dust could be higher in Alternative B than in Alternative A, but those effects still would be short-term, negligible, and localized to areas near road traffic. The effects from planned burns for restoration would be short-term (1 to 2 days) and of moderate intensity in areas

in the immediate vicinity of the fire, diminishing rapidly downwind. The effects on air quality from wildland use fires would potentially last longer (up to 7 days) than planned ignitions, depending on the vegetation types involved. Smoke impacts would be an important factor in decisions to initiate or terminate a wildland use fire; therefore, the impacts on air quality would be moderate to major in areas in the immediate vicinity of the fire but diminishing rapidly downwind. In Alternative B, potential wildland fire use could be expanded to most of the Preserve (409,460 acres).

### **Cumulative Impacts**

The cumulative effects on air quality from other sources of smoke and dust in the area would be the same as those described for Alternative A: particulates from wildfires and prescribed fires on public and private lands in the region, fugitive dust from nearby roads, recently burned lands, agricultural fields following tilling, and industrial and construction activities plus regional truck and auto emissions. Off-site sources, added to the sources of air pollution from the actions of Alternative B, would create negligible to minor long-term effects and moderate short-term effects over the entire area; this would be similar for all the alternatives.

### **Conclusion**

The adverse effects on air quality from the management actions of Alternative B typically would be short term and limited to the local region. The intensity of effects would range from negligible to moderate, with most prescribed and wildland use fires having minor effects. Fugitive dust from roads with potentially increased vehicle traffic use on unpaved roads would produce short-term local effects of negligible to minor intensity. A substantial increase in traffic would be required to elevate this impact to the moderate levels.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to

opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's air resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

Alternative C would involve fewer high standard roads than Alternative B; therefore, vehicle traffic and speed would remain the same as in Alternative A or possibly decrease, with a proportional decrease in fugitive dust from this source, resulting in negligible short-term local impacts on air quality and visibility.

The particulates (smoke) that would be produced by prescribed fire and wildland fire use was predicted for Alternative C with the use of the same assumptions as were described for Alternative A. More emissions of smoke would be produced under Alternative C than in Alternatives A or B because there would be a slightly larger area of prescribed fires (see Table 29). Some naturally ignited fires in the Pristine Zone would be managed for resource benefit; these would be more likely to generate smoke over a longer period of time than if the fire was suppressed aggressively. Prescribed fires to meet restoration objectives could increase to a maximum of 55,000 acres over the life of the plan.

### **Cumulative Impacts**

The cumulative effects on air quality from other sources of smoke and dust in the area would be the same under Alternative C as those described for Alternative A: particulates from wildfires and prescribed fires on public and private lands in the region, fugitive dust from nearby roads, recently burned lands, agricultural fields following tilling, and industrial and construction activities plus regional truck and auto emissions. Off-site sources, added to the sources of air pollution from the actions of Alternative C, would create negligible to minor long-term effects and moderate short-term effects over the entire area; this would be similar for all the alternatives.

### **Conclusion**

The adverse effects on air quality from Alternative C typically would be short term and limited to the local region. The intensity of effects would range from negligible to moderate, with most prescribed and wildland use fires causing minor effects. Fugitive dust from roads with decreased traffic use and vehicle speeds would produce short-term local effects of negligible intensity.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's air resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

Unpaved roads would be maintained to a high standard under Alternative D (Proposed Plan) to facilitate restoration and fire-related activities. Overall, increases in vehicle traffic and speed could be similar to those described for Alternative B, resulting in more road-related fugitive dust. Short-term increases in local areas could result from vehicle traffic from restoration projects. The adverse effects on air quality would be short-term, negligible, and localized.

The particulates (smoke) that would be produced by prescribed fire and wildland fire use was predicted for Alternative D (Proposed Plan) with the use of the same assumptions as were described for Alternative A. More emissions of smoke would be produced under Alternative D (Proposed Plan) than in any of the other alternatives because there would be more prescribed fires (see Table 29). Some naturally ignited fires in the Pristine Zone would be managed for resource benefit; these would be more likely to generate smoke over a longer period of time than if



the fire was suppressed aggressively. Prescribed fires to meet restoration objectives could increase to a maximum of 80,000 acres over the life of the plan.

### **Cumulative Impacts**

The cumulative effects on air quality from other sources of smoke and dust in the area would be the same under Alternative C as those described for Alternative A: particulates from wildfires and prescribed fires on public and private lands in the region, fugitive dust from nearby roads, recently burned lands, agricultural fields following tilling, and industrial and construction activities plus regional truck and auto emissions. Off-site sources, added to the slightly increased sources of air pollution from the actions of Alternative D (Proposed Plan), would create negligible to minor long-term effects and moderate short-term effects over the entire area; this would be similar for all the alternatives.

### **Conclusion**

The adverse effects on air quality from the actions of Alternative D (Proposed Plan) typically would be short term and limited to the local region. The intensity of effects would range from negligible to moderate, with most prescribed and wildland use fires causing minor effects. Fugitive dust from roads with current traffic use would produce short-term local effects of negligible intensity. The addition of non-Monument sources occurring during the same time period could produce more intense but still moderate effects throughout the Monument.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's air resources or values would not be impaired.

## **CULTURAL RESOURCES (ARCHAEOLOGICAL AND HISTORIC RESOURCES)**

### **METHODOLOGY AND ASSUMPTIONS**

The impact analysis for cultural resources is limited to the effects on archaeological and historic resources, since other cultural resource areas were dismissed from detailed analysis (see Chapter 1); also, effects on Native American treaty rights, trust resources, and ethnographic resources are addressed in a separate section. The NHPA requires agencies to take into account the effects of their actions on properties listed or eligible for listing on the National Register of Historic Places (NRHP). The process begins with identification and evaluation of cultural resources for NRHP eligibility, followed by an assessment of effect on those eligible resources, and concludes after a consultation process. If an action could change in any way the characteristics that qualify the resource for inclusion on the NRHP, it is considered to have an effect. No adverse effect means there could be an effect, but the effect would not be harmful to those characteristics that qualify the resource for inclusion on the NRHP. Adverse effect means the effect could diminish the integrity of the characteristics that qualify the resource for the NRHP.

Section 110 of the NHPA also provides direction to agencies to ensure that properties under agency jurisdiction are identified, evaluated and nominated to the National Register of Historic Places. In addition, eligible properties are to be managed and maintained for their historic preservation values. Preservation of these properties is to be given full consideration in planning.

In order to analyze the effects of the plan alternatives on archaeological resources, all available information on known archaeological sites was compiled. Map locations of archaeological sites were compared with locations of proposed developments and modifications to existing facilities. Certain assumptions were made regarding management of cultural resources in the future. These assumptions include:

- Some proactive Section 110 inventory (i.e., non-project-related inventory) would be completed within the Monument each year.
- Section 106 inventory would be conducted for all proposed development projects as required by FLPMA under each of these alternatives.
- NRHP listed and eligible sites would be monitored for vandalism and protected/stabilized as necessary.

Archaeological sites are continually deteriorating due primarily to the effects of weather and gravity. Left alone, sites will inevitably degrade over time. Impacts from concentrated human and livestock visitation and use can contribute to the effects to natural agents of deteriorations, and they can substantially increase the rate of site deterioration, in areas such as parking lots, livestock water troughs, trailheads, and corrals. Although it is impossible to entirely eliminate deterioration caused by natural elements, actions such as restoration, protection, and stabilization measures may be used to slow deterioration. In contrast, it is possible to control the effects of human impacts through careful planning of activities and new developments, by educating visitors and agency staff, and by limiting or directing locations of human activity in and around archaeological sites.

If impacts caused by deliberate vandalism or artifact collection are excluded, most impacts resulting from visitor use are relatively minor when considered on an individual basis. However, for the purpose of this plan, it is necessary to consider the effects caused by large amounts of visitors at a given location over the life of this plan. For example, while a single hiker may have a negligible effect on site integrity, the cumulative impact of many hikers over 15 to 20 years can be substantial. In the following section, impacts are analyzed for each alternative based on the numbers of sites that would be affected in conjunction with the effects of various types of activities over the life of the plan. For the purposes of this analysis, levels of impacts to archaeological resources were defined as follows:

Negligible: The impact on archaeological sites is at

the lowest levels of detection – barely measurable with any perceptible consequences, either beneficial or adverse, to archaeological resources. For purposes of Section 106, the site’s NRHP eligibility is not threatened and the determination of effect would be *no adverse effect*.

Minor: The adverse minor impact on archaeological sites is measurable or perceptible, but it is slight and localized within a relatively small area for a site or group of sites. The impact does not affect the character diminish features of an NRHP eligible or listed archaeological site and would not have a permanent effect on the integrity of any archaeological sites. For the purposes of Section 106, the site’s NRHP eligibility is intact and the determination of effect would be *no adverse effect*.

The beneficial minor impact involves maintenance and preservation of sites. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate: The adverse moderate impact is measurable and perceptible. The impact changes one or more character-defining features of an archaeological resource, but does not diminish the integrity of the resource to the extent that its NRHP eligibility is entirely lost. For purposes of Section 106, the site’s NRHP eligibility is threatened and the determination of effect would be *adverse effect*.

The beneficial moderate impact involves site stabilization. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major: The adverse major impact on archaeological sites is substantial, noticeable, and permanent. For NRHP-eligible or



-listed archaeological sites, the impact changes one or more character-defining features of an archaeological resource, diminishing the integrity of the resource to the extent that it is no longer eligible for listing in the NRHP. For purposes of Section 106, the site's NRHP eligibility is lost and the determination of effect would be *adverse effect*.

The beneficial major impact involves active intervention to preserve and improve sites. For purposes of Section 106, the determination of effect would be *no adverse effect*.

The area of analysis for cumulative impacts to Cultural Resources was defined as south central and eastern Idaho.

## **IMPACTS FROM ALTERNATIVE A**

### **Analysis**

Cultural resource management within the Monument would continue under current laws, policies, and regulations under Alternative A. The cultural resource database for this area would expand slowly each year as data are collected from Section 106 projects and Section 110 inventory, a moderate beneficial impact to cultural resources.

Roads within the Monument would remain in their current condition at current maintenance levels. Remote areas of the Monument would remain difficult to access by vehicle, and most areas would be inaccessible by sedan. The broad network of repetitive, two-track Class D roads would remain open. Travel on poorly maintained Class D roads could increase erosion that could impact nearby sites. Difficult travel would keep the majority of visitors out of the most remote areas and away from many cultural resources. There could be long-term, minor adverse impacts to cultural resources from erosion due to vehicle traffic. There would be a long-term, minor beneficial impact in keeping cultural resources inaccessible.

Under this alternative, 40,000 acres are targeted for sagebrush steppe restoration, which involves the use of prescribed fire and drill seeding to return the vegetation to a mix of perennial plants and shrubs. Any fire, wild or prescribed, exposes cultural resources on the ground surface, placing them at risk for unauthorized collection and increased soil erosion. Any restoration projects would be subject to Section 106 inventory as they arise to ensure that cultural resources are not impacted. Flagging cultural resources for avoidance often attracts attention to those sites and increases the risk of unauthorized collection. Sagebrush steppe restoration activities would have a short-term, minor adverse effect on cultural resources resulting from flagging, but the long-term stabilization of the soils and the reduced potential for wildfire would have a long-term, moderate beneficial effect.

Wildfire management under this alternative consists of full suppression on all lands outside designated wilderness. Full suppression reduces the number of acres that burn, which limits the acres of ground surface exposed, thereby protecting cultural resources from increased risk of unauthorized collection. Cultural resources may receive intense, short-term vehicle traffic during active fire suppression activities, as well as possible heavy equipment impacts as a result of fire line construction. This could constitute a short-term, moderate adverse impact during suppression activities. Overall, full suppression of wildfire would have a long-term, major beneficial impact on cultural resources.

There would be no change in livestock use management under Alternative A. Currently, livestock cause some erosion at playa sites and water trough locations, which may impact cultural resources. Fence construction could cause livestock congregation in certain areas. Livestock can create trails and denude areas of vegetation where they congregate, which adds to surface soil erosion and can damage cultural resources in the area. Livestock use could have a short-term, site-specific (at a temporary water trough, for example), minor to moderate adverse effect on cultural resources.

Visitor facilities would remain the way they currently are, with cultural resource interpretation at specific locations at the north end of the Monument, some minor trail maintenance of existing trails and some safety information posted on waysides at the Crystal Ice Cave/Kings Bowl area. Keeping the majority of visitors on developed trails and providing interpretative materials at specific locations minimizes the amount of foot traffic, unauthorized collection, and vandalism at the majority of cultural resource sites within the Monument. For those locations with interpretive materials, there would be a long-term, minor adverse effect from foot traffic, unauthorized collection and vandalism. Interpretive materials may stress resource protection, which may reduce the amount of damage to cultural resources. There would be a long-term, minor beneficial effect for cultural resources away from trails without interpretive waysides because visitors would not be drawn to those areas.

The Monument currently includes all four Visual Resource Management (VRM) classifications (Classes I through IV). This allows for a relatively wide range of developments outside WSAs and Wilderness areas. A Section 106 inventory would be required to prevent adverse impacts to sites on a case-by-case basis, but over time more developments within the Monument could increase the amount of visual intrusion, which can have an indirect impact on cultural resources. Class III and IV VRM designations within the Monument would have a long-term, minor adverse impact to cultural resources.

### **Cumulative Impacts**

For the most part, use of adjacent federal lands outside the Monument would contribute similar impacts to cultural resources as described above. At current staffing levels, the amount of proactive cultural resource inventory and monitoring would be limited, and site looting could go undetected in the backcountry areas.

Adjacent private land development, including use of land for agriculture and grazing, can severely affect cultural resources, since there is no federal oversight

or regulation of these activities. This makes the preservation of sites on public lands more urgent, as the overall number of undisturbed archaeological resources is dwindling.

It is possible that information distributed in visitor centers in the neighboring communities, such as Twin Falls and Idaho Falls, may draw increased visitors to the Monument, although it seems unlikely given the current visitation levels. This could increase pressure on cultural resources from foot and vehicle traffic, as well as unauthorized collection and vandalism. This increased visitation, in conjunction with the impacts already occurring, may have a long-term, negligible to minor, adverse impact on cultural resources. Overall, cumulative impacts to cultural resources from actions outside the Monument boundary, plus those of this alternative, would be long term and generally adverse, ranging from minor to moderate in intensity.

### **Conclusion**

Alternative A would have a negligible to minor, adverse impact on maintaining the long-term integrity of the majority of archaeological resources within the Monument. The restoration program outcome and fire suppression would have a long-term, moderate beneficial effect, while initial restoration, suppression actions, grazing, and vehicle travel would result in short-term, minor to moderate adverse impacts.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's cultural resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

Cultural resource management within the Monu-



ment would continue under current laws, policies, and regulations. The cultural resource database for this area would expand each year as data is collected from Section 106 projects and Section 110 inventory, a moderate beneficial impact to cultural resources. Increased recreation use would require more intense monitoring of cultural resources in the Passage Zone to prevent or minimize damage.

Under Alternative B, the road and trail system would provide a high level of access to a wide variety of destinations, recreation activities, and both motorized and non-motorized trails. Improved access to the more remote regions of the Monument could increase the visitor use of those areas, as well as increasing the impacts of vehicle and foot traffic, unauthorized collections and vandalism to cultural resources. Increased vehicle access may lead to an increase in wildfires, leaving cultural resources exposed to vandalism, illegal collection, and excessive erosion. This alternative includes the largest number of acres within the Passage Zone, which provides more opportunities for trail development within that zone. There would be a long-term, moderate adverse effect to cultural resources under this alternative.

Under this alternative, 45,000 acres are targeted for sagebrush steppe restoration, which involves the use of prescribed fire and drill seeding to return the vegetation to a mix of perennial plants and shrubs. Any fire, wild or prescribed, exposes cultural resources on the ground surface placing them at risk for unauthorized collection and increased soil erosion. Any restoration projects would be subject to a Section 106 inventory as they arise to assure cultural resources are not impacted. Flagging cultural resources for avoidance often attracts attention to those sites and increases the risk of unauthorized collection. Sagebrush steppe restoration activities would have a short-term, minor adverse effect on cultural resources resulting from flagging, but the long-term stabilization of the soils and the reduced potential for wildfire would have a long-term, moderate beneficial effect.

Wildfire management under this alternative consists of full suppression on all lands outside the Pristine

Zone, especially those with existing, healthy sagebrush steppe. Full suppression reduces the number of acres that burn, which limits the acres of ground surface exposed, thereby protecting cultural resources from increased risk of unauthorized collection. Cultural resources may receive intense, short-term vehicle traffic during active fire suppression activities, as well as possible heavy equipment impacts as a result of fire line construction. This could constitute a short-term, moderate adverse impact during suppression activities. Overall, full suppression of wildfire would have a long-term, major beneficial impact on cultural resources.

In Alternatives B, C, and D, any new livestock water facilities would be more likely in the Passage Zone, although few new developments are anticipated. Since livestock tend to congregate around water sources, there could be long term, site specific, minor to moderate adverse effects on cultural resources located near water sources.

Visitor facilities would be expanded under Alternative B, with cultural resource interpretation at specific locations, new trail designations and interpretive/safety information posted on waysides at the Crystal Ice Cave/Kings Bowl area. Increasing the number of designated, developed trails and providing more interpretative materials at specific locations, increases the potential for vehicle and foot traffic, unauthorized collection and vandalism at cultural resource sites within the Passage Zone. For those locations with interpretive materials, there would be a long-term, minor adverse effect from vehicle and foot traffic, unauthorized collection and vandalism. Interpretive materials may stress resource protection, which may reduce the amount of damage to cultural resources. There would be a long-term, minor beneficial effect for cultural resources away from trails without interpretive waysides because visitors would not be drawn to those areas.

This alternative would designate all lands within the Monument as VRM Class I or II. This minimizes the visual intrusion of possible developments outside WSAs and Wilderness areas. A Section 106 inven-

tory would be required to prevent adverse impacts to development sites on a case-by-case basis. Over time, less intrusive developments resulting from more restrictive VRM classes within the Monument would have a long-term, negligible to minor beneficial impact on cultural resources.

### **Cumulative Impacts**

For the most part, use of adjacent federal lands outside the Monument would contribute similar impacts to cultural resources as described above. Adjacent private land development, including use of land for agriculture and grazing, can severely affect cultural resources, since there is no federal oversight or regulation of these activities. This makes the preservation of sites on public lands more urgent, as the overall number of undisturbed archaeological resources is dwindling.

It is possible that information distributed in visitor centers in the neighboring communities, such as Twin Falls and Idaho Falls, may draw increased visitors to the Monument. This could increase pressure on cultural resources from foot and vehicle traffic, as well as unauthorized collection and vandalism. This increased visitation, in conjunction with the impacts already occurring, may have a long-term, negligible to minor, adverse impact on cultural resources. Increased proactive cultural resource inventory, interpretation and monitoring under this alternative would help minimize that impact. Overall, cumulative impacts to cultural resources from actions outside the Monument boundary, plus those of this alternative, would be long term and generally adverse, ranging from minor to moderate in intensity.

### **Conclusion**

Alternative B would have a moderate adverse effect on maintaining the long-term integrity of the majority of archaeological resources within the Monument by emphasizing recreational opportunities and vehicle access. The restoration program outcome and fire suppression would have a long-term, moderate beneficial impact, where vehicle travel, grazing, initial restoration, and suppression

actions would result in short-term minor to moderate adverse impacts.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's cultural resources or values would not be impaired.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

Cultural resource management within the Monument would continue under current laws, policies and regulations. The cultural resource database for this area would expand each year as data is collected from Section 106 projects and Section 110 inventory, a moderate beneficial impact to cultural resources.

Under Alternative C, fewer roads within the Monument would be maintained to a high standard and more roads would be closed. Decreased access to the more remote regions of the Monument would decrease the visitor use of those areas, and concurrently decrease the impacts of vehicle and foot traffic, unauthorized collections, and vandalism to cultural resources. Decreased vehicle access may lead to a decrease in human caused wildfires, which would protect cultural resources from exposure and erosion. This alternative includes the largest number of acres within the Pristine Zone, which provides fewer opportunities for trail development within the Monument. There would be a long-term, minor beneficial effect to cultural resources under this alternative.

Under this alternative, 55,000 acres are targeted for sagebrush steppe restoration, which involves the use of prescribed fire and drill seeding to return the vegetation to a mix of perennial plants and shrubs. Any fire, wild or prescribed, exposes cultural resources on the ground surface placing them at



risk for unauthorized collection and increased soil erosion. Any restoration projects would be subject to Section 106 inventory as they arise to assure cultural resources are not impacted. Flagging cultural resources for avoidance often attracts attention to those sites and increases the risk of unauthorized collection. Sagebrush steppe restoration activities would have a short-term, minor adverse effect on cultural resources resulting from flagging, but the long-term stabilization of the soils and the reduced potential for wildfire would have a long-term, moderate beneficial effect.

Wildfire management under this alternative consists of full suppression on all lands outside the Pristine Zone, especially those with existing, healthy sagebrush steppe. Full suppression reduces the number of acres that burn, which limits the acres of ground surface exposed, thereby protecting cultural resources from increased risk of unauthorized collection. Cultural resources may receive intense, short-term vehicle traffic during active fire suppression activities, as well as possible heavy equipment impacts as a result of fire line construction. This could constitute a short-term, moderate adverse impact during suppression activities. Overall, full suppression of wildfire would have a long-term, major beneficial impact on cultural resources.

In Alternatives B, C, and D, any new livestock water facilities would be more likely in the Passage Zone, although few new developments are anticipated. Since livestock tend to congregate around water sources, there could be long-term, site-specific, and minor to moderate adverse effects on cultural resources located near water sources.

Visitor facilities would be minimal under Alternative C, with cultural resource interpretation at a few specific locations, no new trail designations and interpretive/safety information posted on waysides at the Crystal Ice Cave/Kings Bowl area. For those locations with interpretive materials, there would be a long-term, minor adverse effect from vehicle and foot traffic, unauthorized collection, and vandalism. Interpretive materials may stress resource protection, which may reduce the amount of damage to

cultural resources. There would be a long-term, minor beneficial effect for cultural resources away from trails without interpretive waysides because visitors would not be drawn to those areas.

This alternative would designate all lands within the Monument as VRM Class I or II. This minimizes the visual intrusion of possible developments outside WSAs and Wilderness areas. A Section 106 inventory would be required to prevent adverse impacts to development sites on a case-by-case basis. Less intrusive developments resulting from more restrictive VRM classes within the Monument would have a long-term, negligible to minor beneficial impact on cultural resources.

### **Cumulative Impacts**

For the most part, use of adjacent federal lands outside the Monument would contribute similar impacts to cultural resources as described above. Adjacent private land development, including use of land for agriculture and grazing, can severely affect cultural resources, since there is no federal oversight or regulation of these activities. This makes the preservation of sites on public lands more urgent, as the overall number of undisturbed archaeological resources is dwindling.

It is possible that information distributed in visitor centers in the neighboring communities, such as Twin Falls and Idaho Falls, may draw increased visitors to the Monument. This could increase pressure on cultural resources from foot and vehicle traffic, as well as unauthorized collection and vandalism. This increased visitation, in conjunction with the impacts already occurring, may have a long-term, negligible to minor adverse impact on cultural resources. Increased proactive cultural resource inventory and monitoring under this alternative would help minimize that impact. Overall, cumulative impacts to cultural resources from actions outside the Monument boundary, plus those of this alternative, would be long-term and generally adverse, ranging from minor to moderate in intensity.

## Conclusion

Alternative C would have a minor beneficial effect on maintaining long-term integrity of the majority of archaeological resources within the Monument by minimizing the amount of human and vehicle traffic into the Primitive and Pristine Zones. The restoration program outcome, fire suppression, and restricted access would all contribute to long-term, minor to moderate beneficial impacts. Vehicle traffic (limited), grazing, initial restoration, and suppression actions would result in short-term, minor to moderate adverse impacts.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's cultural resources or values would not be impaired.

## IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)

### Analysis

Cultural resource management within the Monument would continue under current laws, policies and regulations. The cultural resource database for this area would expand each year as data is collected from Section 106 projects and Section 110 inventory, a moderate beneficial impact to cultural resources.

Under Alternative D (Proposed Plan), existing Class B and C roads in the Primitive Zone would remain open, their maintenance driven by natural resource management needs, primarily fire suppression, weed management, and restoration activities. Many Class D roads in the Primitive and Pristine Zones would be converted to trails or closed for resource protection. The restrictions proposed on Class D roads could decrease visitor use in the Primitive and Pristine Zones, thereby decreasing the risk of cultural resource vandalism and illegal collection. The occurrence of human caused wildfires may

also decrease, lowering the risk of cultural resource site erosion. Upgrading the primary access routes outside the Monument (south end of Arco-Minidoka Road and the Carey-Kimama Road,) to a consistent B classification may encourage more visitors in the Passage Zone and may increase pressure on cultural resources within the Passage Zone, but overall this alternative would have a long-term, minor beneficial effect to cultural.

Under this alternative, the largest amount of land (80,000 acres) is targeted for sagebrush steppe restoration, a substantial increase over the other three alternatives. This involves the use of prescribed fire and drill seeding to return the vegetation to a mix of perennial plants and shrubs. Any fire, wild or prescribed, exposes cultural resources on the ground surface placing them at risk for unauthorized collection and increased soil erosion. Any restoration project would be subject to Section 106 inventory as they arise to assure cultural resources are not impacted. Flagging cultural resources for avoidance often attracts attention to those sites and increases the risk of unauthorized collection. Sagebrush steppe restoration activities would have a short-term, minor to possibly moderate adverse effect on cultural resources due to the amount of area and aggressive program, which would expose more area at any one time. However, the long-term stabilization of the soils and the reduced potential for wildfire would have a long-term, moderate beneficial effect.

Wildfire management under this alternative consists of full suppression on all lands outside the Pristine Zone, especially those with existing, healthy sagebrush steppe. Full suppression reduces the number of acres that burn, which limits the acres of ground surface exposed, thereby protecting cultural resources from increased risk of unauthorized collection. Cultural resources may receive intense, short-term vehicle traffic during active fire suppression activities, as well as possible heavy equipment impacts as a result of fire line construction. This could constitute a short-term, moderate adverse impact during suppression activities. Overall, full suppression of wildfire would have a long-term,



major beneficial impact on cultural resources.

In Alternatives B, C, and D, any new livestock water facilities would be more likely in the Passage Zone, although few new developments are anticipated.

Since livestock tend to congregate around water sources, there could be long-term, site-specific, and minor to moderate adverse effects on cultural resources located near water sources. The modifications made in the FEIS to Alternative D reduce Passage Zone in the Laidlaw Park area compared to the Draft Alternative D. This would likely limit some development of livestock facilities and reduce the potential for associated adverse impacts to cultural resources in or near these areas.

Visitor facilities would be focused outside the Monument under Alternative D (Proposed Plan). For those few cultural resource locations with on-site interpretive materials, there would be a long-term, minor adverse effect from vehicle and foot traffic, unauthorized collection, and vandalism. Interpretive materials would stress resource protection, which may reduce the amount of damage to cultural resources. There would be a long-term, minor beneficial effect for cultural resources away from roads and trails without interpretive waysides because visitors would not be drawn to those areas.

This alternative would designate all lands within the Monument as VRM Class I or II. This minimizes the visual intrusion of possible developments outside WSAs and Wilderness areas. A Section 106 inventory would be required to prevent adverse impacts to development sites on a case-by-case basis. Less intrusive developments resulting from more restrictive VRM classes within the Monument would have a long-term, negligible to minor beneficial impact on cultural resources.

### **Cumulative Impacts**

For the most part, use of adjacent federal lands outside the Monument would contribute similar impacts to cultural resources as described above. Adjacent private land development, including use of land for agriculture and grazing, can severely affect cultural resources, since there is no federal oversight

or regulation of these activities. This makes the preservation of sites on public lands more urgent, as the overall number of undisturbed archaeological resources is dwindling.

It is possible that information distributed in visitor centers in the neighboring communities, such as Twin Falls and Idaho Falls, may draw increased visitors to the Monument. This could increase pressure on cultural resources from foot and vehicle traffic, as well as unauthorized collection and vandalism. This increased visitation, in conjunction with the impacts already occurring, may have a long-term, negligible to minor adverse impact on cultural resources. Increased proactive cultural resource inventory, interpretation and monitoring under this alternative would help minimize that impact. Overall, cumulative impacts to cultural resources from actions outside the Monument boundary, plus those of this alternative, would be long-term, negligible to minor adverse impacts.

### **Conclusion**

Alternative D (Proposed Plan) would have a moderate beneficial effect on maintaining the long-term integrity of the majority of archaeological resources within the Monument by emphasizing off-site interpretation and visitor services, and by emphasizing aggressive range restoration. Short-term minor to moderate adverse impacts would also occur from vehicle travel, initial restoration activities, suppression actions, and grazing.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the Monument's cultural resources or values would not be impaired.

# NATIVE AMERICAN RIGHTS AND INTERESTS

## METHODOLOGY AND ASSUMPTIONS

Federal agencies are required to take into account the effects of their actions on Native American values, such as tribal treaty rights/trust resources, ethnographic resources, access to traditional use areas and/or religious/sacred sites, preservation of archaeological sites, the handling of Native American Graves Protection and Repatriation Act (NAGPRA) materials and the maintenance of suitable habitat for subsistence species of importance to tribes.

In order to analyze the effects of the plan alternatives on Native American values, several meetings were held with interested tribal staff to collect their comments on the alternatives. Certain assumptions were made regarding Native American values within the Monument. These assumptions include:

- Section 106 archaeological inventory would be conducted for all proposed development projects as required by the National Historic Preservation Act (NHPA) under each of these alternatives. As part of the agencies' mandated tribal consultation responsibilities, any proposed development determined to have impacts to cultural resources or Native American values would be discussed with the tribes to develop alternatives and/or mitigation measures.
- Tribes regulate their own members' hunting on the Preserve and the expanded areas of the Monument.
- In addition to the agencies' mandated tribal consultation responsibilities, BLM and NPS staff would continue to meet with interested tribal staff on a regular basis to discuss and address issues of concern as they arise.
- The current road network provides sufficient access to traditional use areas for tribal members.
- The handling of NAGPRA materials would follow the guidance provided in the law and

would not vary by alternative.

For the purposes of this analysis, levels of impacts to Native American values were defined as follows:

**Negligible:** The impact to Native American values is at the lowest levels of detection - barely measurable, without perceptible consequences, either beneficial or adverse.

**Minor:** A minor adverse impact on Native American values is measurable or perceptible, but it is slight and localized within a relatively small area. The impact does not diminish the character of trust resources, ethnographic resources, traditional use areas or the exercise of treaty rights and would not have a permanent effect on the integrity of any ethnographic resource, traditional use area, or treaty right.

A minor beneficial impact involves maintenance and preservation of traditional use areas, trust resources, ethnographic resources and/or habitat for treaty species.

**Moderate:** A moderate adverse impact is measurable and perceptible. The impact changes one or more characteristics or defining features of trust resources, ethnographic resources, traditional use areas or treaty rights, but does not diminish the integrity of the resource to the extent that it is jeopardized.

A moderate beneficial impact involves stabilization of trust resources, ethnographic resources, traditional use areas, and/or habitat for treaty species.

**Major:** A major adverse impact on Native American values is substantial, noticeable, and permanent. The impact changes one or more character-defining features of trust resources, ethnographic



resources, traditional use areas or treaty rights, diminishing the integrity of the resource to the extent that it is no longer able to sustain traditional uses or support the exercise of treaty rights.

A major beneficial impact involves active intervention to preserve trust resources, ethnographic resources, traditional use areas, and/or habitat for treaty species.

The area of analysis for cumulative impacts to Native American Values was defined as the Eastern Snake River Plain.

## **IMPACTS FROM ALTERNATIVE A**

### **Analysis**

Under Alternative A, 40,000 acres are planned for sagebrush steppe restoration, which involves the use of prescribed fire and drill seeding to return the vegetation to a mix of native plants and shrubs. Any fire, wild or prescribed, temporarily displaces wildlife and may change the character of traditional use areas. Sagebrush steppe restoration activities could have a short term, minor adverse effect on ethnographic resources, traditional use areas and the exercise of treaty rights, but the long term improvement in habitat and the reduced potential for wildfire would have a long term, moderate beneficial effect on Native American values.

Wildfire management under this alternative consists of full suppression on all lands outside the Pristine Zone. Full suppression reduces the number of acres that burn, thereby protecting traditional use areas from loss of habitat for treaty species. Traditional use areas may receive intense, short-term vehicle traffic during active fire suppression activities, as well as possible heavy equipment impacts as a result of firebreak construction. This could constitute a short-term, moderate adverse impact during suppression activities. Overall, full suppression of wildfire would have a long-term, minor beneficial impact on ethnographic resources, traditional use areas and habitat for treaty species.

The Monument currently includes all four Visual Resource Management (VRM) classifications (Classes I – IV). This allows for a wide range of developments outside WSAs and Wilderness areas. Over time, Class III and IV area developments within the Monument could increase the amount of visual intrusion, which could have an indirect impact on the character and integrity of ethnographic resources and traditional use areas. Class III and IV VRM designations within the Monument could have a long-term, negligible to minor adverse impact to Native American values.

Under Alternative A, roads within the Monument would remain in their current condition at current maintenance levels. Remote areas of the Monument would remain difficult to access by vehicle and most areas would be inaccessible by sedan. The broad network of two-track Class D roads would remain open. Because tribal members have not identified any access concerns, for the purpose of this analysis the agencies assume the existing road network is adequate for tribal access to traditional use areas. There would be a long-term, negligible to minor beneficial impact to Native American values.

### **Cumulative Impacts**

Tribal treaty rights exercised on adjacent federal lands outside the Monument are consistent with those exercised within the expanded Monument and Preserve. It is possible that information distributed in existing visitor centers in the neighboring communities, such as Twin Falls and Idaho Falls, may draw increased visitors to the Monument, but it seems unlikely given the current visitation levels. Increased visitation, in conjunction with the impacts already occurring, could have a long-term, negligible to minor, adverse impact on ethnographic resources and traditional use areas.

### **Conclusion**

Alternative A would have a negligible to minor, beneficial impact on maintaining the long-term integrity of ethnographic resources and traditional use areas within the Monument.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, there would be no impairment of Native American rights and interests.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

Under Alternative B, 45,000 acres are planned for sagebrush steppe restoration, which involves the use of prescribed fire and drill seeding to return the vegetation to a mix of native plants and shrubs. Any fire, wild or prescribed, temporarily displaces wildlife and may change the character of traditional use areas. Sagebrush steppe restoration activities could have a short-term, minor adverse effect on ethnographic resources, traditional use areas and the exercise of treaty rights, but the long term improvement in habitat and the reduced potential for wildfire would have a long-term, moderate beneficial effect on Native American values.

Wildfire management under this alternative consists of full suppression on all lands outside the Pristine Zone, especially those with existing, healthy sagebrush steppe. Full suppression reduces the number of acres that burn, thereby protecting traditional use areas from loss of habitat for treaty species. Traditional use areas may receive intense, short-term vehicle traffic during active fire suppression activities, as well as possible heavy equipment impacts as a result of firebreak construction. This could constitute a short term, moderate adverse impact during suppression activities. Overall, full suppression of wildfire would have a long-term, minor beneficial impact on ethnographic resources, traditional use areas and habitat for treaty species.

This alternative would designate all lands within the Monument as VRM Class I or II. This minimizes the visual intrusion of potential developments

outside WSAs and Wilderness areas. Over time, less intrusive developments resulting from more restrictive VRM classes within the Monument would have a long term, negligible to minor, beneficial impact on the character and integrity of ethnographic resources and traditional use areas.

Under Alternative B, the road and trail system would provide a high level of access to a wide variety of destinations and recreation activities. Improved access to the more remote regions of the Monument could increase the visitor use of those areas, as well as increasing the impacts of vehicle and foot traffic, unauthorized collections and vandalism to cultural and/or ethnographic resources. Increased vehicle access may lead to an increase in wildfires. This alternative includes the largest number of acres within the Passage Zone, which provides more opportunities for trail development within that zone. As a result, there could be a long-term, minor adverse effect to ethnographic resources and traditional use areas under this alternative.

With the increased acres in the Passage Zone under Alternative B, there would be an increased area of potential livestock facility development. Livestock-caused erosion at water trough locations and water pipeline developments would be confined to the Passage Zone. The concentration of livestock within the Passage Zone could increase pressure on any ethnographic resources and traditional use areas within that zone. Under Alternative B, livestock grazing would have a long-term, site specific, minor adverse effect on ethnographic resources and traditional use areas within the Passage Zone. Livestock grazing would have a short-term, negligible to minor adverse effect on ethnographic resources and traditional use areas within the Frontcountry, Primitive, and Pristine Zones.

Visitor facilities would be expanded under Alternative B, with natural and cultural resource interpretation at specific locations, new trail designations and interpretive/safety information posted on waysides at recreation areas. Increasing the number of designated, developed trails and providing more interpretative materials at specific locations,



increases the potential for vehicle and foot traffic within the Passage Zone. For those locations with increased recreation use, there could be a long-term, minor adverse effect from vehicle and foot traffic, unauthorized collection, and vandalism. Interpretive materials may stress resource protection, which may reduce the amount of damage to natural and cultural/ethnographic resources in traditional use areas.

### **Cumulative Impacts**

Tribal treaty rights exercised on adjacent federal lands outside the Monument are consistent with those exercised within the expanded Monument and Preserve. It is possible that information distributed in existing visitor centers in the neighboring communities, such as Twin Falls and Idaho Falls, and the proposed road improvements may draw increased visitors to the Monument. This could increase pressure on traditional use areas from foot and vehicle traffic and possibly result in conflicts between tribal members and the public. This increased visitation, in conjunction with the impacts already occurring, may have a long-term, negligible to minor, adverse impact on ethnographic resources, traditional use areas and the exercise of tribal treaty rights.

### **Conclusion**

Alternative B would have a minor to moderate adverse effect on maintaining the long-term integrity of ethnographic resources and traditional use areas within the Monument by emphasizing recreational opportunities and vehicle access.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, there would be no impairment of Native American rights and interests.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

Under Alternative C, 55,000 acres are planned for sagebrush steppe restoration, which involves the use of prescribed fire and drill seeding to return the vegetation to a mix of native plants and shrubs. Any fire, wild or prescribed, temporarily displaces wildlife and may change the character of ethnographic resources and traditional use areas. Sagebrush steppe restoration activities could have a short-term, minor adverse effect on traditional use areas and the exercise of treaty rights, but the long-term improvement in habitat and the reduced potential for wildfire would have a long-term, moderate beneficial effect on Native American values.

Wildfire management under this alternative consists of full suppression on all lands outside the Pristine Zone, especially those with existing, healthy sagebrush steppe. Full suppression reduces the number of acres that burn, thereby protecting ethnographic resources and traditional use areas from loss of habitat for treaty species. Traditional use areas may receive intense, short-term vehicle traffic during active fire suppression activities, as well as possible heavy equipment impacts as a result of firebreak construction. This could constitute a short term, moderate adverse impact during suppression activities. Overall, full suppression of wildfire would have a long-term, minor beneficial impact on ethnographic resources, traditional use areas and habitat for treaty species.

This alternative would designate all lands within the Monument as VRM Class I or II. This minimizes the visual intrusion of potential developments outside WSAs and Wilderness areas. Over time, less intrusive developments resulting from more restrictive VRM classes within the Monument would have a long-term, negligible to minor, beneficial impact on the character and integrity of ethnographic resources and traditional use areas.

Under Alternative C, fewer roads within the Monument would be maintained to a high standard and more roads would be closed. Decreased access to the more remote regions of the Monument may decrease

the amount of visitor use of those areas. Decreased vehicle access may lead to a decrease in human-caused wildfires, which would protect traditional use areas. Road closures may make access to ethnographic resources, traditional use areas or sacred sites difficult for tribal elders who may not be able to walk long distances over rough terrain. This alternative includes the largest number of acres within the Pristine Zone, which provides fewer opportunities for trail development within the Monument. There would be a long-term, minor beneficial effect to traditional use areas and habitat for treaty species under this alternative, but there may also be a minor adverse impact to Native Americans resulting from decreased vehicle access.

With the increased acres in the Pristine Zone under Alternative C, there would be a decreased area of potential livestock facility development. Livestock-caused erosion at water trough locations and water pipeline developments would be confined to the relatively small Passage Zone. The concentration of livestock within the Passage Zone could increase pressure on traditional use areas within that zone, as well as decrease pressure on traditional use areas in the Primitive and Pristine Zones. Under Alternative C, livestock grazing would have a long-term, site-specific, minor to moderate adverse effect on traditional use areas within the Passage Zone. Livestock grazing would have a short-term, negligible to minor adverse effect on ethnographic resources and traditional use areas within the Frontcountry, Primitive, and Pristine Zones.

### **Cumulative Impacts**

Tribal treaty rights exercised on adjacent federal lands outside the Monument are consistent with those exercised within the expanded Monument and Preserve. It is possible that information distributed in existing visitor centers in the neighboring communities, such as Twin Falls and Idaho Falls, may draw increased visitors to the Monument, but the decrease in visitor facilities and the road network would confine most visitors to the Passage Zone. This increased visitation, in conjunction with the impacts already occurring, may have a long-term, negligible to minor, adverse impact on ethnographic

resources and traditional use areas within the Passage Zone.

### **Conclusion**

Alternative C would have a minor beneficial effect on maintaining long-term integrity of ethnographic resources and traditional use areas within the Monument by minimizing the amount of human and vehicle traffic in the Primitive and Pristine Zones, but may also cause some hardship for elderly tribal members due to lack of vehicle access.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, there would be no impairment of Native American rights and interests.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

Under Alternative D (Proposed Plan), 80,000 acres are planned for sagebrush steppe restoration, which involves the use of prescribed fire and drill seeding to return the vegetation to a mix of native plants and shrubs. Any fire, wild or prescribed, temporarily displaces wildlife and may change the character of traditional use areas. Sagebrush steppe restoration activities could have a short-term, minor adverse effect on ethnographic resources, traditional use areas and the exercise of treaty rights, but the long-term improvement in habitat, and the reduced potential for wildfire would have a long-term, moderate beneficial effect on Native American values.

Wildfire management under this alternative consists of full suppression on all lands outside the Pristine Zone, especially those with existing, healthy sagebrush steppe. Full suppression reduces the number of acres that burn, thereby protecting ethnographic resources and traditional use areas from loss of



habitat for treaty species. Traditional use areas may receive intense, short-term vehicle traffic during active fire suppression activities, as well as possible heavy equipment impacts as a result of firebreak construction. This could constitute a short-term, moderate adverse impact during suppression activities. Overall, full suppression of wildfire would have a long-term, minor beneficial impact on ethnographic resources, traditional use areas and habitat for treaty species.

This alternative would designate all lands within the Monument as VRM Class I or II. This minimizes the visual intrusion of potential developments outside WSAs and Wilderness areas. Over time, less intrusive developments resulting from more restrictive VRM classes within the Monument would have a long-term, negligible to minor, beneficial impact on the character and integrity of ethnographic resources and traditional use areas.

Under Alternative D (Proposed Plan), existing Class B and C roads would remain open in the Primitive Zone, their maintenance driven by natural resource management needs, primarily fire suppression, weed management, and restoration activities. Many Class D roads in the Primitive and Pristine Zones would be converted to trails or closed for resource protection. The restrictions proposed on Class D roads could decrease visitor use in the Primitive and Pristine Zones, thereby decreasing impacts to ethnographic resources and traditional use areas. The occurrence of vehicle-caused wildfires may also decrease, lowering the risk of habitat loss. Upgrading the primary access routes outside the Monument (south end of the Arco-Minidoka Road, and the Carey-Kimama Road) to a consistent B classification may encourage more visitors in the Passage Zone and may increase pressure on ethnographic resources and traditional use areas within the Passage Zone; but overall, this alternative would have a long-term, minor beneficial effect on ethnographic resources and traditional use areas.

In Alternatives B, C and D, any new livestock water facilities would be more likely in the Passage Zone, although few new developments are anticipated.

Since livestock tend to congregate around water sources, there could be long-term, site-specific, and minor to moderate adverse effects on ethnographic resources and traditional use areas near water sources in the Passage Zone. The modifications made in the FEIS to Alternative D reduce Passage Zone in the Laidlaw Park area compared to the Draft Alternative D. This would likely limit some development of livestock facilities and reduce the potential for associated adverse impacts to cultural resources in or near these areas.

With the increased acres in the Passage Zone under Alternative D (Proposed Plan), there would be an increased area of potential livestock facility development. Livestock-caused erosion at water trough locations and water pipeline developments would be confined to the Passage Zone. The concentration of livestock within the Passage Zone could increase pressure on ethnographic resources and traditional use areas within that zone. Under Alternative D (Proposed Plan), livestock grazing would have a long-term, site-specific, minor to moderate adverse effect on traditional use areas within the Passage Zone. Livestock grazing would have a short-term, negligible to minor adverse effect on ethnographic resources and traditional use areas within the Frontcountry, Primitive, and Pristine Zones.

Also emphasized under this alternative would be more visitor facilities and information located outside the Monument boundary, near highways. There is the potential to educate a large public audience about Monument resources and preservation without having the increased visitor pressure on the Monument resources. The increased visibility is likely to increase the amount of visitors to the Monument to some degree, but the majority of the public would be satisfied with a short stop at a convenient visitor center outside the Monument. This alternative would provide a long-term, minor beneficial impact on maintaining the character and integrity of ethnographic resources and traditional use areas by satisfying the public's interest with off-site visitor facilities.

## Cumulative Impacts

Tribal treaty rights exercised on adjacent federal lands outside the Monument are consistent with those exercised within the expanded Monument and Preserve. It is possible that information distributed in proposed off-site visitor centers along major highways could draw increased visitors to the Monument, but the majority of the public probably would not visit the actual Monument. This could decrease pressure on ethnographic resources and traditional use areas from foot/vehicle traffic and potential conflicts between tribal members and the public. This emphasis on off-site visitor services, in conjunction with the impacts already occurring, may have a long-term, negligible to minor, adverse impact on ethnographic resources, traditional use areas and the exercise of tribal treaty rights.

## Conclusion

Alternative D (Proposed Plan) would have a minor to moderate beneficial effect on maintaining the long-term integrity of ethnographic resources and traditional use areas within the Monument by emphasizing off-site interpretation and visitor services, and by emphasizing range restoration. Lack of vehicle access in Pristine Zone could cause some hardship for elderly tribal members who are not able to physically reach certain areas on foot.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to the natural or cultural integrity of the Monument or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, there would be no impairment of Native American rights and interests.

# LAND USE AND TRANSPORTATION

## TRAVEL AND ACCESS

### METHODOLOGY AND ASSUMPTIONS

Road system standards and maintenance influence the amount and type of access to a given area. Use generally increases when road conditions improve and decreases as conditions degrade.

To analyze the effects of the alternatives on travel and access, available information on existing roads and trails in the Monument was compiled. Certain assumptions were made regarding the management of travel and access in the future, as follows:

- A Comprehensive Travel Management Plan would be prepared for the Monument and made available to the public. This would provide specific guidance to Monument managers, local road and bridge cooperators, and the general public of the standards for improvement and/or maintenance of the various classes of roads described in this Proposed Plan/FEIS or potential road closures. It would also include a road map/brochure of the Monument for public use. This would show road standards, maintenance levels and appropriate uses.
- There would be no net increase in road mileage in the Monument.
- The road system in the planning area would provide access for visitors, permittees, non-federal landowners, and administrative needs without adversely affecting the resources and values that the Monument was established to preserve.
- The agencies would coordinate road management inside and outside of the Monument cooperatively with local government agencies so that the transportation system would be managed in a comprehensive, logical manner.
- The agencies also would work cooperatively with local government agencies to provide



appropriate access to the Monument and private land within the Monument.

The road standard classifications that were developed for the purpose of identifying and defining roads at Craters of the Moon National Monument and Preserve are described in the Affected Environment section.

For the purposes of this analysis, the intensity of impacts on travel and access were defined as follows:

**Negligible:** The effects would not be detectable and would have no discernible effect on traffic flow and/or road conditions.

**Minor:** The effects would be slightly detectable but there would not be an overall effect on traffic flow and/or road conditions.

**Moderate:** The effects would be clearly detectable, and the action could have an appreciable effect on traffic flow and/or road conditions.

**Major:** The effects would be substantial, with a highly noticeable influence, and the traffic flow and/or road conditions could be permanently altered.

The area of analysis for cumulative impacts was defined as the Monument and the surrounding 50-mile radius.

## **IMPACTS FROM ALTERNATIVE A**

### **Analysis**

Under Alternative A, the roads in the Monument would remain in their current condition at current maintenance levels. The majority of the road network consists of Class C and D roads in the Primitive Zone, with some higher standard Class B roads in the Passage Zone. Class A roads are restricted to the Frontcountry Zone, and Class 1 (non-motorized) trails are mainly found in the Primitive Zone (see Table 3 for mileage). Remote areas of the Monument would remain difficult to reach by vehicle, and most areas would be accessible only to high clearance

vehicles. The broad network of two-track roads would remain open. Difficult travel would keep most visitors out of the most remote areas. Vehicle traffic could cause erosion on access routes, a long-term minor adverse impact on visitors desiring better access.

Under this alternative, 40,000 acres of degraded rangeland would be proactively treated for sagebrush steppe restoration, which would involve the use of herbicides, prescribed fire, drill seeding, and other methods. These activities could cause short-term minor disruptions to travel and access in the Monument if certain areas or roads were restricted during the activities. However, the reduced potential for large wildfires would result in a long-term moderate beneficial effect by reducing the amount of road use by firefighting equipment.

Wildfire management in Alternative A would consist of full suppression on all lands outside the designated wilderness. There could be intense, short-term vehicle traffic on access routes during active fire suppression activities, and the use of heavy equipment to construct firebreaks also might affect such routes. Fire management impacts on roads, whether from suppression or prescribed burning, would include heavy use of roads by large fire engines, small fire engines, pickup trucks and SUVs, equipment transport (low-boys) and bulldozers, as well as bulldozing and widening existing roads for use as fuel breaks. Suppression activities could cause a short-term moderate adverse impact. This could constitute a short-term moderate adverse impact during and immediately after suppression activities.

There would be no change in the management of livestock use under Alternative A. Permittees would continue to haul water to troughs on the existing road network and to trail livestock along road corridors. This would result in a long-term minor adverse effect on access roads, and periodic maintenance would be necessary to retain existing conditions.

Visitor facilities would remain as they are at present, with interpretation at specific locations at the original NPS Monument, some minor trail maintenance of existing trails, and some safety information posted on waysides at the Crystal Ice Cave/Kings Bowl area. Visitor use would cause a negligible effect on access and transportation routes with interpretive waysides.

New mineral material permits would be authorized inside the Monument only for administrative use, but the existing pits would continue to be used until expended.

Road maintenance efforts would cause minor short-term adverse impacts on road conditions but would result in a long-term minor beneficial effect on road conditions. When mineral material pits were closed, reclamation efforts would cause minor short-term adverse impacts from heavy equipment and work on the ground. Obliterating short material-site access roads during reclamation efforts would cause a negligible to minor adverse impact on access.

### **Cumulative Impacts**

Access and transportation management on adjoining federal lands outside the Monument would affect the numbers of visitors able to reach the expanded portion of the Monument. The planned realignment of US 93 would straighten some curves in the Highway, making this access route safer for motorists. It is possible that information distributed in visitor centers in neighboring communities such as Twin Falls and Idaho Falls would attract more visitors to the Monument. Informational kiosks at access points to the Monument also could increase visitation. All these factors could potentially increase the pressure on access routes in the Monument, necessitating more road maintenance. Increased visitation, in conjunction with the impacts already occurring under Alternative A, would result in a long-term negligible to minor adverse impact on access and transportation.

### **Conclusion**

Actions under Alternative A would cause minor adverse impacts on travel and access in the Monument,

with long-term minor beneficial effects resulting from completed restoration and road maintenance activities.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

Alternative B would involve more opportunities over the life of the plan for improving access to the Monument both inside and outside of the Monument boundary. With emphasis on providing greater access for recreation, the subsequent increase in Passage Zone acreage could result in higher maintenance costs, as could the expense of converting some Class D roads to Class 1 and 2 trails. The recommended improvement of the Arco-Minidoka Road could result in an upgrade of approximately 25 miles from Class C to Class B inside the Passage Zone (see Table 8 for mileage). This improved access would cause minor to moderate long-term adverse impacts on travel and access by attracting more visitors and increasing the frequency and level of needed maintenance. Alternative B would result in substantial increases in road upgrade/reconstruction costs for the agencies, counties, and local highway districts, as well as increasing annual road maintenance costs.

Improved access and more emphasis on road signs and interpretive signs in the Passage Zone would result in moderate long- and short-term beneficial effects by increasing visitor access to the Monument and by offering visitors more orientation and direction. Remote areas of the Monument still would be difficult to reach by vehicle, but some areas might become more accessible for lower clearance type vehicles. The broad network of existing Class D roads would remain, providing access to the Pristine Zone.

Multiple use trails developed under this alternative could improve access for forms of travel other than cars and trucks, leading to minor to moderate beneficial effects. However, erosion and more use of multiple use trails would degrade such trails, necessitating more maintenance. This would result in minor to moderate short- and long-term adverse impacts.



Designating the Carey-Kimama and Arco-Minidoka roads as Backcountry Byways would cause moderate long-term adverse impacts from more visitor use and related increases in maintenance expenses.

Treating about 45,000 acres of degraded rangeland would be treated for proactive sagebrush steppe restoration under Alternative B would be a 5,000-acre increase over Alternative A. As in Alternative A, the sagebrush steppe restoration process would cause a short-term minor disruption of access and transportation. However, the reduced potential for large wildfires would reduce the amount of road use by firefighting equipment, a long-term moderate beneficial effect.

Wildfire management in Alternative B would consist of full suppression on all lands outside the Pristine Zone. During active fire suppression activities, access routes might be subject to intense short-term vehicle traffic and possible impacts from the use of heavy equipment to construct fire lines. The effects on roads from fire management, whether suppression or prescribed burning, would be caused by heavy use of roads by large fire engines, small fire engines, pickup trucks, SUVs, equipment transporters, and bulldozers, as well as bulldozing and widening existing roads for use as fuel breaks. Active fire suppression would result in temporary road closures, a short-term moderate adverse effect on access and transportation.

More livestock developments (such as water troughs) in the expanded Passage Zone could increase the use of the road network to reach these sites, causing minor to moderate short- and long-term adverse impacts on transportation and access. More water-truck traffic would create the potential for road congestion and could create dusty conditions on roads during the grazing season, resulting in a long-term minor to moderate adverse effect on access routes.

Placing interpretive waysides in the Passage Zone under Alternative B would cause negligible effects on travel and access. Constructing designated primitive campsites would increase visitor use, leading to

increased needs for road maintenance. This would be a negligible to minor long-term adverse impact. Designating dispersed campsites would concentrate visitation in specific areas, relieving pressure on the overall transportation system, a long-term negligible to minor beneficial effect.

Improved access to destination sites in the Monument such as Baker Caves and Kings Bowl would lead to increased visitation, resulting in a long-term minor beneficial effect on visitor access. Increased road maintenance and traffic could create short-term minor adverse impacts on transportation safety.

New mineral material sites could be authorized inside the Monument for administrative use only, but the existing pits would continue to be used until expended. New mineral material pits might be necessary to complete the road upgrades and resulting maintenance in this alternative. Using heavy equipment to maintain Monument roads would cause minor short-term adverse impacts on transportation safety, but there would be a long-term minor beneficial effect from such maintenance efforts. When mineral material pits were closed, reclamation efforts would result in minor short-term adverse impacts from heavy equipment and work on the ground. Obliterating short material-site access roads during reclamation efforts would cause negligible to minor adverse impacts on access.

### **Cumulative Impacts**

The principal access routes outside the Monument would be upgraded and maintained in conjunction with counties and other BLM offices, causing minor to moderate long-term benefits by improving access to and from gateway sites around the Monument. The planned realignment of US 93 would straighten some curves in the Highway, making this access route safer for motorists. This realignment would increase visitation to the Monument, necessitating more road maintenance. This would cause minor to moderate long-term adverse impacts on transportation safety in the Monument. All these factors, along with the emphasis on visitor use of the Monument under this alternative, would result in a long-term minor beneficial effect on visitor access.

## Conclusion

By emphasizing recreational opportunities and increased access, Alternative B would cause a long term minor to moderate adverse effect on road conditions in the Monument, but it also would lead to a long-term moderate beneficial effect on the availability of access and ease of travel to many locations in the Monument.

## IMPACTS FROM ALTERNATIVE C

### Analysis

Alternative C would involve reducing access to and within the Monument over the life of the plan because the Pristine Zone would be larger. By definition, the Pristine Zone does not allow any roads, and this would result in closing or converting to trails approximately 50 miles of Class C and D roads. Fewer miles of roads with limited Passage Zone areas would be maintained to Class B and C standards (see Table 8 for mileage). The road closures and possible road removal would be a potential loss of access, a long-term minor to moderate adverse impact. Having fewer miles of roads maintained under Alternative C would cause minor to moderate adverse impacts on Monument access because a smaller range of vehicles would be accommodated by the transportation system. Over time, this alternative would result in a reduction in road maintenance expenses for the agencies, counties, and local Highway Districts.

Placing interpretive facilities off-site would reduce the number of visitors to the Monument, resulting in long-term minor beneficial effects on transportation safety. Less visitation would result in less erosion, degradation, and other forms of damage to roads, thereby reducing the need for road maintenance.

The large land area in the Pristine Zone in this alternative would include some roads along lava edges and in sagebrush steppe areas. Alternative C would close the two-track roads by signing and blocking, ripping and seeding, or converting them to Class 1 trails. This would result in moderate long-term adverse impacts on motorized access and

a moderate long-term beneficial effect on foot/horse access.

A total of 55,000 acres of degraded rangeland would be proactively treated for sagebrush steppe restoration under Alternative C, 15,000 acres more than in Alternative A. As in Alternative A, the restoration activities would result in a short-term minor adverse effect on travel and access, but in this alternative the effects would be evident possibly over a larger area or for a longer time. However, the reduced potential for large wildfires would reduce the amount of road used by firefighting equipment, a long-term moderate beneficial effect.

As in Alternative B, wildfire management under Alternative C would consist of full suppression on all lands outside the Pristine Zone. During active fire suppression activities, access routes might be subject to intense short-term vehicle traffic and possible impacts from the use of heavy equipment to construct fire lines. The effects on roads from fire management, whether suppression or prescribed burning, would be caused by heavy use of roads by large fire engines, small fire engines, pickup trucks, SUVs, equipment transporters, and bulldozers, as well as bulldozing and widening existing roads for use as fuel breaks. Active fire suppression would result in temporary road closures, a short-term moderate adverse effect on access and transportation.

Existing livestock developments would remain, with the possibility of some closures. Closing livestock facilities would cause long-term minor beneficial effects on access and transportation safety. Fewer water-hauling vehicles would use the transportation system, reducing traffic, damage to roads, and the frequency of needed maintenance.

Using heavy equipment to maintain Monument roads would cause minor short-term adverse impacts on transportation safety, but there would be a long-term minor beneficial effect from such maintenance efforts. When mineral material pits were closed, reclamation efforts would result in minor short-term adverse impacts from heavy equipment and work



on the ground. Obliterating short material-site access roads during reclamation efforts would cause negligible to minor adverse impacts on access.

Existing mineral material sites in the Monument would be used until expended, and no new material sites would be developed. Having fewer miles of maintained road under this alternative would reduce the presence of heavy equipment on roads and congestion in the transportation system, resulting in minor to moderate long-term beneficial effects on travel safety in the Monument. Travel on lower standard roads in the Monument could cause long term minor to moderate adverse impacts on travel safety.

### **Cumulative Impacts**

Access and transportation management on adjoining federal lands outside the Monument would affect the numbers of visitors who could reach the Primitive and Pristine Zones of the Monument. The planned realignment of US 93 would straighten some curves in the highway, making this route safer for motorists. Visitor travel on roads maintained to a lower standard would result in minor to moderate long-term adverse impacts the road network in the Monument. Placing interpretive materials such as waysides and printed products outside the Monument boundaries would cause minor to moderate beneficial effects because fewer visitors would actually enter the Monument and use the transportation network. Overall, the effects of these actions, along with the effects from the actions of Alternative C, would result in long-term minor adverse impacts on travel and access.

### **Conclusion**

By closing more miles of road in the Monument, Alternative C would cause minor to moderate adverse impacts on access. Reduced vehicle traffic could result in minor beneficial effects on transportation safety, but there also might be minor adverse impacts on travel safety from visitors using lower standard roads.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

Under Alternative D (Proposed Plan), the main purposes of the road network would be to protect resources and to facilitate fire suppression. This alternative would allow opportunities for modest improvements in existing Monument access over the life of the plan by providing needed road maintenance in the Passage and Primitive Zones (see Table 8 for mileage). This would improve public access and road quality, creating a long-term minor beneficial effect on access and transportation. Some reduction was made to Passage Zone in the Laidlaw Park area in the FEIS Alternative D, in response to public comment on the Draft Plan/EIS. However, a main loop drive in designated Passage Zone was retained to serve the needs of visitors and park staff for access, while reducing the potential for adverse impacts to resources in the Laidlaw Park area. Other modifications to Alternative D were done to change some areas from Primitive to Pristine Zone that were intruding from roads into the interior of the Monument along the edges of the lava fields. Although this would limit access beyond the immediate road corridors, it would not cause adverse conditions for most visitor or park staff access, and would serve to further protect the Monument's interior resources. Some Class C and D roads in the Primitive Zone could also be closed for resource benefit, resulting in long-term negligible to minor adverse impacts on access. There would be modest increases in road maintenance costs for the agencies, the counties, and the Highway Districts.

Most Monument roads would be maintained at current levels, with some minor improvements to protect resources and improve the response time for fire suppression. In places where maintenance is currently lacking, this could result in minor adverse impacts from continued degradation of the roadways and access. In areas where roads are currently well maintained, this would prevent the degradation of roadways and access from possible higher levels of use, a minor beneficial effect. The use of heavy equipment for temporary road improvements,

along with short-term road closures associated with restoration efforts, would cause minor short-term impacts on access and transportation.

A total of 80,000 acres of degraded rangeland would be proactively treated for sagebrush steppe restoration under Alternative D (Proposed Plan), double the acreage planned for Alternative A. These more extensive sagebrush steppe restoration activities would cause a short-term minor to moderate adverse effect on travel and access. However, the reduced potential for large wildfires in this alternative (stemming from the provision of additional fire stations and adequate access to reach wildfires at their initial stages) would reduce the amount of road used by firefighting equipment, a long-term moderate beneficial effect. As in Alternatives B and C, wildfire management under Alternative D (Proposed Plan) would consist of full suppression on all lands outside the Pristine Zone. Naturally ignited fires in the Pristine Zone could be allowed to burn when and where suitable conditions and planning exist. During active fire suppression activities, access routes might be subject to intense short-term vehicle traffic and possible impacts from the use of heavy equipment to construct fire lines. The effects on roads from fire management, whether suppression or prescribed burning, would be caused by heavy use of roads by large fire engines, small fire engines, pickup trucks, SUVs, equipment transporters, and bulldozers, as well as bulldozing and widening existing roads for use as fuel breaks. Access roads in the Monument would be maintained under this alternative for fire suppression, a minor long-term beneficial effect on Monument access.

Offering off-site interpretation would reduce the number of visitors using the Monument's transportation network, a long-term minor beneficial effect. Placing some visitor facilities outside the Monument would reduce pressure on the transportation network, a long-term minor beneficial effect. Rehabilitating Kings Bowl could involve temporary road closures and the use of heavy equipment, resulting in a negligible to minor short-term adverse impact.

New mineral material sites could be authorized inside the Monument for administrative use only, but the existing pits would continue to be used until expended. New mineral material pits might be necessary to complete the road maintenance required in this alternative. Using heavy equipment to maintain Monument roads would cause minor short-term adverse impacts on transportation safety, but there would be a long-term minor beneficial effect from such maintenance efforts. When mineral material pits are closed, reclamation efforts would result in minor short-term adverse impacts from heavy equipment and work on the ground. Obliterating short material-site access roads during reclamation efforts would cause negligible to minor adverse impacts on access.

### **Cumulative Impacts**

Access and transportation management on adjoining federal lands outside the Monument could affect the numbers of visitors who are directed toward the Monument entrances and use existing roads and trails to access Monument features and recreational facilities. The planned realignment of US 93 would straighten some curves in the highway, making this route safer for motorists. Distributing information in visitor centers in neighboring communities such as Twin Falls and Idaho Falls might attract more visitors to the Monument. Informational kiosks now at access points to the Monument also could attract more visitors, increasing the pressure on access routes within the Monument. Placing interpretive materials such as waysides and printed products outside the Monument boundaries would cause minor to moderate beneficial effects because fewer visitors would actually enter the Monument and use the transportation network. Overall, the effects of these actions, along with the effects from the actions of Alternative D (Proposed Plan), would result in long-term negligible to minor beneficial effects on travel and access.

### **Conclusion**

By emphasizing off-site interpretation, visitor services, and long-term range restoration, Alternative D (Proposed Plan) would cause long-term minor beneficial effects on access and road conditions in the Monument.



## LIVESTOCK GRAZING

### METHODOLOGY AND ASSUMPTIONS

Available information was obtained through relevant literature, Best Management Practices, standards and guidelines assessments, monitoring, existing land use plans, and consultation with the public, permittees, and interdisciplinary teams. Impacts were assessed using best professional judgment and the following criteria to define impact intensities:

|            |   |
|------------|---|
| Negligible | Grazing operations would not be appreciably affected.   |
| Minor      | The effect would be perceptible, and the action would result in a slight change in grazing operations, but the change would be localized. |
| Moderate   | The effects would be apparent, and the action would result in a limited change in grazing operations.                                     |
| Major      | The effects would be readily apparent or widespread, and the action would result in a substantial change in grazing operations.           |

The area of analysis for cumulative impacts was defined as Craters of the Moon National Monument and Preserve and the surrounding communities within approximately 50 miles.

### IMPACTS FROM ALTERNATIVE A

#### Analysis

Under this alternative about 40,000 acres of degraded rangeland would be targeted for proactive sagebrush steppe restoration. The restoration would involve a combination of manipulation techniques such as herbicides, prescribed fires, and seeding to return the plant communities to proper functioning condition. Natural wildfires generally would be suppressed, but some fires would occur throughout the Monument, disrupting grazing. The restoration and fire-related activities could result in closure to grazing for two years or more. Such a substantial change in grazing operations would result in a

short-term moderate adverse impact. In addition to the allotment directly affected by the closure, adjacent allotments might be indirectly affected by the redistribution of displaced livestock. Such changes might include altering the number of grazing livestock, the season of use, or the duration of grazing. However, the long-term effects would be moderate and beneficial because restoration would improve rangeland health.

In this alternative the Frontcountry Zone would cover approximately 2,300 acres; the Passage Zone, 4,700 acres; the Primitive Zone, 290,200 acres; and the Pristine Zone, 448,800 acres. Road upgrading and facility development would be allowed in the Passage Zone. This would cause short- and long-term minor beneficial effects on livestock use. Road improvements would benefit livestock permittees by facilitating and reducing the cost of water hauling, facility development, and maintenance. New livestock developments in the Passage Zone could improve livestock distribution. The size of the Pristine Zone could result in short- and long-term moderate adverse impacts on permittees by increasing the cost of grazing and limiting access through potential road closures, a lack of road maintenance, and not allowing new livestock developments.

Over time, increased recreational use in the Frontcountry and Passage Zones could cause minor to moderate adverse impacts on livestock operations. More recreational use could create conflicts with livestock or livestock-associated equipment on the roads, at camping or parking locations, at livestock watering sites, and at popular recreation locations.

#### Cumulative Impacts

The BLM would continue to assess all livestock use allotments in Idaho, using the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management. These standards are designed to provide resource measures and guidance needed to ensure healthy, functional rangelands. Livestock allotments are evaluated to determine if standards and guidelines are being met or if significant progress is being made toward meeting them. If the standards are not being met, the BLM is required to

make changes that would help achieve these standards in the future. Required changes could affect allotments both inside and adjacent to the Monument by reducing or increasing livestock numbers, season of use, allocated AUMs, and livestock-associated developments.

The ICBEMP has coordinated an extensive study of the Interior Columbia Basin, including District lands. This study has determined that the sagebrush steppe ecosystem is at risk due to several past and existing impacts. These include grazing, road construction, human development, and disturbance-related invasion of exotic plant species. These disturbances would be likely to continue to contribute cumulatively to the impacts on vegetation communities in southern Idaho. The BLM has entered into a 2003 MOU to implement the ICBEMP. The implementation strategy includes direction to federal agencies to update or develop land-use plans to provide direction to address the major issues.

The economic status of surrounding local communities directly impacts livestock use within the 50-mile radius. Economic changes can affect the livelihood of the livestock permittees and their employees. Dramatic economic changes could potentially increase the number of people and available jobs or force people in the surrounding communities to find employment elsewhere or even move out of the area. Overall, the effects of the actions that would or could occur on adjacent lands, combined with the actions of Alternative A, would result in negligible to minor adverse impacts on grazing.

### **Conclusion**

Restoration activities and restrictions in the Pristine Zone in Alternative A could restrict grazing operations and/or increase costs associated with grazing, resulting in short- and long-term minor to moderate adverse impacts. The use of the Passage Zone for potential road improvement and facility development would result in short- and long-term minor beneficial effects, but the potential increased recreational use of this area could cause minor to moderate adverse impacts. Alternative A would have the third largest

Pristine Zone, which could restrict or increase the costs associated with grazing.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

Under this alternative about 45,000 acres of degraded rangeland would be treated for sagebrush steppe restoration, a 5,000-acre increase from Alternative A. Wildfires would be suppressed in all areas except in the Pristine Zone, where wildland fire use would be prescribed. As in Alternative A, the restoration and actions for fire suppression and the recovery of burned areas could result in closure to grazing for two years or more, which could result in a substantial change in grazing operations, causing a short-term moderate adverse impact. In addition to the allotment directly affected by the closure, adjacent allotments might be indirectly affected by the redistribution of displaced livestock. Such changes might include altering the number of grazing livestock, the season of use, or the duration of grazing. However, the long-term effects would be moderate and beneficial because restoration would improve rangeland health.

In this alternative the Frontcountry Zone would cover approximately 2,300 acres; the Passage Zone, 68,900 acres inside the Monument and 9,000 acres outside the Monument; the Primitive Zone, 226,900 acres; and the Pristine Zone, 447,900 acres. Road upgrading and facility development would be allowed in the Passage Zone. This would cause short- and long-term minor to moderate beneficial effects on livestock use because the acreage in the Passage Zone would be greater in this alternative than in all the other alternatives. Road improvements would benefit livestock permittees by facilitating and reducing the cost of water hauling, facility development, and maintenance, but there could be conflicts between road users and livestock. New livestock developments in the Passage Zone could improve livestock distribution. The size of the Pristine Zone, although it would be slightly smaller than in Alternative A, could result in short- and long-term moderate adverse impacts on permittees by increasing the cost of grazing and limiting



access through potential road closures, a lack of road maintenance, and not allowing new livestock developments.

Over time, increased recreation use in the Frontcountry and adjacent Passage Zone areas could cause minor to moderate adverse impacts on livestock operations. More recreation could create conflicts with livestock or livestock-associated equipment on the roads, at camping or parking places, at livestock watering sites, and at popular recreation settings. The larger Passage and Frontcountry Zones probably would increase the amount of recreational use.

### **Cumulative Impacts**

The cumulative effects of Alternative B on livestock grazing would be similar to those described for Alternative A, with both more beneficial effects and more adverse impacts from the additional access available in the expanded Passage Zone. Overall, the effects of the actions that would occur on adjacent lands, combined with the actions of Alternative B, would result in negligible to minor adverse impacts on grazing.

### **Conclusion**

Restoration activities and restrictions in the Pristine Zone under Alternative B could restrict or increase the costs of grazing operations, resulting in short- and long-term moderate adverse impacts in grazing, but larger Passage Zone areas and the development of good access could result in road improvement and facility development, which would cause short- and long-term minor to moderate beneficial effects. The increased recreational use and access in this area could cause minor to moderate adverse impacts.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

A total of 55,000 acres of degraded rangeland would be proactively treated for sagebrush steppe restoration under Alternative C, 15,000 more acres than in Alternative A. Natural wildfires would be managed for resource benefit in the Pristine Zone, which would be much larger in this alternative than in Alternatives A or B. As in Alternative A, the

restoration and related actions could result in closure to grazing for two years or more, which could result in a substantial change in grazing operations, causing a short-term moderate adverse impact. In addition to the allotment directly affected by the closure, adjacent allotments might be indirectly affected by redistribution of displaced livestock. Such changes might include altering the number of grazing livestock, the season of use, or the duration of grazing. The long-term effects would be moderate and beneficial because restoration would improve rangeland health.

In this alternative the Frontcountry Zone would cover approximately 2,300 acres; the Passage Zone, 3,200 acres; the Primitive Zone, 201,000 acres; and the Pristine Zone, 539,500 acres. Road upgrading and facility development would be allowed in the Passage Zone. The Passage Zone would be smaller than in Alternative A, but road upgrading and facility development still would be possible. Having a somewhat reduced Passage Zone would result in negligible to minor beneficial effects on livestock use. Road improvements would benefit livestock permittees by facilitating and reducing the cost of water hauling, facility development, and maintenance, but there could be conflicts between road users and livestock. New livestock developments in the Passage Zone could improve livestock distribution. The large Pristine Zone could result in could result in short- and long-term moderate adverse impacts on permittees by increasing the cost of grazing and limiting access through potential road closures, a lack of road maintenance, and not allowing new livestock developments.

Over time, increased recreational use could cause minor adverse impacts on livestock operations. More recreation could create conflicts with livestock or livestock-associated equipment on the roads, at camping or parking places, at livestock watering sites, and at popular recreation settings. Because of the smaller amount of Passage Zone in Alternative C, there would not be a large increase in the amount of recreational use.

### **Cumulative Impacts**

The cumulative effects of Alternative C on livestock operations would be similar to those described for Alternative A, with some additional adverse impacts from the expanded restoration activities. Overall, the effects from the actions that could occur on adjacent lands, combined with the actions of Alternative C, would result in minor adverse impacts on grazing.

### **Conclusion**

Restoration activities and restrictions in the Pristine Zone under Alternative C could restrict or increase the costs associated with grazing, resulting in moderate short- and long-term adverse impacts on grazing. The smaller number of areas in the Passage Zone would allow for some access and facility development, a negligible to minor beneficial effect, but any increased recreational use would cause minor adverse impacts on grazing operations. The large amount of Pristine Zone could increase costs and limit access, causing moderate adverse impacts on grazing.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

A total of 80,000 acres of degraded rangeland would be proactively treated for sagebrush steppe restoration under Alternative D (Proposed Plan). This is twice as much acreage as in Alternative A and the largest amount proposed for restoration in any alternative. As in Alternative C, natural wildfires would be managed for resource benefit in the Pristine Zone, and various land use treatments would be similar. The restoration and fire-related actions could result in closure to grazing for two years or more, and the restoration program would be accelerated in this alternative. Closure to grazing could cause a short-term moderate adverse impact. In addition to the allotment directly affected by the closure, adjacent allotments might be indirectly affected because livestock numbers could be reduced, or they might go to adjacent allotments to graze. Such a substantial change in grazing operations would cause a short-term moderate adverse impact. There could be changes in livestock numbers,

the season of use, or the duration of grazing. The long-term effects would be substantial and beneficial because restoration would improve rangeland health over a large acreage.

In this alternative the Frontcountry Zone would cover about 2,300 acres; the Passage Zone, 6,700 acres inside the Monument and 4,100 acres outside the Monument; the Primitive Zone, 218,700 acres; and the Pristine Zone, 518,300 acres. A larger Passage Zone (compared to Alternative A) and emphasis on maintaining good access for restoration and resource management in that zone would allow for road upgrading and facility development, which would result in short- and long-term beneficial effects on livestock operations. Some reduction in Passage Zone and an increase in Pristine Zone was included in this FEIS in certain areas such as Laidlaw Park and on the fringes of the lava flows, in response to public comment to provide for resource protection and reduce fragmentation of habitat. These designations may limit some grazing and livestock development along some roads, but not significantly. Road improvements would benefit livestock permittees by facilitating and reducing the cost of water hauling, facility development, and maintenance, but there could be conflicts between road users and livestock. New livestock developments in the Passage Zone could improve livestock distribution. As in Alternative A, the large Pristine Zone could result in short- and long-term moderate adverse impacts on permittees by increasing the cost of grazing and limiting access through potential road closures, a lack of road maintenance, and not allowing new livestock developments.

The additional Passage Zone provided in this alternative (compared to Alternative A) probably would result in slightly more recreational use, which could cause minor to moderate adverse impacts on livestock operations. More recreation could result in conflicts with livestock or livestock-associated equipment on the roads, at camping or parking places, at livestock watering sites, and at popular recreation settings.



### Cumulative Impacts

The cumulative effects of Alternative D (Proposed Plan) on livestock operations would be similar to those described for Alternative A. The most long-term beneficial effects would result from the eventual restoration of rangeland and the improved access for administrative purposes. Overall, the effects from the actions that could occur on adjacent lands, combined with the actions of Alternative D (Proposed Plan), would result in negligible to minor adverse impacts on grazing.

### Conclusion

Alternative D (Proposed Plan) would involve the largest acreage identified for restoration; this would cause short-term moderate adverse impacts on grazing operations, but the long-term effects would be beneficial. Compared to Alternative A, the increase in Passage Zone could result in more road improvement and facility development, and potentially more recreation use would result in minor to moderate beneficial effects from increased access and more ability to create new facilities. The Pristine Zone, which was increased in this FEIS, could restrict or increase the costs associated with grazing, a moderate adverse impact.

## OTHER LAND USES (ADMINISTRATIVE FACILITIES, REALTY, AND MINERALS)

### METHODOLOGY AND ASSUMPTIONS

To analyze the effects of the alternatives on various land uses, such as the existing NPS Visitor Center facility, realty actions, and mineral material sites, all available information on these land uses in the Monument was compiled, and the following assumptions were made about the management of these land uses in the future:

- The existing NPS Visitor Center, including the previously approved expansion and renovation, would continue to offer visitor services to the public.
- No new mineral material sites would be

authorized except for administrative use within the Monument because Proclamation 7373 withdrew all Monument lands from location, entry, and patent under the mining laws, mineral leasing laws, and mineral material laws.

- The agencies would seek to exchange lands with or purchase private and state inholdings in the Monument from willing sellers.

For the purposes of this analysis, the levels of effects on administrative facilities, realty, and minerals were defined as follows:

**Negligible:** The effect would be barely detectable, and/or the public would not be affected.

**Minor:** The effect would be slight, but detectable, and/or the public might be affected.

**Moderate:** The effect would be readily apparent and/or the public would be affected.

**Major:** The effect would be severely adverse or exceptionally beneficial and/or the public would be affected.

The area of analysis for cumulative impacts is defined as the Monument boundary and the surrounding 50-mile radius.

## IMPACTS FROM ALTERNATIVE A

### Analysis

Under Alternative A, the existing administrative facilities would undergo some enlargement and reconstruction as planned, and the costs of doing day-to-day business would not change from what is currently budgeted. This alternative would result in a negligible impact on administrative facilities.

Realty actions would continue to be processed on demand, as they are now. There would be no effects on valid existing rights such as the existing emergency airstrips and county road rights-of-way. Retaining the existing utility corridors would accommodate existing utilities and encourage the

placement of future utilities within them. Granting utility rights-of-way where in conformance with constraints would accommodate the demand for such services along the US 93 corridor. Considering the acquisition of private lands in the Monument would improve the ability of private property owners to dispose of their property with appropriate compensation and would reduce the number of inholdings. For Monument lands outside WSAs, considering and granting rights-of-way case by case would accommodate the limited demand on public lands while allowing for reasonable access and services on private lands. This alternative would result in a negligible effect on realty.

Proclamation 7373 closed Monument lands to new mineral material leases. The Idaho Transportation Department (ITD) currently holds several old rights-of-way for material sources along US 93. The agencies would work with ITD on the relinquishment of those rights-of-way. The agencies would continue to use existing mineral sources for maintaining Monument roads at current levels as necessary. This alternative would cause long-term minor beneficial effects on mineral materials.

### **Cumulative Impacts**

Few actions within the area of analysis would affect Monument facilities, realty, and minerals. Per Proclamation 7373, agencies or private entities without prior existing rights would have to look elsewhere for mineral materials. ITD might or might not feel the need to use its existing mineral rights-of-way in the Monument, depending on proposed highway improvements in the area. This would not affect Monument minerals because ITD normally needs higher quality gravel than is available from Monument sources. The agencies also might have to look outside the Monument for higher quality gravel. Given the remote nature of the area, few realty actions are foreseeable within the area of analysis. Overall, these limited actions, along with the effects of Alternative A, would result in long-term negligible cumulative adverse impacts on administrative facilities, realty, and minerals.

### **Conclusion**

The No Action Alternative would result in negligible impacts on administrative facilities, realty, and minerals in the Monument.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

Under Alternative B, the existing administrative facilities might have to be expanded to serve more visitors, which would increase the day-to-day cost of doing business and maintenance. This alternative would cause a long-term minor adverse impact on administrative facilities.

As in Alternative A, this alternative would not affect valid existing rights. Retaining the existing utility corridors would accommodate existing utilities and encourage placing utilities within those corridors in the future. Granting utility rights-of-way (where in conformance with constraints) would accommodate the demand for such services along US 93. Considering the acquisition of private lands in the Monument would improve the ability of private property owners to dispose of their property with appropriate compensation and would reduce the number of inholdings. For Monument lands outside WSAs, considering and granting rights-of-way case by case would accommodate the limited demand on public lands while allowing for reasonable access and services on private lands.

An improved transportation system might lead to a slight increase in unauthorized use and a potential for conflicts between leaseholders and recreational visitors. Increased potential for wildfires might cause short-term adverse impacts on existing rights-of-way. This alternative would cause a negligible impact, with the possibility of some short-term minor adverse impacts on realty.

Proclamation 7373 closed Monument lands to new mineral material leases. The ITD holds several old rights-of-way for material sources along US 93. The agencies would work with ITD on the relinquishment of those rights-of-way. The agencies would continue to use existing mineral sources for



maintaining Monument roads as necessary. Because there would be more high-standard, maintained miles of road in the Monument in this alternative, the use of more mineral materials would be necessary, and new cinder pits might be required to meet that need. The Monument contains a high volume of cinder material; therefore, this alternative would result in negligible impacts on mineral materials. If higher quality gravel were needed for Monument road maintenance, it would have to be obtained from a source outside the Monument.

### **Cumulative Impacts**

The cumulative effects from Alternative B on administrative facilities, realty, and minerals would be similar to those described for Alternative A. The maintenance of more high-standard roads in the Monument would increase the administrative use of existing mineral material sites. The limited actions that would affect these other land uses, plus the actions of Alternative B, would result in cumulative long-term negligible to minor adverse impacts on administrative facilities, realty, and minerals.

### **Conclusion**

Alternative B would cause negligible effects on realty and minerals in the Monument and a minor adverse impact on administrative facilities.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

Under Alternative C, the existing administrative facilities would be unchanged, and the day-to-day cost of doing business would be unchanged because there would be no added expenses beyond the current foreseeable levels. This alternative would result in negligible effects on administrative facilities.

Realty actions would continue to be processed on demand, as at present. There would be no effects on valid existing rights such as the existing emergency airstrips and county road rights-of-way. Retaining the existing utility corridors would accommodate existing utilities and encourage the placement of future utilities within them. Granting utility rights-of-way where in conformance with constraints would

accommodate the demand for such services along the US 93 corridor. Considering the acquisition of private lands in the Monument would improve the ability of private property owners to dispose of their property with appropriate compensation and would reduce the number of inholdings. For Monument lands outside WSAs, considering and granting rights-of-way case by case would accommodate the limited demand on public lands while allowing for reasonable access and services on private lands. Having fewer miles of high-standard, maintained roads in the Monument could result in less unauthorized use. This alternative would result in a negligible to minor long-term beneficial effect on realty.

Proclamation 7373 closed Monument lands to new mineral material leases. The ITD holds several old rights-of-way for material sources along US 93. The agencies would work with ITD on the relinquishment of those rights-of-way. The agencies would continue to use existing mineral sources for maintaining Monument roads as necessary. Maintaining fewer miles of high-standard roads might decrease the use of mineral materials. This alternative would result in long-term minor beneficial effects on mineral materials.

### **Cumulative Impacts**

The cumulative effects from Alternative C on administrative facilities, realty, and minerals would be similar to those described for Alternative A, but the demand for minerals would be slightly reduced because less road maintenance would be needed. Overall, the limited actions that would affect other land uses, plus the actions of Alternative C, would result in negligible cumulative effects on administrative facilities, realty, and minerals.

### **Conclusion**

By minimizing the amount of human and vehicle traffic into the Primitive and Pristine Zones, Alternative C would cause long-term minor beneficial effects on administrative facilities, realty, and minerals in the Monument.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

Under Alternative D (Proposed Plan), the existing administrative facilities would remain, and a new multi-agency/private sector visitor center would be built along the I-84 corridor outside the Monument. The agencies would actively promote public education about the Monument at this new visitor center, possibly alleviating some visitor pressure on the Monument itself. This alternative would result in a negligible effect on administrative facilities in the Monument.

Realty actions would continue to be processed on demand, as at present. There would be no effects on valid existing rights such as the existing emergency airstrips and county road rights-of-way. Retaining the existing utility corridors would accommodate existing utilities and encourage the placement of future utilities within them. Granting utility rights-of-way where in conformance with constraints would accommodate the demand for such services along the US 93 corridor. Considering the acquisition of private lands in the Monument would improve the ability of private property owners to dispose of their property with appropriate compensation and would reduce the number of inholdings. For Monument lands outside WSAs, considering and granting rights-of-way case by case would accommodate the limited demand on public lands while allowing for reasonable access and services on private lands. This alternative would result in negligible effects on realty.

Proclamation 7373 closed Monument lands to new mineral material leases. The ITD holds several old rights-of-way for material sources along US 93. The agencies would work with ITD on the relinquishment of those rights-of-way. The agencies would continue to use existing mineral sources for maintaining Monument roads as necessary. Maintaining fewer miles of high-standard roads might decrease the use of mineral materials. This alternative would result in long-term minor beneficial effects on mineral materials. Because there

would be more high-standard, maintained miles of road in the Monument in this alternative, the use of more mineral materials would be necessary, and new cinder pits might be required to meet that need. The Monument contains a high volume of cinder material; therefore, this alternative would result in negligible impacts on mineral materials. If higher quality gravel were needed for Monument road maintenance, it would have to be obtained from a source outside the Monument.

### **Cumulative Impacts**

The cumulative effects from Alternative D (Proposed Plan) on administrative facilities, realty, and minerals would be similar to those described for Alternative A, with administrative facility impacts occurring both inside and outside the Monument. Overall, the actions that would affect these other land uses, plus the actions of Alternative D (Proposed Plan), would result in cumulative long-term negligible impacts on administrative facilities, realty, and minerals.

### **Conclusion**

Because of its emphasis on off-site interpretation and visitor services, Alternative D (Proposed Plan) would result in negligible effects on administrative facilities, realty, and minerals in the Monument.

## **SPECIAL DESIGNATION AREAS (WILDERNESS, WILDERNESS STUDY AREAS, RESEARCH NATURAL AREA/ AREAS OF CRITICAL ENVIRONMENTAL CONCERN)**

### **METHODOLOGY AND ASSUMPTIONS**

The characteristics of each area that qualified it to receive a special designation and the purpose of the designation were examined. The locations of areas with special designations were compared to the locations of proposed actions, when possible. The potential impacts of each alternative on the areas were then evaluated, including pertinent issues identified during the scoping process. Predictions



about short- and long-term impacts were based on past studies of land use and visitor impacts on the regional ecosystem, including some studies at the Monument. The predicted intensity of impacts was assessed according to the following criteria:

**Negligible:** A change to the characteristics of the area that supported its designation could occur, but the change would be so small that it would not be of any measurable or perceptible consequence.

**Minor:** Changes to the characteristics of the area that supported its designation would occur, but they would be small and, if measurable, would be very localized.

**Moderate:** Changes to the characteristics of the area that supported its designation would occur. The changes would be measurable but would remain localized.

**Major:** Changes to the characteristics of the area that supported its designation would occur. The changes would be perceptible, measurable, and widespread.

The area of analysis for cumulative impacts was defined as the specially designated area and all surrounding lands affecting the special designation, including those beyond the Monument boundary.

## **IMPACTS FROM ALTERNATIVE A**

### **Analysis**

Special designation areas are affected primarily by the continuation of current management actions related to off-highway vehicle use, road system maintenance, and livestock use. These primarily affect portions of WSAs that are near roads and, in some cases, where they are allotted for livestock use. The wilderness area and the RNAs are isolated from most roads.

Off-highway vehicles, by design, have greater capability than standard highway vehicles to leave

existing routes and create new routes. Unauthorized vehicle use could lead to the creation of new travel routes in WSAs emanating from existing routes or ways. Vehicle use of both authorized and unauthorized ways could spread invasive weeds from infested areas into currently uninfested areas, altering natural conditions if not controlled. The direct effect of illegal vehicle use on natural conditions would be local, with the intensity and duration varying depending on the frequency of use. In general, the level of illegal off-road use would be higher near existing roads. Depending on the site, these impacts would vary from negligible to moderate and from short term to long term, but they could potentially be widespread in the vicinity of roads.

Road system maintenance influences the amount and type of access to a given area. Road use generally increases as road standards improve and decreases if road standards degrade. The level of use and any associated effects decrease with distance from roads. Road standards, use levels, and effects on WSAs in this alternative would remain the same. Existing recreational use in the WSA would remain low and would not require substantial management restrictions that would limit opportunities for unconfined primitive recreation. Dust plumes from vehicles traveling on roads through Little Park and the northern end of Laidlaw Park and the sight and sounds of truck traffic on US 93 would continue to be noticeable from many locations in the wilderness area. The amount of traffic through Little Park and Laidlaw Park would remain light, resulting in short-term negligible effects on opportunities for solitude.

Livestock use affects wilderness characteristics in WSAs by altering natural animal and plant communities. These characteristics also are affected by the continued maintenance of livestock developments (such as fences and watering sites) and motor vehicle routes to manage livestock and related developments. Natural animal populations and distribution are altered when livestock compete with native wildlife for forage and when predator control activities are undertaken to protect livestock. The effects vary, since livestock do not use the WSA lands uniformly. Livestock use is authorized only on

the WSA lands administered by BLM (16 percent of the total WSA acreage). Even within that 16 percent, the use of the lands by livestock is not uniform.

Vegetative cover in sheep bed grounds can be substantially altered by repeated annual use, and many areas near the edge of the lava field are grazed only lightly, if at all. Therefore, the adverse effects would range from negligible to moderate, depending on location. Most effects would be short-term, but potential changes to sagebrush steppe plant and animal communities through the spread of exotic annual grasses could be long-term and difficult to reverse. The presence of temporary roads and livestock developments would not disqualify the area from potential legislative designation as wilderness.

### **Cumulative Impacts**

Changes in the county or state road standards in or adjacent to the Monument could influence the use patterns, increasing or decreasing use, depending on the location and nature of each change. Improvements to the Arco-Minidoka Road would be likely to increase the use of Great Rift WSA portions just west of the road. Population growth in Blaine County would include growth in the area in and around the city of Carey. This could result in increased use of the Raven's Eye WSA just east of Carey. The impact of illegal off-road vehicle use emanating from state, county, and private roads inside and outside of the Monument would be similar to the effects resulting from the management of NPS and BLM roads within the Monument boundaries. In general, the level of illegal off-road use would be higher near access roads. These adverse impacts would vary from negligible to moderate and from short term to long term, depending on the site, but they could be widespread near roads.

Existing or future development of communication towers could affect the views of natural conditions and the perceptions of solitude within the wilderness area by adding constructed structures to the skyline. Outdoor lights on these and other structures would alter natural night sky conditions. The effects of such developments on opportunities for solitude and

natural conditions in the wilderness area could be negligible to minor, but their duration could be long term over large areas.

The effects of the actions outside the Monument described above would be adverse. These impacts, in conjunction with the impacts from the actions of Alternative A, would result in cumulative long-term negligible to moderate adverse impacts on special designation areas, primarily WSAs.

### **Conclusion**

The effects on the characteristics and purposes of special designation areas from Alternative A would be primarily negligible to minor and short term, but the effect of livestock use on natural conditions in WSAs could be moderate in some local areas where livestock concentrate, and the vegetative structure would be altered for long periods of time (5+ years). Road system management and limited regulation of off-highway vehicle use could cause negligible to moderate adverse indirect effects through the spread of invasive weeds and the creation of unauthorized routes.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the resources or values of the Monument's special designation areas would not be impaired.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

Improvements to the road system through Paddelford Flat, Little Park, Laidlaw Park, and the Kings Bowl area could result in more use and a higher level of indirect effects on WSA lands than would occur in Alternative A. Since the specific road segments that would be improved are not identified at the current level of planning, detailed effects cannot be described accurately; however, the impacts



probably would vary from negligible to moderate and from short term to long term, depending on the site, but they could be widespread in the vicinity of roads.

Livestock use would affect the wilderness characteristics of WSAs, as described for Alternative A. However, Alternative B would have more acreage in the Passage Zone, and there would be more opportunities to develop livestock facilities. This could result in beneficial effects on special designation areas because grazing might be concentrated in a limited area outside of WSAs. However, there might be more adverse impacts on WSA areas bordering Passage Zone areas with new livestock developments, leading to minor adverse long-term impacts.

### **Cumulative Impacts**

The cumulative impacts on special designation areas from Alternative B would be similar to those described for Alternative A relating to changes in the county or state road standards undertaken in or adjacent to the Monument, including improvements to the Arco-Minidoka Road. The effects from population growth in Blaine County and the effect of illegal off-road vehicle use from the management of state, county, and private roads inside and outside of the Monument would be similar to those described for Alternative A. In general, the level of illegal off-road use would be higher near access roads. These effects would vary from negligible to moderate and from short term to long term, depending on the site, but they could be widespread near roads.

As in Alternative A, existing or future development of communication towers would affect views of natural conditions and perceptions of solitude from within the wilderness area. This could result in effects of negligible to minor intensity, but with long-term duration and affecting large areas.

The effects of the actions outside the Monument described above would be adverse. Current and future outside actions, in conjunction with the actions of Alternative B, would result in cumulative long-term minor to moderate adverse impacts on special designation areas, primarily WSAs.

### **Conclusion**

The effects on the characteristics and purposes of special designation areas from Alternative B would be primarily negligible to minor and short term, but the effects from livestock use on natural conditions in WSAs could be moderate in some local areas where livestock concentrate, and vegetative structure would be altered for long periods of time (5+ years). The improvements to the road system could cause higher levels of indirect adverse effects through the spread of invasive weeds and the creation of unauthorized routes.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the resources or values of the Monument's special designation areas would not be impaired.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

In the Primitive and Pristine Zones, some spur roads adjacent to or inside WSAs could be closed to motorized vehicles under Alternative C. This could decrease the incidence of unauthorized OHV routes and the spread of invasive weeds in those specific areas. Because the specific road segments that might be closed under this alternative have not been identified at the current level of planning, detailed effects cannot be described, but the effects probably would vary from negligible to moderate and from short term to long term, depending on the site. They could potentially be widespread near roads. The effects of livestock use would be similar to those described for Alternative A, but in Alternative C the Passage Zone would be smaller and the Pristine Zone would be larger, and there would be fewer opportunities for adding livestock developments in the vicinity of the WSAs.

As part of this management plan, the potential for an

ACEC designation in Laidlaw Park was investigated. The purpose of an ACEC designation would be to focus management attention on special resources in the area. The BLM used a screening process - the ACEC Criteria Review Checklist (see Appendix G) - as an initial evaluation to determine if the nominated area met the basic relevance and importance criteria for designation. The BLM considered the appropriate amount of land needed to protect the resource values reflected in the nomination. The ACEC evaluation was based on guidance provided by 43 CFR 1610.7-2 and BLM Manual Section 1613, which state that potential ACECs must meet specified criteria for relevance and importance. Relevance is based on the presence of a significant

- Historic, cultural, or scenic value;
- Fish or wildlife resource or other natural system or process; or
- Natural hazard.
- Upon meeting the relevance criteria, a nominated site must then have substantial significance and values that meet one or more of the following "importance" criteria:
- Has more than locally significant qualities that give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.
- Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.
- Has been recognized as warranting protection in order to satisfy national priority concerns or to carry out the mandates of FLPMA.
- Has qualities that warrant highlighting in order to satisfy public or management concerns about safety and public welfare.
- Poses a significant threat to human life and safety or to property.

North Laidlaw Park met the relevance criteria for scenic values, wildlife resources, and natural processes or systems and importance criteria for scenic values and wildlife resources. In Alternative

C, 10,500 acres encompassing North Laidlaw Park, north of the Turnbull Fence, would be designated as an ACEC. The following actions would be implemented to protect the high quality native vegetation, wildlife habitat, and scenic values of the area:

- a) Develop standards and indicators for vegetation health that would allow for natural disturbance and processes while ensuring that degradation due to invasion of invasive or noxious weeds would not occur.
- b) Develop a low-use transportation network with no new routes, trails, or signs.
- c) Limit new development of livestock watering facilities to ensure that the existing light use of the area would continue.
- d) Use off-site interpretive resources such as brochures and displays in the Visitor Center to highlight the grazing management, native vegetation, and scenic qualities of the area.

The ACEC designation under Alternative C would constitute a long-term minor beneficial effect. It is uncertain that ACEC designation would be necessary to provide special management for the identified resources or values because current management, regulation, and law provide sufficient protection for the values identified. Therefore, ACEC designation may not be necessary. In any case, other actions under Alternative C, including grazing and road use/access, would result in minor adverse impacts on the ACEC, similar to effects noted for other special designated areas.

### **Cumulative Impacts**

The cumulative effects on special designation areas from Alternative C would be similar to those described for Alternative A relating to changes in the county or state road standards undertaken in or adjacent to the Monument, including improvements to the Arco-Minidoka Road. The effects from population growth in Blaine County and the effect of illegal off-road vehicle use from the management of state, county, and private roads inside and outside of the Monument would be similar to those described



for Alternative A. In general, the level of illegal off-road use would be higher near access roads. These effects would vary from negligible to moderate and from short term to long term, depending on the site, but they could be widespread near roads.

As in Alternative A, existing or future development of communication towers would affect views of natural conditions and perceptions of solitude from within the wilderness area. This could result in effects of negligible to minor intensity, but with long-term duration and affecting large areas.

The effects of the actions outside the Monument described above would be adverse. Current and future outside actions, in conjunction with the actions of Alternative C, would result in cumulative long-term minor adverse impacts on special designation areas, primarily WSAs.

### **Conclusion**

The adverse effects on the characteristics and purposes of special designation areas from most actions under Alternative C would be primarily negligible to minor and short term. The effect of livestock on natural conditions in WSAs could be moderate in some local areas where livestock concentrate, and vegetative structure would be altered for long periods of time (5+ years). The lack of access and limited Passage Zone acreage could cause indirect adverse effects if grazing was expanded to certain areas, with potential indirect adverse effects through the spread of invasive weeds and the creation of unauthorized routes. Designating a new ACEC in North Laidlaw Park would lead to minor beneficial effects on the adjacent Craters of the Moon Wilderness and Great Rift WSA.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of the Moon National Monument; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents,

the resources or values of the Monument's special designation areas would not be impaired.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

In Alternative D (Proposed Plan), some roads in the Passage Zone might be improved to speed up the response time for wildland fire suppression. Such road improvements might lead to more recreational use and indirectly to more use of adjacent WSAs. Because the specific road segments that would be improved would not be identified at the current stage of planning, the effects cannot be described in more detail. Vegetative restoration projects could improve the natural conditions in the WSA, but it is not indicated where the projects would occur in this alternative, so the exact impacts that would result are not known. Aggressive noxious weed control could prevent the spread of weeds into the WSA, thereby preserving natural conditions. Under the modified Alternative D presented in this FEIS, several areas in and around the Laidlaw Park area were changed from Passage to Primitive Zone, and more Pristine Zone was added around the lava field edges. This was done in response to public comment and concerns about potential fragmentation of the Laidlaw Park area by looping roads and protection of sensitive resources. Therefore, although Alternative D would not officially designate the North Laidlaw Park area as an ACEC, it would provide many of the same benefits by limiting access and visitor use in this and other sensitive areas of the Monument, a minor beneficial impact.

### **Cumulative Impacts**

The cumulative effects on special designation areas from Alternative D (Proposed Plan) would be similar to those described for Alternative A relating to changes in the county or state road standards undertaken in or adjacent to the Monument, including improvements to the Arco-Minidoka Road. The effects from population growth in Blaine County and the effect of illegal off-road vehicle use from the management of state, county, and private roads inside and outside of the Monument also would

be similar to those described for Alternative A. In general, the level of illegal off-road use would be higher near access roads. These effects would vary from negligible to moderate and from short term to long term, depending on the site, but they could be widespread near roads.

As in Alternative A, existing or future development of communication towers would affect views of natural conditions and perceptions of solitude from within the wilderness area. This could result in effects of negligible to minor intensity, but with long-term duration and affecting large areas.

The effects of the actions outside the Monument described above would be adverse. Current and future outside actions, in conjunction with the actions of Alternative D (Proposed Plan), would result in cumulative long-term minor to moderate adverse impacts on special designation areas, primarily WSAs.

### **Conclusion**

The adverse effects on the characteristics and purposes of special designation areas from Alternative D (Proposed Plan) would be mostly negligible to minor and short-term, with potential for more intense effects if restoration activities took place in or near any of the areas. The effect of livestock on natural conditions in WSAs could be moderate in some local areas where livestock concentrate, and vegetative structure would be altered for long periods (5+ years). Road system management and limited regulation of off-highway vehicle use could cause indirect adverse effects through the spread of invasive weeds and the creation of unauthorized routes. The additional Pristine Zone and reduction of Passage Zone in the Laidlaw Park area, compared to Alternative D as presented in the Draft Plan/EIS, would provide indirect beneficial impacts to an area that had been discussed as an ACEC candidate during the scoping for this project.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Craters of

the Moon National Monument; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its management plan or other relevant NPS planning documents, the resources or values of the Monument's special designation areas would not be impaired.

## **VISITOR EXPERIENCE**

The following discussions of effects on the visitor experience cover the effects on visitor understanding of the Monument's resources (interpretation), recreation, visual resources, and soundscape.

### **METHODOLOGY AND ASSUMPTIONS**

To evaluate the potential impacts on the visitor experience from each alternative, information gathered from the Visitor Services Project Report (USDI NPS 1989) was used, along with public input during the planning process. For analysis purposes, impact intensities for all visitor experience topics were defined as follows:

- Negligible: The impact would be barely detectable, affecting the experience of few visitors in the applicable setting.
- Minor: The impact would be detectable, affecting the experience of many visitors in the applicable setting.
- Moderate: The impact would be readily apparent, affecting the experience of the majority of visitors in the applicable setting.
- Major: The impact would be severely adverse or exceptionally beneficial, affecting the experience of nearly all visitors in the applicable setting.

The area of analysis for cumulative impacts was defined as the Monument and approximately 50 miles beyond the Monument boundary, considering other nearby areas that could affect or contribute to visitor experience within the Monument.



## **INTERPRETATION AND VISITOR UNDERSTANDING**

### **IMPACTS FROM ALTERNATIVE A**

#### **Analysis**

Under Alternative A, posting information and orientation materials at all primary backcountry access points and at proposed fire stations in Carey and Kimama would mean that visitors would be exposed to this interpretive information before entering the Monument and when leaving; this would result in a long-term minor beneficial effect.

Continuing to focus educational programs for schools and other groups on site at the original NPS Monument would result in continued long-term minor beneficial effects.

In addition, in Alternative A, a variety of interpretive media would continue to be developed for on- and off-site use, interpretive programs still would be offered, and exhibits and waysides would be available. Visitor safety and resource protection still would be emphasized, and some interpretation of archaeological and historic sites would continue. All these actions would result in long-term minor beneficial effects.

Modest development of the Kings Bowl area, with the installation of previously approved signs and wayside exhibits, would emphasize safety and resource protection. This would result in long-term minor beneficial effects.

The existing Visitor Center and administrative building would be enlarged and undergo reconstruction, as previously approved. This would enable Monument visitors to benefit from a greater variety of interpretive materials and programs, a long-term major beneficial effect on visitors' understanding of the Monument.

When practicable, NPS and BLM facilities and staff would help qualified researchers and educational institutions to conduct authorized studies or field classes. Both agencies would facilitate the transfer of research information to the public. These actions

would result in long-term minor beneficial effects.

#### **Cumulative Impacts**

The five Cooperative Weed Management Areas that include lands in the Monument facilitate weed management activities cooperatively among counties, private landowners, and government agencies, including the BLM and NPS. An important component of those activities is educating the public about the threats posed by invasive weeds. Typically, the Cooperative Weed Management Areas use a variety of print and other media to disseminate information about identifying and controlling the spread of weeds. These educational materials and programs, combined with the interpretive media, programs, exhibits, and waysides in Alternative A that would emphasize resource protection, would result in cumulative long-term minor beneficial effects on interpretation.

#### **Conclusion**

Posting information at backcountry access points and fire stations; offering school programs at the original NPS Monument; interpreting cultural resources; adding interpretive media, programs, exhibits, and waysides; and modest development in the Kings Bowl area would cause long-term minor beneficial effects on interpretation and visitor understanding, as would agency assistance to research and educational institutions. In addition, long-term major benefits would result from expanding the existing Monument Visitor Center.

### **IMPACTS FROM ALTERNATIVE B**

#### **Analysis**

Adding interpretive facilities along the corridor of US 20/26/93 and at sites in the Passage Zone and upgrading interpretive kiosks, wayside exhibits, and the associated trail system and day-use area at Kings Bowl under Alternative B would result in long-term moderate beneficial effects on interpretation and visitor understanding.

Designating the Carey-Kimama and Arco-Minidoka roads as "Backcountry Byways" under Alternative B would upgrade the maintenance of these road-

ways. Designating single-use and multiuse trails and improving the trail system at Kings Bowl also would constitute transportation system upgrades. Increased visitation resulting from these improvements would enlarge the target audience for gateway and on-site interpretive materials, resulting in long-term minor beneficial effects. More visitation could cause proportional increases in vandalism of interpretive resources, resulting in short-term negligible adverse impacts.

Continuing to focus educational programs for schools and other groups on site at the original NPS Monument and expanding these programs under Alternative B would help to increase public education. Greater public understanding of cultural resources would result from offering interpretation of such resources at various dispersed recreation sites. These actions would result in continued long-term minor beneficial effects.

As in Alternative A, continuing to develop a variety of interpretive media for on- and off-site use and continuing to offer interpretive programs and to display exhibits and waysides emphasizing visitor safety and resource protection would result in long-term minor beneficial effects. Developing a variety of portable media to interpret the expanded portion of the Monument (such as maps, tapes, and guidebooks) also would result in long-term minor beneficial effects.

Expanding the NPS Headquarters Visitor Center under Alternative B or developing new facilities beyond the previously approved plan (to accommodate more visitation) would give Monument visitors access to an even greater variety of interpretive materials and programs, resulting in long-term major beneficial effects.

Help offered by NPS and BLM staff to qualified researchers and educational institutions (when practicable) in conducting authorized studies or field classes would result in long-term minor beneficial effects, as would facilitating the transfer of research information to the public by both agencies.

Initiating a restoration program to remove cave

graffiti and foster public understanding of the need to protect these resources under Alternative B would result in long-term minor beneficial effects.

Restoration projects would give staffs the opportunity to interpret the decline of sagebrush steppe and the efforts to restore this dwindling resource. In addition, integrated weed management would include an education and interpretation component to increase visitor understanding of the treatment, containment, and prevention of weed infestations in the Monument. These efforts would result in long-term minor beneficial effects.

### **Cumulative Impacts**

The cumulative effects on interpretation and visitor understanding from Alternative B would be similar to those described for Alternative A. The five Cooperative Weed Management Areas that include lands in the Monument would disseminate educational materials to the public. These educational materials and programs, combined with additional interpretive media, programs, exhibits, and waysides in Alternative B, would result in cumulative long-term minor beneficial effects on interpretation.

### **Conclusion**

Upgrading the Carey-Kimama and Arco-Minidoka Roads; offering school programs at the original NPS Monument; interpreting cultural resources; adding interpretive media, programs, exhibits, and waysides; and developing portable interpretive media would result in long-term minor beneficial effects on interpretation, as would agencies assisting research and educational institutions, developing a cave restoration program, and interpreting sagebrush steppe restoration and integrated weed management. Short-term negligible adverse impacts would result from upgrading the Carey-Kimama and Arco-Minidoka Roads. Long-term minor beneficial effects on interpretation would result from adding interpretive facilities along US 20/26/93, at significant sites within the Passage Zone, and at Kings Bowl. Long-term major beneficial effects would come from expanding and developing new facilities at the existing Visitor Center.



## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

Posting information and orientation materials at all primary backcountry access points and at proposed fire stations in Carey and Kimama would mean that visitors would be exposed to this interpretive information before entering the Monument and when leaving. This would result in long-term minor beneficial effects on interpretation and visitor understanding.

Continuing to focus educational programs for schools and other groups on site at the original NPS Monument would result in continued long-term minor beneficial effects.

Developing a variety of portable media such as maps, tapes, and guidebooks to interpret the expanded part of the Monument would result in long-term minor beneficial effects.

As in Alternative A, the existing Visitor Center and Administrative Building would be enlarged and undergo reconstruction, as previously approved. This would enable Monument visitors to benefit from a greater variety of interpretive materials and programs, a long-term major beneficial effect on visitors' understanding of the Monument.

Help offered by NPS and BLM staff to qualified researchers and educational institutions (when practicable) in conducting authorized studies or field classes would result in long-term minor beneficial effects, as would facilitating the transfer of research information to the public by both agencies.

Initiating a restoration program to remove cave graffiti and foster public understanding of the need to protect these resources under Alternative C would result in long-term minor beneficial effects.

### **Cumulative Impacts**

The cumulative effects on interpretation and visitor understanding from Alternative C would be similar to those described for Alternative A. The five Cooperative Weed Management Areas that include lands in the Monument would disseminate educational

materials to the public. These educational materials and programs, combined with additional interpretive media, programs, exhibits, and waysides in Alternative C, would result in cumulative long-term minor beneficial effects on interpretation.

### **Conclusion**

Posting information at backcountry access points and fire stations, offering school programs at the original NPS Monument, developing portable interpretive media, and establishing a limited cave restoration program under Alternative C would result in long-term minor beneficial effects on interpretation. There would be cumulative effects from Cooperative Weed Management Area programs. Long-term, major benefits would result from expanding the existing visitor center.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

Adding interpretive signs along the corridor of US 20/26/93 and placing safety and resource protection information at Monument access points under Alternative D (Proposed Plan) would result in long-term minor beneficial effects on interpretation and visitor understanding.

To facilitate dispersing information and orientation materials about recreation, safety, and resource concerns in gateway communities around the Monument, one or more proposed visitor centers would be operated in cooperation with local partners within the I-84 corridor. Forming partnerships with communities and organizations to develop new interpretive and educational materials and programs, along with the materials and programs mentioned above, would give many more people interpretive information about the Monument, resulting in long-term moderate beneficial effects.

In addition to the programs provided at the original NPS Monument, educational programs for schools and other groups would be expanded to include off-site locations, and public education and understanding of cultural resources would be increased

through various interpretation methods at several sites. These actions would result in long-term minor beneficial effects.

As in Alternative A, a variety of interpretive media would be developed for on- and off-site use, interpretive programs would be offered, and exhibits and waysides would be available. Visitor safety and resource protection would be emphasized, and a variety of portable media (such as maps, tapes, and guidebooks) would be developed to interpret the expanded part of the Monument. Interpretive publications, web sites, and other off-site media also would be used. All these actions would result in long-term minor beneficial effects.

As in Alternative A, modest development of the Kings Bowl area, with the installation of previously approved signs and wayside exhibits, would emphasize safety and resource protection. This would result in long-term minor beneficial effects. The existing Visitor Center and Administrative Building would be enlarged and undergo reconstruction, as previously approved. As in Alternative A, this would enable Monument visitors to benefit from a greater variety of interpretive materials and programs, a long-term major beneficial effect on visitors' understanding of the Monument.

When practicable, NPS and BLM facilities and staff would help qualified researchers and educational institutions to conduct authorized studies or field classes. Both agencies would facilitate the transfer of research information to the public. These actions would result in long-term minor beneficial effects.

Initiating an intensive restoration program to remove cave graffiti and foster public understanding of the need to protect these resources under Alternative D (Proposed Plan) would result in long-term minor beneficial effects.

Encouraging commercial outfitters and guides to offer a range of guided experiences would enable visitors who otherwise might not have appropriate knowledge, vehicles, or preparation to experience the interior of the Monument, gaining first-hand knowledge of its resources. Such activities would be

readily apparent, affecting not only the experience of the people engaged in the guided services, but also the experience of those visiting the interior of the Monument without a guide. The resulting effects would be minor and either beneficial or adverse, depending on the expectations of the visitor.

### **Cumulative Impacts**

The cumulative effects on interpretation and visitor understanding from Alternative D (Proposed Plan) would be similar to those described for Alternative A. The five Cooperative Weed Management Areas that include lands in the Monument would disseminate educational materials to the public. These educational materials and programs, combined with additional interpretive media, programs, exhibits, and waysides in Alternative C, would result in cumulative long-term minor beneficial effects on interpretation. Proposals for two multi-agency visitor centers in south central Idaho, one near Twin Falls and another near the junction of I-84 and I-86, would enable chambers of commerce, tourism development organizations, and other government agencies to contact and provide information to area visitors. The multi-agency visitor centers would reach a broad audience of potential Monument visitors. The effect of information made available outside of the Monument, combined with the interpretive media and programs of Alternative D (Proposed Plan), would result in cumulative long-term moderate beneficial effects on interpretation.

### **Conclusion**

Long-term minor beneficial effects on interpretation under Alternative D (Proposed Plan) would result from placing interpretive signs and information along the US 20/26/93 corridor and at access points; offering school programs (including off-site efforts) and off-site interpretation of cultural resources; posting interpretive media, programs, exhibits, and waysides; developing portable off-site interpretive media; and modest development in the Kings Bowl area. Agency assistance to research and educational institutions and an intensive cave restoration program also would cause long-term minor beneficial effects.



Long-term moderate beneficial effects would come from placing interpretive materials, facilities, and programs outside the Monument, in gateway communities and at a visitor center along the I-84 corridor, as well as from offering commercially guided services in the Monument. Long-term major benefits would accrue from expanding the existing Visitor Center.

Commercial guide services could cause long-term minor adverse impacts on people visiting the interior of the Monument without a guide.

## **RECREATION AND PUBLIC SAFETY**

### **IMPACTS FROM ALTERNATIVE A**

#### **Analysis**

Under Alternative A, efforts to protect geologic features would increase, in part, through interpretation efforts. Curbing vandalism and other forms of resource damage would improve recreational experiences associated with geologic formations such as viewing, nature study, hiking, and photography. This would result in long-term moderate beneficial effects in the original NPS Monument and long-term minor beneficial effects in the expanded part of the Monument. Interpretation efforts would also emphasize safety, resulting in improvements in safety, a long-term minor beneficial effect on recreational visitors.

Rehabilitating or restoring 40,000 acres of sagebrush steppe communities and controlling weed infestations would return vegetated areas to a more natural, healthy state, contributing to improved photography, nature study, and other experiences. The restoration activities also would contribute to better opportunities for primitive and unconfined experiences free of human influence. This would result in long-term minor beneficial effects, but initial restoration treatment might cause short-term major adverse impacts on recreational users if certain areas were closed or restricted. These restoration efforts would improve habitat for game species, resulting in indirect long-term moderate

beneficial effects on hunting experiences.

The suppression of wildland fire would continue in almost all areas under Alternative A. This would result in short-term minor beneficial effects. Fast and effective response to wildland fire would cause less fire-related interference with recreation opportunities. Reduced smoke and fewer area closures (which can interfere with recreational users' experiences) would result in short-term minor beneficial effects in or near burned areas.

Nearly all roads would remain open to motorized use under Alternative A, but some roads could be closed individually to protect resources. This continued level of access to Monument features and destinations would lead to long-term minor beneficial effects. However, this level of access, and its associated use, would result in long-term minor adverse effects on visitors seeking solitude. A few new Class I and Class II trails might be developed in certain areas, and trails in the Kings Bowl area would be rehabilitated or maintained; these actions would result in long-term minor beneficial effects.

Continuing livestock operations in the BLM part of the Monument would result in the presence of cattle and sheep and the attendant facilities and equipment. This could interfere with many types of recreational experiences such as driving (cars and OHVs) for pleasure, hunting, solitude, or sightseeing. Ongoing livestock operations would cause long-term minor to moderate adverse impacts on these experiences, particularly in locations where livestock operations and recreation activities occur in the same area at the same time.

Livestock operations and the concept of "open range" appeal to some Monument visitors. Given the long cultural history of livestock operations on public lands, some opportunities for recreational experiences related to seeing and appreciating sheepherding, cattle driving, and other activities would be possible, creating long-term negligible to minor beneficial effects.

Facility developments and improvements related to recreation in Alternative A would include enlarging

and improving the visitor center at the original NPS Monument. Fire stations at Carey and Kimama would offer visitor information. Portal kiosks would be established at key access points to the Monument, and signs and wayside exhibits would be installed at Kings Bowl. These facility improvements would offer recreational users maps, information, and some direction/safety messages for people who value such materials as part of a high-quality experience. These improvements would lead to long-term minor beneficial effects for many recreational users.

The agencies would pursue the purchase or exchange of private inholdings in the Monument on the basis of initiation by a willing seller. Such acquisitions would result in long-term negligible to minor beneficial effects by increasing the amount of land available for recreation.

No additional water developments or other habitat manipulations would be allowed in Wilderness areas or WSAs, and ways in WSAs not identified during the wilderness inventory would be closed and rehabilitated. These actions would improve primitive and unconfined experiences and opportunities for solitude, a long-term minor beneficial effect.

Continuing to authorize commercial outfitters and guides would add to the overall range of opportunities by offering a variety of backcountry and other remote experiences for recreational users who otherwise might not be able to enter the area. It also would improve monitoring at sensitive locations in the Monument. These authorizations would result in continuing long-term minor beneficial effects.

Programs such as *Leave No Trace* and *Tread Lightly!* emphasize responsible conservation-oriented recreation experiences. These programs would be promoted to encourage visitors to use the resources in a more responsible and sustainable way, resulting in long-term minor beneficial effects.

Opportunities for camping in the expanded part of the Monument would remain undeveloped and dispersed, with no designated sites. This would result in long-term minor beneficial effects on visitors who prefer this type of experience and long-term

minor adverse impacts on people who prefer a more developed camping experience.

### **Cumulative Impacts**

Poor air quality caused by activities originating outside of the Monument could hinder recreational experiences. Under Alternative A, the agencies would work proactively with the Idaho Department of Environmental Quality (IDEQ), businesses, and other relevant organizations to protect and preserve the excellent air quality in the Monument, resulting in long-term moderate beneficial effects.

Other local, state, and federal agencies and private organizations have developed promotional materials that include information about the Monument. The agencies would continue consultation with outside public and private organizations to coordinate these programs with recreational needs. This would result in long-term minor beneficial effects.

According to the State Comprehensive Outdoor Recreation and Tourism Plan (2003), statewide and regional visitation is expected to increase at a slow pace over the life of the plan due to general demographic trends. When combined with expected visitation increases for the Monument, these regional increases would result in long-term minor beneficial effects on recreation but also result in long-term minor adverse impacts on people seeking solitude.

Overall, the cumulative effects on recreational users from the actions of Alternative A, combined with the expected (primarily beneficial) effects from other activities and plans, would result in cumulative long-term minor to moderate beneficial effects on recreation.

### **Conclusion**

Alternative A would result in a wide range of negligible to moderate adverse and beneficial effects on recreation and public safety, depending on the recreational experience desired.

Acquiring private inholdings would result in long-term negligible to minor beneficial effects, as would greater protection of geological features in the expanded part of the Monument; safety emphasis



through interpretation; restoring sagebrush steppe communities; trail development and rehabilitation in the Kings Bowl area; developing or improving facilities; closing certain ways in Wilderness areas and WSAs; and authorizing commercial outfitters and guides. Short-term minor beneficial effects would result from wildland fire suppression.

Long-term moderate beneficial effects would result from greater protection of geological features in the original NPS Monument and indirectly from restoring of sagebrush steppe communities. Keeping almost all existing roads open to motorized travel would result in long-term minor beneficial effects on certain recreational experiences, but such access also could affect other recreational experiences, resulting in long-term minor adverse impacts.

Long-term minor beneficial effects would result from the availability of undeveloped and dispersed camping, but this also could affect people who prefer more developed, dispersed camping, resulting in long-term minor adverse impacts.

Ongoing livestock operations would result in long-term minor to moderate adverse impacts on certain recreational experiences, but this also could affect other recreational opportunities, resulting in long-term negligible to minor beneficial effects.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

In Alternative B, the effects on recreation from increased efforts to protect geologic features would be the same as those described for Alternative A, resulting in long-term moderate beneficial effects in the original NPS Monument and long-term minor beneficial effects in the expanded part of the Monument. Interpretation efforts would also emphasize safety, resulting in safety improvements that would cause long-term minor beneficial effects on recreational visitors.

Rehabilitating or restoring 45,000 acres of sagebrush steppe communities in the expanded part of the Monument, 5,000 acres more than in Alternative A,

would cause about the same effects as the No Action Alternative - long-term minor beneficial effects, as well as indirect long-term moderate beneficial effects on hunting experiences.

Reduced smoke and fewer area closures (which can interfere with recreational users' experiences) would result in short-term minor beneficial effects in or near burned areas.

Nearly all roads would remain open to motorized use under Alternative B, but some roads could be closed individually to protect resources. This continued level of access to Monument features and destinations would lead to long-term minor beneficial effects. However, this level of access, and its associated use, would result in long-term minor adverse effects on visitors seeking solitude. A few new Class I and Class II trails might be developed in certain areas, and trails in the Kings Bowl area would be rehabilitated or maintained; these actions would result in long-term minor beneficial effects.

As in Alternative A, continuing to suppress wildland fire in most areas in Alternative B would result in short-term minor beneficial effects. Fast and effective response to wildland fire would cause less fire-related interference with recreation opportunities, resulting in short-term minor beneficial effects in or near burned areas. Some wildland fire use would be allowed in the Wilderness and Preserve in Alternative B, resulting in short-term negligible adverse impacts.

Because the Passage Zone would be large in Alternative B, this alternative would offer the greatest opportunity of all the alternatives for motorized and mechanized recreational experiences. The entire length of both the Carey-Kimama and Arco-Minidoka roads would be designated Backcountry Byways, including an upgrade to Class B standards. This would be likely to increase visitation to the Monument, causing long-term moderate adverse impacts on visitors seeking solitude, but it would result in long-term moderate beneficial effects on people who prefer improved access for experiences like hunting, driving for pleasure, sightseeing, and going to points of interest along those routes.

Multiuse and single-use trails would be designated under Alternative B, including both Class I and Class II designations. This would increase the opportunities for hiking, mountain biking, off-highway motorcycle riding, horseback riding, and OHV use, resulting in long-term moderate beneficial effects on visitors wanting experiences in those activities.

Continuing livestock operations in the BLM part of the Monument would result in the presence of cattle and sheep and the attendant facilities and equipment. This could interfere with many types of recreational experiences, causing long-term minor to moderate adverse impacts on these experiences, particularly in locations where livestock operations and recreation activities occur in the same area at the same time. However, given the long cultural history of livestock operations on public lands, some opportunities for recreational experiences related to seeing and appreciating sheepherding, cattle driving, and other activities would be possible, creating long-term negligible to minor beneficial effects.

Alternative B would involve the highest level of facility development and improvements related to recreation, including additional enlargement and improvement of the Visitor Center at the original NPS Monument. The fire stations at Carey and Kimama would offer agency staff assistance and visitor information. Portal kiosks would be established at key access points to the Monument, and more facilities, signs, and wayside exhibits would be installed at Kings Bowl. These facility improvements would offer recreational users maps, information, and some direction/safety messages for people who value such materials as part of a high-quality experience. These improvements would lead to long-term moderate beneficial effects for many recreational users.

As in Alternative A, acquiring private inholdings would increase the amount of land available for recreation, resulting in long-term negligible to minor beneficial effects. Not allowing added water developments or other habitat manipulations in Wilderness areas or WSAs and closing and rehabilitating ways in WSAs that were not identified during the wilderness inventory would result in long-term minor beneficial

effects by improving primitive and unconfined experiences and opportunities for solitude.

Continuing to authorize commercial outfitters and guides would add to the overall range of opportunities by offering a variety of backcountry and other remote experiences for recreational users who otherwise might not be able to enter the area. It also would improve monitoring at sensitive locations in the Monument. These authorizations would result in continuing long-term minor beneficial effects.

As in Alternative A, programs such as *Leave No Trace* and *Tread Lightly!* would be promoted to encourage visitors to use the resources in a more responsible and sustainable way, resulting in long-term minor beneficial effects.

Opportunities for camping in the expanded part of the Monument would increase in Alternative B's larger Passage Zone, but camping would remain generally undeveloped and dispersed, with the potential development of only 12 designated campsites. This would result in long-term minor beneficial effects on visitors who prefer this type of experience and long-term minor adverse impacts on people who prefer more developed, dispersed camping experiences.

### **Cumulative Impacts**

The cumulative effects on recreational users under Alternative B would be similar to those described for Alternative A. There would be minor to moderate beneficial effects from cooperative efforts to limit air quality impacts and to supply promotional materials with information about the Monument. The agencies would continue to consult with outside public and private organizations to coordinate these programs with recreational needs. This would result in long-term minor beneficial effects.

According to the State Comprehensive Outdoor Recreation and Tourism Plan (2003), general demographic trends indicate that statewide and regional visitation will increase at a slow pace over the life of the plan. The expected slow growth, combined with expected visitation increases for the Monument, would result in long-term moderate



beneficial effects on recreation but also would result in long-term moderate adverse impacts on people seeking solitude.

Overall, the cumulative effects on recreational users from the actions of Alternative B, combined with the expected (primarily beneficial) effects from other activities and plans, would result in cumulative long-term moderate beneficial effects on recreational activities.

### **Conclusion**

The added access available in Alternative B would contribute both beneficial and adverse effects, depending on the type of recreation desired.

Acquiring private inholdings would result in long-term negligible to minor beneficial effects, as would greater protection of geological features in the expanded part of the Monument, safety emphasis through interpretation, restoring sagebrush steppe communities, developing and rehabilitating trails in the Kings Bowl area, developing or improving facilities, closing certain ways in Wilderness areas and WSAs, and authorizing of commercial outfitters and guides. Short-term minor beneficial effects would result from wildland fire suppression, and short-term negligible adverse impacts would result from wildland fire use.

Long-term moderate beneficial effects would result from greater protection of geological features in the original NPS Monument, from designating multiuse and single-use trails, and from developing or improving facilities. There would be indirect long-term moderate benefits from restoring sagebrush steppe communities.

Improving motorized access would result in long-term moderate beneficial effects on certain recreational experiences, but it also could result in long-term moderate adverse impacts on other recreational experiences.

Long-term moderate beneficial effects would result from the availability of undeveloped and dispersed camping, but this also could result in long-term minor adverse impacts on people who prefer more

developed, dispersed camping.

Ongoing livestock operations would result in long-term minor to moderate adverse impacts on certain recreational experiences, but this also could affect other recreational opportunities, resulting in long-term negligible to minor beneficial effects.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

In Alternative C, the effects on recreation from increased efforts to protect geologic features would be the same as those described for Alternative A, resulting in long-term moderate beneficial effects in the original NPS Monument and long-term minor beneficial effects in the expanded part of the Monument. Interpretation efforts would also emphasize safety, resulting in safety improvements that would cause long-term minor beneficial effects on recreational visitors.

Rehabilitating or restoring 55,000 acres of sagebrush steppe communities and controlling weed infestations would result in slightly more effects, both beneficial and adverse, than in Alternative A, because the area would be 10,000 acres larger. The restoration would result in long-term minor beneficial effects, and these efforts also would improve the habitat for game species, resulting in indirect long-term moderate beneficial effects on hunting experiences.

As in Alternative A, continuing to suppress wildland fire in most areas in Alternative C would result in short-term minor beneficial effects. Fast and effective response to wildland fire would cause less fire-related interference with recreation opportunities, resulting in short-term minor beneficial effects in or near burned areas. Some wildland fire use would be allowed in the Wilderness and Preserve in Alternative C, resulting in short-term negligible adverse impacts.

Alternative C would involve the least opportunity for motorized and mechanized travel. Many Class D roads in the Primitive Zone would be converted

to non-motorized trails. This would result in long-term minor beneficial effects on experiences like hiking, mountain biking, and solitude and long-term minor adverse impacts on motorized experiences. The Pristine Zone would be larger in Alternative C than in the other alternatives, and all roads and ways in that zone would be closed to motorized and mechanized vehicle use. This would result in long-term minor adverse impacts on motorized and mechanized vehicle experiences; long-term moderate beneficial effects on visitors seeking a specifically non-motorized experience, solitude, and self discovery; and long-term moderate adverse impacts on people seeking access to certain destinations in the Primitive and Pristine Zones.

As in Alternative B, continuing livestock operations in the BLM part of the Monument would result in the presence of cattle and sheep and the attendant facilities and equipment. This could interfere with many types of recreational experiences, causing long-term minor to moderate adverse impacts on these experiences, particularly in locations where livestock operations and recreation activities occur in the same area at the same time. However, given the long cultural history of livestock operations on public lands, some opportunities for recreational experiences related to seeing and appreciating sheepherding, cattle driving, and other activities would be possible, creating long-term negligible to minor beneficial effects.

In Alternative C facility development and improvements related to recreation would be kept to a minimum, but the Visitor Center at the original NPS Monument would be enlarged and improved. The fire stations at Carey and Kimama would offer visitor information. Portal kiosks would be established at key access points to the Monument, and more facilities, signs, and wayside exhibits would be installed at Kings Bowl. These facility improvements would offer recreational users maps, information, and some direction/safety messages for people who value such materials as part of a high-quality experience. These improvements would lead to long-term minor beneficial effects

As in Alternatives A and B, acquiring private inholdings would result in long-term negligible to minor beneficial effects by increasing the amount of land available for recreation. Allowing no additional water developments or other habitat manipulations in Wilderness areas or in WSAs, closing certain ways in Wilderness areas and WSAs, and authorizing commercial outfitters and guides would result in long-term minor beneficial effects by improving primitive and unconfined experiences and opportunities for solitude.

Continuing to authorize commercial outfitters and guides would add to the overall range of opportunities by offering a variety of backcountry and other remote experiences for recreational users who otherwise might not be able to enter the area. It also would improve monitoring at sensitive locations in the Monument. These authorizations would result in long-term minor beneficial effects.

As in Alternatives A and B, programs such as *Leave No Trace* and *Tread Lightly!* would be promoted to encourage visitors to use the resources in a more responsible and sustainable way, resulting in long-term minor beneficial effects.

Opportunities for camping in the expanded part of the Monument would increase in Alternative C, but camping would remain generally undeveloped and dispersed, with the potential development of only four designated campsites. This would result in long-term minor beneficial effects on visitors who prefer this type of experience and long-term minor adverse impacts on people who prefer more developed, dispersed camping experiences.

### **Cumulative Impacts**

The cumulative effects on recreational users under Alternative C would be similar to those described for Alternatives A and B. There would be minor to moderate beneficial effects from cooperative efforts to limit air quality impacts and to supply promotional materials with information about the Monument. The agencies would continue to consult with outside public and private organizations to coordinate these programs with recreational needs. This would result



in long-term minor beneficial effects.

The expected slow growth in regional visitation over the life of the plan, combined with expected visitation increases for the Monument, would result in long-term minor beneficial effects on recreation but also would result in long-term minor adverse impacts on people seeking solitude.

Overall, the cumulative effects on recreational users from the actions of Alternative C, combined with the expected (primarily beneficial) effects from other activities and plans, would result in cumulative long-term moderate beneficial effects on recreational activities.

### **Conclusion**

The restricted access of Alternative C would contribute both beneficial and adverse effects, depending on the type of recreation desired.

Acquiring private inholdings would result in long-term negligible to minor beneficial effects, as would greater protection of geological features in the expanded part of the Monument; safety emphasis through interpretation; restoring sagebrush steppe communities; limited facility developments and improvements; closing certain ways in Wilderness areas and WSAs; and authorizing commercial outfitters and guides. Short-term minor beneficial effects would result from wildland fire suppression, and short-term negligible adverse impacts would result from wildland fire use.

Long-term moderate beneficial effects would result from greater protection of geological features in the original NPS Monument, and there would be indirect long-term moderate benefits from restoring sagebrush steppe communities.

Long-term minor beneficial effects on certain recreational experiences would come from converting many Class D roads to non-motorized trails, but such conversion also would affect other recreational experiences, causing long-term minor adverse impacts. Closing certain roads and ways in the Pristine Zone to motorized and mechanized vehicle travel would result in long-term moderate beneficial

effects on certain recreational experiences, but long-term minor adverse impacts also would result from such closures, affecting other recreational experiences. These closures also would result in long-term moderate adverse impacts from reduced access.

Long-term minor beneficial effects would result from the availability of undeveloped and dispersed camping, but this also could adversely affect people who prefer more developed, dispersed camping, resulting in long-term minor adverse impacts.

Ongoing livestock operations would result in long-term minor to moderate adverse impacts on certain recreational experiences, but this also could affect other recreational opportunities, resulting in long-term negligible to minor beneficial effects.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

In Alternative D (Proposed Plan), the effects on recreation from increased efforts to protect geologic features through interpretation efforts would be the same as those described for Alternative A, resulting in long-term moderate beneficial effects in the original NPS Monument and long-term minor beneficial effects in the expanded part of the Monument. Interpretation efforts would also emphasize safety, resulting in safety improvements that would cause long-term minor beneficial effects on recreational visitors.

Rehabilitating or restoring 80,000 acres of sagebrush steppe communities and controlling weed infestations would result in more effects, both beneficial and adverse, than in Alternative A, because the area would be twice as large. The restoration could cause minor to moderate short-term adverse effects during the treatments, but in the long term there would be moderate beneficial effects. These efforts also would improve the habitat for game species, resulting in indirect long-term moderate beneficial effects on hunting experiences.

Alternative D (Proposed Plan) would involve the most aggressive fire suppression and rehabilitation program of all the alternatives. Wildland fire would continue to be suppressed in almost all areas, resulting in short-term minor beneficial effects. Fast, effective response to wildland fire would result in less fire-related interference with recreation opportunities. A reduced amount of smoke and fewer area closures that might interfere with recreational users' experiences would lead to short-term minor beneficial effects in or near burned areas, but aggressive rehabilitation would result in short-term minor adverse impacts on recreational experiences in these areas. Some wildland fire use would be allowed in the Wilderness and Preserve under Alternative D (Proposed Plan), resulting in short-term negligible adverse impacts.

Existing Class B and C roads would remain open to motorized use under Alternative D (Proposed Plan), and select Class D roads in the Primitive and Pristine Zones could be converted to trails or closed for resource protection. This reduced level of access to Monument features and destinations in the Primitive and Pristine Zones would result in long-term minor adverse impacts on motorized experiences and long-term minor beneficial effects on remote backcountry trail experiences, solitude, and self-discovery. Upgrading primary access roads leading to the Monument to facilitate fire management (subject to county government approval and coordination) would result in long-term moderate beneficial effects. Select, limited improvements of Class C and D roads in the Primitive and Pristine Zones could be authorized to accommodate fire suppression, restoration, or other natural resource protection activities; this would result in improved access to remote areas, a short-term negligible to minor beneficial effect.

As in Alternatives B and C, continuing livestock operations in the BLM part of the Monument would result in the presence of cattle and sheep and the attendant facilities and equipment. This could interfere with many types of recreational experiences, causing long-term minor to moderate adverse impacts on these experiences, particularly in

locations where livestock operations and recreation activities occur in the same area at the same time. However, given the long cultural history of livestock operations on public lands, some opportunities for recreational experiences related to seeing and appreciating sheepherding, cattle driving, and other activities would be possible, creating long-term negligible to minor beneficial effects.

Under Alternative D (Proposed Plan), partnerships would be encouraged to develop new information facilities in gateway communities. Facility development and improvements related to recreation would include enlarging and improving the Visitor Center at the original NPS Monument. The fire stations at Carey and Kimama would offer visitor information. Portal kiosks would be established at key access points to the Monument, and more facilities, signs, and wayside exhibits would be installed at Kings Bowl. These facility improvements would offer recreational users maps, information, and some direction/safety messages for people who value such materials as part of a high-quality experience. These improvements would lead to long-term minor beneficial effects.

Acquiring private inholdings would result in long-term negligible to minor beneficial effects by increasing the amount of land available for recreation. Allowing no additional water developments or other habitat manipulations in Wilderness areas or in WSAs and closing and rehabilitating certain ways in Wilderness areas and WSAs would result in long-term minor beneficial effects by improving primitive and unconfined experiences and opportunities for solitude.

Increasing the authorizations for commercial outfitters and guides would add to the overall range of opportunities by offering a variety of backcountry and other remote experiences for recreational users who otherwise might not be able to enter the area. It also would improve monitoring at sensitive locations in the Monument. These authorizations would result in long-term moderate beneficial effects.

As in Alternative A, programs such as *Leave No*



*Trace and Tread Lightly!* would be promoted to encourage visitors to use the resources in a more responsible and sustainable way, resulting in long-term minor beneficial effects.

Opportunities for camping in the expanded part of the Monument would increase in Alternative D (Proposed Plan), but camping would remain generally undeveloped and dispersed, with the potential development of only six designated campsites. This would result in long-term minor beneficial effects on visitors who prefer this type of experience and long-term minor adverse impacts on people who prefer more developed, dispersed camping experiences.

### **Cumulative Impacts**

The cumulative effects on recreational users under Alternative D (Proposed Plan) would be similar to those described for the other alternatives. There would be minor to moderate beneficial effects from cooperative efforts to limit air quality impacts and to supply promotional materials with information about the Monument. The agencies would work proactively with outside public and private organizations, as well as continuing to consult with local, state, and other federal agencies and private organizations to coordinate these programs with recreational needs. This would result in long-term minor beneficial effects.

The expected slow growth in regional visitation over the life of the plan, combined with expected visitation increases for the Monument under Alternative D (Proposed Plan), would result in long-term minor beneficial effects on recreation but also would result in long-term minor adverse impacts on people seeking solitude.

Overall, the cumulative effects on recreational users from the actions of Alternative D (Proposed Plan), combined with the expected (primarily beneficial) effects from other activities and plans, would result in cumulative long-term moderate beneficial effects on recreational activities.

### **Conclusion**

The added access related to administrative needs and the aggressive restoration program in Alterna-

tive D (Proposed Plan) would contribute both beneficial and adverse effects, depending on the type of recreation desired.

Acquiring private inholdings would result in long-term negligible to minor beneficial effects, as would greater protection of geological features in the expanded part of the Monument, safety emphasis through interpretation, developing or improving facilities, and closing certain ways in Wilderness areas and WSAs.

Short-term negligible to minor beneficial effects would result from temporary improvements to Class C and D roads that could accommodate certain authorized activities, as well as from wildland fire suppression. Short-term negligible adverse impacts would result from wildland fire use, and short-term minor adverse impacts would result from aggressive rehabilitation.

Long-term minor to moderate beneficial effects would result from authorizing commercial outfitters and guides, and long-term moderate beneficial effects would come from greater protection of geological features in the original NPS Monument and from restoring sagebrush steppe communities.

Long-term minor beneficial effects on certain recreational experiences would result from closing Class D roads or converting them to trails in the Primitive and Pristine Zones, but such conversion also would affect other recreational experiences, causing long-term minor adverse impacts. Long-term moderate beneficial effects would result from the availability of undeveloped and dispersed camping, but this also could affect people who prefer more developed, dispersed camping, resulting in long-term minor adverse impacts.

Ongoing livestock operations would result in long-term minor to moderate adverse impacts on certain recreational experiences, but this also could affect other recreational opportunities, resulting in long-term negligible to minor beneficial effects.

## **VISUAL RESOURCES**

### **IMPACTS FROM ALTERNATIVE A**

#### **Analysis**

Any new surface disturbing activities proposed in the Monument would be subject to NEPA analysis, including a Visual Resource Management (VRM) Contrast Rating. New facilities and developments that could be allowed in the Frontcountry and Passage Zones are livestock facilities, recreation sites, and interpretive facilities. Surface-disturbing activities would have to comply with VRM management class standards, which include several Class III and IV areas in Alternative A. This would result in long-term minor beneficial effects on the Monument's visual resources.

Efforts to protect geologic features from damage would be increased. Stopping vandalism and other forms of damage to frequently viewed geologic resources would lead to long-term minor beneficial effects.

Rehabilitating or restoring 40,000 acres of sagebrush steppe communities and controlling weed infestations would return those vegetated areas to their natural appearance, a long-term minor beneficial effect on viewscales in the Monument.

Wildland fires and prescribed fires would result in smoke, causing short-term minor to moderate adverse impacts on visual resources, including the night sky. Other visual impacts would result from increased vehicle traffic, fire lines, and the contrast between burned and unburned areas. Burned areas could vary in size from a few acres to tens of thousands of acres.

Vehicles and dust plumes caused by the use of Class B roads would cause short-term minor adverse impacts. Existing livestock facilities, which are primarily in the Passage Zone, would result in minor visual contrasts and long-term minor adverse impacts. Continued use of the three existing mineral material sites would cause long- and short-term minor adverse impacts.

#### **Cumulative Impacts**

Visibility in the Monument can be affected by regional haze, dust from agricultural activities, smoke from western wildland fires, and other outside sources of air pollution. These things would cause short-term negligible to moderate adverse impacts on the Monument's viewscales and night sky.

Several communication sites outside the Monument are visible from inside the Monument. These communication sites would cause long-term minor adverse impacts on visual resources during the day and long-term moderate adverse impacts on visual resources at night. Artificial light sources and light pollution from neighboring towns would affect the Monument's night sky, causing long-term negligible adverse impacts.

Overall, the beneficial and adverse effects from the actions of Alternative A, plus the adverse impacts from regional or neighboring sources, would result in cumulative minor adverse impacts on the Monument's visual resources.

#### **Conclusion**

Long-term minor beneficial effects would result from greater protection of geological features, from restoring sagebrush steppe communities, and from holding surface disturbing activities to the VRM management class standards that apply under Alternative A.

Artificial light sources would cause long-term negligible cumulative adverse impacts. Long-term minor adverse impacts would result from existing livestock facilities and, cumulatively, from communications sites during the day. Long- and short-term minor adverse impacts would result from the use of existing mineral material sites. Long-term moderate adverse impacts would result from communications sites at night.

Class B road use would cause short-term minor adverse impacts, and short-term minor to moderate adverse impacts would be caused by wildland fires and prescribed fires. Short-term negligible to moderate cumulative adverse impacts would result from outside sources of air pollution.



## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

Any new surface disturbing activities proposed in the Monument under Alternative B would be subject to NEPA analysis, including a VRM Contrast Rating. Under this alternative, all of the Monument would be designated VRM Class I or Class II. New facilities and developments that could be allowed in the Frontcountry and Passage Zones are livestock facilities, mineral material sites for administrative use, recreation sites, and interpretive facilities. Surface-disturbing activities would have to comply with VRM management class standards, which would result in long-term minor to moderate beneficial effects on the Monument's visual resources.

As in Alternative A, efforts to protect geologic features from damage would be increased, and rehabilitating or restoring 45,000 acres of sagebrush steppe communities and controlling weed infestations would return those vegetated areas to their natural appearance, a long-term minor beneficial effect on viewscales in the Monument.

Short-term minor to moderate adverse impacts on visual resources, including the night sky, would result from wildland fires and prescribed fires (smoke), increased vehicle traffic, fire lines, and the contrast between burned and unburned areas. Burned areas could vary in size from a few acres to tens of thousands of acres. Increased suppression activities in this alternative would result in short-term impacts on the landscape from fire line construction, but these effects would be temporary.

Vehicles and dust plumes caused by the use of Class B roads would cause short-term minor to moderate adverse impacts. Existing livestock facilities, which are primarily in the Passage Zone, would result in minor visual contrasts and long-term minor adverse impacts. Continued use of the three existing mineral material sites would cause long- and short-term minor adverse impacts.

### **Cumulative Impacts**

The cumulative effects on visibility in the Monument would be similar to those described for

Alternative A. Visibility can be affected by regional haze, dust from agricultural activities, smoke from western wildland fires, and other outside sources of air pollution, including communication sites near the Monument. These things would cause long-term negligible to moderate adverse impacts on the Monument's viewscales and night sky. Artificial light sources and light pollution from neighboring towns would affect the Monument's night sky, causing long-term negligible adverse impacts.

The use of vehicles, and the resultant dust plumes, would affect visibility in the Monument. Upgrades to the Arco-Minidoka and Carey-Kimama roads outside the Monument by county governments, as well as upgrades to certain roads within the Monument, would result in short-term minor adverse impacts on visibility from vehicles and the resultant dust plumes.

Several communication sites outside the Monument are visible from inside the Monument. These communication sites would cause long-term minor adverse impacts on visual resources during the day and long-term moderate adverse impacts on visual resources at night.

Overall, the beneficial and adverse effects from the actions of Alternative B, plus the adverse impacts from regional or neighboring sources, would result in long-term cumulative minor adverse impacts on the Monument's visual resources.

### **Conclusion**

Long-term minor beneficial impacts on visual resources would result from greater protection of geological features and from restoring sagebrush steppe communities. Long-term minor to moderate beneficial effects would result from holding surface-disturbing activities to VRM management class standards that apply in Alternative B.

Artificial light sources would cause long-term negligible adverse cumulative impacts. Long-term minor adverse impacts would result from existing livestock facilities and, cumulatively, from communications sites during the day. Long- and short-term minor adverse impacts would be caused by the use of

existing mineral material sites. Long-term moderate, adverse impacts would result from communications sites at night.

Road upgrades would cause short-term minor cumulative adverse impacts, and short-term minor to moderate adverse impacts would result from Class B road use. Short-term minor to moderate adverse impacts would be caused by wildland fires and prescribed fires. Short-term negligible to moderate cumulative adverse impacts would result from outside sources of air pollution.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

Any new surface disturbing activities proposed in the Monument under Alternative C would be subject to NEPA analysis, including a VRM Contrast Rating. Under this alternative, all of the Monument would be designated VRM Class I or Class II. New facilities and developments that could be allowed in the Frontcountry and Passage Zones are livestock facilities, recreation sites, and interpretive facilities. Surface-disturbing activities would have to comply with VRM management class standards, which would result in long-term moderate beneficial effects on the Monument's visual resources.

As in Alternative A, efforts to protect geologic features from damage would be increased, and rehabilitating or restoring 55,000 acres of sagebrush steppe communities and controlling weed infestations would return those vegetated areas to their natural appearance, a long-term minor to moderate beneficial effect on viewscales in the Monument.

Wildland fires and prescribed fires would result in smoke, causing short-term minor to moderate adverse impacts on visual resources, including the night sky. Other visual impacts would result from increased vehicle traffic, fire lines, and the contrast between burned and unburned areas. Burned areas could vary in size from a few acres to tens of thousands of acres.

Vehicles and dust plumes caused by the use of Class

B roads would cause short-term minor adverse impacts. Existing livestock facilities, which are primarily in the Passage Zone, would create minor visual contrasts and long-term minor adverse impacts. Continued use of the three existing mineral material sites would cause long- and short-term minor adverse impacts.

### **Cumulative Impacts**

The cumulative effects on visibility in the Monument would be similar to those described for Alternative A. Visibility can be affected by regional haze, dust from agricultural activities, smoke from western wildland fires, several communication sites that are near the Monument, and other outside sources of air pollution. These things would cause long-term negligible to moderate adverse impacts on the Monument's viewscales and night sky. Artificial light sources and light pollution from neighboring towns would affect the Monument's night sky, causing long-term negligible adverse impacts.

Overall, the cumulative impacts on visual resources from the actions outside the Monument, added to the effects of Alternative C, would result in long-term minor adverse impacts on visual resources.

### **Conclusion**

Long-term minor beneficial effects would result from greater protection of geological features. Long-term minor to moderate beneficial effects would result from restoring sagebrush steppe communities. Long-term moderate beneficial effects would come from holding surface disturbing activities to VRM class standards that apply under Alternative C.

Artificial light sources would cause long-term negligible cumulative adverse impacts. Long-term minor adverse impacts would result from existing livestock facilities and, cumulatively, from communications sites during the day. Long- and short-term minor adverse impacts would result from the use of existing mineral material sites. Long-term moderate adverse impacts would result from communications sites at night.

Class B road use would cause short-term minor adverse impacts, and short-term minor to moderate



adverse impacts would be caused by wildland fires and prescribed fires. Short-term negligible to moderate cumulative adverse impacts would result from outside sources of air pollution.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

Any new surface disturbing activities proposed in the Monument under Alternative D (Proposed Plan) would be subject to NEPA analysis, including a VRM Contrast Rating. Under this alternative, all of the Monument would be designated VRM Class I or Class II. New facilities and developments that could be allowed in the Frontcountry and Passage Zones are livestock facilities, mineral material sites for administrative use, recreation sites, and interpretive facilities. Surface-disturbing activities would have to comply with VRM management class standards, which would result in long-term minor to moderate beneficial effects on the Monument's visual resources.

As in Alternative A, efforts to protect geologic features from damage would be increased, and rehabilitating or restoring 80,000 acres of sagebrush steppe communities and controlling weed infestations would return those vegetated areas to their natural appearance. This more aggressive restoration program would cause long-term moderate beneficial effect on viewscapes in the Monument.

Wildland fires and prescribed fires would result in smoke, causing short-term minor to moderate adverse impacts on visual resources, including the night sky. Other visual impacts would result from increased vehicle traffic, fire lines, and the contrast between burned and unburned areas. Burned areas could vary in size from a few acres to tens of thousands of acres.

Vehicles and dust plumes caused by the use of Class B roads would cause short-term minor adverse impacts. Existing livestock facilities, which are primarily in the Passage Zone, would create minor visual contrasts and long-term minor adverse impacts.

The reduction of passage Zone in the Laidlaw Park area included in the FEIS version of Alternative D would help to limit this visual intrusion and the visual fragmentation of that area. Continued use of the three existing mineral material sites would cause long- and short-term minor adverse impacts.

### **Cumulative Impacts**

The cumulative effects on visibility in the Monument would be similar to those described for Alternative A. Visibility can be affected by regional haze, dust from agricultural activities, smoke from western wildland fires, several communication sites that are near the Monument, and other outside sources of air pollution. These things would cause long-term negligible to moderate adverse impacts on the Monument's viewscapes and night sky. Artificial light sources and light pollution from neighboring towns would affect the Monument's night sky, causing long-term negligible adverse impacts.

Overall, the cumulative impacts on visual resources from the actions outside the Monument, added to the effects of Alternative D (Proposed Plan), would result in long-term minor adverse impacts on visual resources.

### **Conclusion**

Long-term minor beneficial effects on visual resources would result from greater protection of geological features; long-term minor to moderate beneficial effects would come from holding surface disturbing activities to VRM management class standards, and restoring sagebrush steppe communities would cause long-term moderate beneficial effects.

Artificial light sources would cause long-term negligible cumulative adverse impacts. Long-term minor adverse impacts would result from existing livestock facilities and, cumulatively, from communications sites during the day. Long- and short-term minor adverse impacts would result from the use of existing mineral material sites. Long-term moderate adverse impacts would result from communications sites at night.

Class B road use would cause short-term minor

adverse impacts, and short-term minor to moderate adverse impacts would be caused by wildland fires and prescribed fires. Short-term negligible to moderate cumulative adverse impacts would result from outside sources of air pollution.

## **SOUNDSCAPES**

### **IMPACTS FROM ALTERNATIVE A**

#### **Analysis**

Natural soundscapes in the Monument would be affected by a number of sources. Vehicle and road noise from the US 20/26/93 corridor, which passes through the Monument on the north side, would cause long-term minor adverse impacts, particularly affecting campers at the original NPS Monument. Areas of the expanded Monument along this corridor also would incur similar long-term minor adverse impacts from the noise. The sounds associated with car, truck, motorcycle, OHV, and snowmobile use in the Monument would cause short-term adverse impacts on natural soundscapes in a number of areas in the Monument that would be mostly negligible to minor.

The noise from regular grazing operations and firefighting/fire suppression actions would cause short-term negligible to minor adverse impacts. For example, administrative and fire suppression air operations, using both fixed-wing aircraft and helicopters over the Monument, would cause short-term minor adverse impacts in the area in which they were used for the duration of the fire.

#### **Cumulative Impacts**

Trains using railroad lines outside the southern boundary of the Monument can be heard from some locations in the Monument, causing long-term negligible to minor adverse impacts. Occasional over flights of commercial jets at cruising altitudes, small private aircraft, and military jets using training flyways at both high and low altitudes might be heard. Combined with the various sources of noise from the actions of Alternative A, these noise intrusions would result in cumulative long-term

negligible to minor adverse impacts.

#### **Conclusion**

The effects on natural soundscapes in the Monument would result mainly from transportation, administrative uses, and grazing. The use of the US 20/26/93 corridor would cause long-term minor adverse impacts. Short-term negligible to minor adverse impacts would result from the use of various vehicles in the Monument, from fire management operations, and from livestock operations. Air operations would cause short-term minor adverse impacts.

### **IMPACTS FROM ALTERNATIVE B**

#### **Analysis**

The effects on natural soundscapes in Alternative B would be almost the same as those described for Alternative A. There probably would be a higher incidence of short-term negligible to minor adverse impacts from vehicle use in the expanded Passage Zone because the roads would be maintained to a higher degree, allowing better access for more vehicles.

Activities associated with fire management and livestock operations would be the same as those described for Alternative A, resulting in short-term minor adverse impacts.

#### **Cumulative Impacts**

The cumulative effects on soundscapes in the Monument from Alternative B would be the same as those described for Alternative A, with slightly more noise caused by the increased access and associated transportation, more visitation, and more grazing in the Passage Zone. Overall, combined with the various sources of noise from the actions of Alternative B, the outside noise intrusions would result in cumulative long-term minor adverse impacts.

#### **Conclusion**

The effects on natural soundscapes in the Monument would result mainly from transportation, administrative uses, and grazing. Some increased noise would come from more use of the Passage



Zone. The use of the US 20/26/93 corridor would cause long-term minor adverse impacts. Short-term negligible to minor adverse impacts would result from the use of various vehicles in the Monument, from fire management operations, and from livestock operations. Air operations would cause short-term minor adverse impacts.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

The effects on natural soundscapes in Alternative C would be almost the same as those described for Alternative A, but there would be less road-related noise and therefore fewer impacts from vehicle use.

### **Cumulative Impacts**

The cumulative effects on soundscapes in the Monument from Alternative C would be the same as those described for Alternative A, but slightly less noise would be expected in the Passage Zone areas. Overall, combined with the various sources of noise from the actions of Alternative C, the outside noise intrusions would result in cumulative long-term minor adverse impacts on soundscapes.

### **Conclusion**

The effects on natural soundscapes in the Monument from Alternative C would result mainly from transportation, administrative uses, and grazing. The use of the US 20/26/93 corridor would cause long-term minor adverse impacts. Short-term negligible to minor adverse impacts would result from the use of various vehicles in the Monument, from fire management operations, and from livestock operations. Air operations would cause short-term minor adverse impacts.

## **IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)**

### **Analysis**

The effects on natural soundscapes in Alternative D (Proposed Plan) would be similar to those described for Alternative A, but some roads would be maintained to a higher degree, and the maintenance of others would be decreased. This would mean that

there probably would be a slightly higher incidence of short-term negligible to minor adverse impacts from vehicle use in the Monument.

The fire management and livestock operations would be the same in this alternative as in Alternative A, resulting in short-term minor adverse impacts.

### **Cumulative Impacts**

The cumulative effects on soundscapes in the Monument from Alternative D (Proposed Plan) would be the same as those described for Alternative A, but with slightly more short-term noise from restoration, road improvement, and fire management activities. Overall, the outside noise intrusions, combined with the various sources of noise from the actions of Alternative D (Proposed Plan), would result in cumulative long-term minor adverse impacts on soundscapes.

### **Conclusion**

The effects on natural soundscapes in the Monument would result mainly from transportation, administrative uses, and grazing. The use of the US 20/26/93 corridor would cause long-term minor adverse impacts. Short-term negligible to minor adverse impacts would result from the use of various vehicles in the Monument, from fire management operations, and from livestock operations. Air operations would cause short-term minor adverse impacts.

## **SOCIAL AND ECONOMIC CONDITIONS**

### **METHODOLOGY AND ASSUMPTIONS**

This section identifies the potential impacts on the population, housing, social conditions, employment, and regional economy that might result from implementing each alternative. To assess socioeconomic impacts of each alternative, the following methods and assumptions were used:

- For the baseline condition, it is assumed that the Monument's annual operating budget and number of employees would not increase more than 10 percent over the next 10 years.

- Effects on economic conditions would result primarily from a long-term (more than 10 years) increase in the number of visitors to the Monument, an increase in the average time visitors stay at the Monument or at gateway communities, and/or more visitor spending, as well as an increase in the number of new permanent residents drawn to the area by a wider range of recreational opportunities and greater appreciation of the Monument's resources.

The following impact thresholds were defined for analyzing impacts to socioeconomic conditions.

- Negligible:** No changes would occur, or changes to socioeconomic indicators (population, employment/unemployment rate, per capita income, property values, poverty level, crime rates, characteristics, quality and satisfaction of visitors' experience, or effects on the rural character around the Monument and Preserve) would be below or at the level of statistical error (about 3 percent) and, if detected, the effects would be considered slight and short term.
- Minor:** There would be increases in the number of visitors to the Monument and Preserve or changes in socioeconomic indicators between 4 and 10 percent.
- Moderate:** There would be increases in the number of visitors to the Monument and Preserve or changes in socioeconomic indicators by 10 to 20 percent.
- Major:** There would be increases in the number of visitors to the Monument and Preserve or changes in socioeconomic indicators by more than 20 percent.

The area of analysis for all impacts was defined as the county census tracts in the five counties surrounding Craters of the Moon National Monument and Preserve.

## IMPACTS FROM ALTERNATIVE A

### Analysis

#### *Economic Conditions*

Under Alternative A, continuation of present interim management actions, the number of annual visitors would remain consistent at about 200,000. Alternative A would not substantially change the number of annual visitors, the length of stay, or visitor spending, nor would substantial new facilities be developed. Other than changes related to minerals development (see below), there would be no direct effects on the regional economy, population, employment/ unemployment rates, per capita income for workers in the counties surrounding the Monument, change in property values, or the need for additional services. Although this alternative is unlikely to draw additional residents to nearby communities, existing population growth in the area will probably continue at similar rates, which could increase pressure on Monument resources and gradually increase local property values as available land becomes more scarce.

Existing mineral permits are valued at approximately \$5 per ton. Replacement costs for the Monument mineral permits are estimated to be about \$25 per ton, plus transportation costs of \$1 to \$2 per mile at distances of up to 100 miles to sites where needed. As mineral leases expired and could not be renewed, there would be long-term moderate adverse economic impacts on county leaseholders, who would have to obtain minerals from other sources. However, given that employment and income from mining total no more than one percent in any of the five counties in the planning area, this would be a negligible effect on the local economy.

#### *Social Conditions*

No activities under Alternative A would affect the social value (characteristics, quality, satisfaction) of local resident or visitor experiences at the Monument or substantially change the number of visitors to the Monument, nor would there be any changes to Monument management. None of the actions of this alternative would directly or indirectly affect the rural character around the Monument or affect



local residents' use and appreciation of Monument resources.

### **Cumulative Impacts**

The Minidoka Internment National Monument was designated in January 2001. An administrative facility for the Minidoka National Wildlife Refuge has been proposed, as has the development of a multi-agency South Central Idaho Visitor Center along I-84 near Twin Falls. These actions would have the potential to minimally increase the number of visitors to Craters of the Moon National Monument and Preserve. Blaine County's comprehensive plan stipulates that the portion of the Arco-Minidoka Road within its jurisdiction would continue to be maintained at its current level. No other regional economic activities were identified that would contribute to the cumulative effects on economic conditions under this alternative (i.e., any activities that would further stimulate increased visitation or draw additional new residents to the Monument area). However, current population growth rates in some of the communities near the Monument are likely to increase pressure on Monument resources even without changes in resource management.

### **Conclusion**

Alternative A would result in a negligible adverse or beneficial effect on local communities, the number of annual visitors to the Monument, length of stay, or visitor spending. There would be no direct, indirect, or cumulative effects on the regional economy or any economic or social indicator, other than negligible adverse impacts related to a gradual loss of mineral leases. Alternative A would not affect the rural character around the Monument.

## **IMPACTS FROM ALTERNATIVE B**

### **Analysis**

#### ***Economic Conditions***

Alternative B, which would involve the highest level of visitor recreational opportunities, would entail more public education and interpretation of cultural resource sites, more designated primitive campsites, interpretation of select caves, Kings Bowl Frontcountry Zone development, expansion and

development of new facilities, and more travel and access in the Monument. Under this alternative a range of recreational opportunities would be available, including commercial helicopter landings. This alternative also would produce the highest level of Monument development.

The state of Idaho's 2002 "Outdoor Recreation Demand Assessment" found that 52 percent of residents were willing to travel 1 to 2 hours to engage in recreational activities, and the top three recreational activities for adults were walking, hiking, or watching wildlife - activities that would be available at the Monument. More opportunities for recreational activities would directly result in a moderate increase in the annual number of visitors, a longer visitor's stay in the area, and more recreational spending per visit. Such development could also have a minor impact in attracting additional permanent residents and businesses to the area, although it is difficult to estimate how many. Beyond those who would be directly employed by such new activities, a greater range of recreational opportunities and an enhanced appreciation of Monument resources might draw more retirees, commuters and entrepreneurs to the area. This could increase population and economic growth rates in nearby communities, which may increase pressure on Monument resources.

A moderate increase in visitors and visitor spending would result in the addition of about 100 new jobs directly or indirectly to the local economy, a negligible increase of about 1 percent of the workforce in the five-county/census tract region surrounding the Monument. These new jobs would be dispersed throughout the region in a wide variety of visitor support services such as hotels, restaurants, auto service stations, and recreational outfitters and in services that would support increased business at these facilities. However, such services would likely be concentrated in the communities closest to the Monument, such as Carey and Arco, which could result in minor to moderate impacts in these communities.

This increased economic stimulus would be

long-term and permanent. Although important, this increased stimulus would cause a negligible to minor impact on local employment rates and per capita income. However, it could have a more substantial impact on the local economy due to an increase in personal income brought by new residents circulating in the community. It could also increase population growth rates and property values in nearby communities, and the use of Monument resources by local residents.

As in Alternative A, mineral material site permits in the Monument would be terminated upon expiration, and those areas would be closed to further use except as needed administratively. This would cause moderate long-term beneficial effects on access and transportation by reducing heavy equipment damage to roads and related maintenance, as well as reducing congestion in the Monument's transportation system. However, as mineral leases expired and could not be renewed, there would be long-term moderate adverse economic impacts on county leaseholders, who would have to obtain minerals from other sources. Given that employment and income from mining total no more than 1 percent in any of the five counties in the planning area, this would be a negligible effect on the local economy.

### ***Social Conditions***

As was discussed above, this alternative would involve management actions that would result in more visitation to the Monument and more revenue from tourism, which would stimulate the need for approximately 100 new jobs. It might also attract larger numbers of permanent residents to the area than would occur otherwise, which could have a minor impact on population growth rates in local communities. Although important, this level of economic stimulation would result in a negligible to minor effect on, health care, education, and crime rates around the Monument. These effects could be concentrated in nearby communities.

More visitors and more recreational activities could result in both positive and negative effects on the visitor experience, based on each visitor's recreational objectives. For some visitors, more

recreational opportunities would mean a moderate decline in satisfaction for those who want to see the Monument protected from recreational impacts on the land. Other visitors could experience a moderate increase in satisfaction as a result of having a wide variety of recreational opportunities.

Likewise, more visitors and recreational activities could have both positive and negative effects on the quality of life of permanent residents and its attractiveness to newcomers. Although some residents value the area's quiet, rural atmosphere, others might prefer a wider range of recreational opportunities.

### **Cumulative Impacts**

Population growth in southern Blaine County (U.S. Census Tract 9601) increased by 31 percent between 1990 and 2000. Similarly, the population in the town of Carey in Blaine County has increased greatly, and the town is currently undergoing a building boom. If new Monument-oriented recreational businesses should locate around Carey and southern Blaine County, they could exacerbate existing trends that are leading to more rapid population and economic growth.

As was described for Alternative A, the Minidoka Internment National Monument was designated in January 2001. An administrative facility for the Minidoka National Wildlife Refuge has been proposed, as has the development of a multi-agency South Central Idaho Visitor Center along I-84 near Twin Falls. These actions would have the potential to minimally increase the number of visitors to Craters of the Moon National Monument and Preserve. No other regional economic activities were identified that would contribute to the cumulative effects on economic conditions under this alternative (i.e., any activities that would further stimulate increased visitation or attract new residents to the Monument area).

### **Conclusion**

Alternative B would result in a moderate increase in the annual number of visitors, would lengthen visitor's stay, and would increase recreational spend-



ing per visit. It could also cause a larger proportion of the region's rapidly growing population to locate in communities near the Monument, such as Carey and Arco. This moderate increase in local residents, visitors and visitor spending would result in a negligible to minor effect on the local economy, a negligible or minor effect on local employment rates and per capita income, a negligible to minor effect on the local population, health care, education, and crime rates around the Monument, and a moderate adverse or beneficial effect on local resident and visitor satisfaction. A negligible adverse impact would result from the gradual loss of mineral leases, given that employment and income from mining total no more than one percent in any of the five counties in the planning area.

## **IMPACTS FROM ALTERNATIVE C**

### **Analysis**

#### ***Economic Conditions***

Alternative C would create a visitor experience that would be similar to Alternative A, except that off-site interpretation would be emphasized and livestock developments might be reduced because there would be fewer acres in the Passage Zone.

Alternative C would not entail any new opportunities for visitor recreation that would stimulate additional Monument visitation or increase the length of visitors' stay or visitor spending, nor offer greater incentives to newcomers to locate to the area. Substantial new facilities would not be developed. The effects on the regional economy or population would be negligible. The annual number of visitors would remain consistent at about 200,000. There would be negligible direct and indirect effects on the regional economy, population, employment/unemployment rates, per capita income for workers in the counties surrounding the Monument, change in property values, or the need for additional services.

As in Alternative A, mineral material site permits in the Monument would be terminated upon expiration, and those areas would be closed to further use except as needed administratively. This would

cause moderate long-term beneficial effects on access and transportation by reducing heavy equipment damage to roads and related maintenance, as well as reducing congestion in the Monument's transportation system. However, as mineral leases expired and could not be renewed, there would be long-term moderate adverse economic impacts on county leaseholders, who would have to obtain minerals from other sources. However, given that employment and income from mining total no more than one percent in any of the five counties in the planning area, this would be a negligible effect on the local economy.

#### ***Social Conditions***

Alternative C would be similar to Alternative A in its development of new opportunities for visitor and local resident recreation. No actions of this alternative would affect the social value (characteristics, quality, satisfaction) of visitor or local resident experiences at the Monument or substantially change the number of visitors to the Monument, nor would there be any changes to Monument management. None of the actions of this alternative would directly or indirectly affect the rural character around the Monument or population or economic growth rates.

#### ***Cumulative Impacts***

As was described previously, the Minidoka Internment National Monument was designated in January 2001. An administrative facility for the Minidoka National Wildlife Refuge has been proposed, as has the development of a multi-agency South Central Idaho Visitor Center along I-84 near Twin Falls. These actions would have the potential to minimally increase the number of visitors to Craters of the Moon National Monument and Preserve. No other regional economic activities were identified that would contribute to the cumulative effects on economic conditions under this alternative (i.e., any activities that would further stimulate increased visitation or attract new residents to the Monument area).

## Conclusion

Alternative C would result in a negligible adverse or beneficial effect on the annual number of visitors to the Monument and Preserve, the length of visitors' stay, and the amount of visitor spending. There would be negligible direct, indirect, or cumulative effects on the regional economy or any economic or social indicator, other than the negligible adverse impacts from the gradual loss of mineral leases. Alternative C would not affect the rural character around the Monument.

## IMPACTS FROM ALTERNATIVE D (PROPOSED PLAN)

### Analysis

#### *Economic Conditions*

Alternative D (Proposed Plan), which would involve a moderate amount of public education, also would entail interpretation of cultural resource sites, expanding and developing new facilities as well as new visitor facilities outside the Monument, a high level of recreation and visitor opportunities, a high level of visitor service development in the gateway communities, and the authorization of commercial outfitters and guides (ecotourism emphasis). This alternative also offers opportunities for partnering with local communities to increase resource interpretation and restoration, which is likely to increase the local communities' appreciation of the Monument and make the area more attractive to new residents and businesses. This could increase local population and economic growth rates. More opportunities for visitor recreation would result in a moderate increase in the annual number of visitors, a longer stay for visitors, and more recreational spending per visit.

Alternative D (Proposed Plan) would be similar to Alternative B in its potential for new visitor and local resident recreation opportunities and the stimulation of more Monument visitations. A moderate increase in visitors and visitor spending would result in the addition of about 100 new jobs directly or indirectly to the local economy, a negligible increase of about 1 percent of the workforce in the

region surrounding the Monument and Preserve. This would be a negligible or minor effect on local employment rates and per capita income.

Alternative D could have more substantial effects on local population growth rates and personal income from non-labor (primarily retirement) income. This alternative could attract additional permanent residents to the area, although it is difficult to estimate how many. Beyond those who would be directly employed by such new activities, more retirees, commuters and entrepreneurs might be drawn to the area by the greater range of recreational opportunities. It could also increase property values in nearby communities, particularly since the emphasis on restoration could enhance scenic values and wildlife watching opportunities. This increased economic stimulus would be long-term and permanent.

As in Alternative A, mineral material site permits in the Monument would be terminated upon expiration, and those areas would be closed to further use except as needed administratively. This would cause moderate long-term beneficial effects on access and transportation by reducing heavy equipment damage to roads and related maintenance, as well as reducing congestion in the Monument's transportation system. However, as mineral leases expired and could not be renewed, there would be long-term moderate adverse economic impacts on county leaseholders, who would have to obtain minerals from other sources. Given that employment and income from mining total no more than one percent in any of the five counties in the planning area, this would be a negligible effect on the local economy.

#### *Social Conditions*

Alternative D (Proposed Plan) would be similar to Alternative B in actions that would stimulate more visitation to the Monument, increasing revenue from tourism and new jobs, and increasing the number of new residents who choose to settle in the area. Economic stimulation under Alternative D (Proposed Plan) would result in minor effects on the local population, health care, education, and crime



rates around the Monument. More visitors and more recreational activities would result in both adverse and beneficial moderate effects on the visitor and local resident experience, based on each visitor or resident's recreational objectives. For some visitors and residents, more recreational opportunities would mean a moderate decline in visitor satisfaction for those who want to see the Monument protected from recreational impacts on the land. Other visitors and residents could experience a moderate increase in satisfaction as a result of having a wide variety of recreational opportunities.

### **Cumulative Impacts**

Population growth in southern Blaine County (U.S. Census Tract 9601) increased by 31 percent between 1990 and 2000. Similarly, the population in the town of Carey in Blaine County has increased greatly. If new Monument and Preserve-oriented recreational businesses should locate around Carey and southern Blaine County, they would cause a minor effect on the area's population and economic growth. An increase in local awareness and appreciation of the Monument's resources and recreational opportunities could cause potential new residents and businesses to decide to settle in communities near the Monument rather than elsewhere.

As was described for Alternative A, the Minidoka Internment National Monument was designated in January 2001. An administrative facility for the Minidoka National Wildlife Refuge has been proposed, as has the development of a multi-agency South Central Idaho Visitor Center along I-84 near Twin Falls. These actions would have the potential to minimally increase the number of visitors to Craters of the Moon National Monument and Preserve. Blaine County's comprehensive plan stipulates that the portion of the Arco-Minidoka Road within its jurisdiction would continue to be maintained at its current level. No other regional economic activities were identified that would contribute to the cumulative effects on economic conditions under this alternative (i.e., any activities that would further stimulate increased visitation at the Monument).

### **Conclusion**

Alternative D (Proposed Plan) would result in a moderate increase in the annual number of visitors, the length of visitors' stay, and the amount of recreational spending per visit. It could also have a minor impact on the number of new residents drawn to nearby communities. This would result in a minor effect on the local economy, a negligible or minor effect on local employment rates and per capita income, a minor effect on the local population, health care, education, and crime rates around the Monument, and a moderate adverse or beneficial effect on quality of life for local residents and visitor satisfaction. A negligible adverse impact would result from the gradual loss of mineral leases.

## **UNAVOIDABLE ADVERSE IMPACTS**

The following paragraphs describe the more important (moderate and major intensity) adverse impacts that would unavoidably result from implementing the alternatives described above. These are residual impacts that would remain after mitigation was complete.

### **ALTERNATIVE A**

#### **Natural Resources**

Damage, theft, vandalism, foot traffic, and other human-caused disturbances to geologic resources, although site-specific, could reach moderate to major intensity in some instances, depending, among other things, on their proximity to roads and trails. Removing cinders from materials sites in the Monument for road construction and maintenance could result in moderate to major adverse impacts on geologic resources. Fire suppression activities could result in moderate adverse impacts on geologic processes.

Localized major impacts to soils would result from fire suppression activities under Alternative A, including fire line construction. Livestock use, especially in areas where livestock concentrate, could cause moderate adverse impacts, including compaction, erosion, and changes in soil fertility

and production. Facility development, including expanding the Visitor Center, creating interpretation and trails in Kings Bowl, and installing kiosks, signs, and wayside exhibits, would also cause moderate adverse impacts on soils. Soil loss and movement resulting from the actions of Alternative A, along with the cumulative effects of agricultural and other land uses in the vicinity of the Monument, would constitute moderate adverse impacts.

Road and trail use and maintenance could result in the spread of noxious weeds, causing moderate short- and long-term adverse impacts on native plant communities. Livestock would trample vegetation, causing the removal of vegetation and the spread of invasive and noxious weeds. Areas surrounding the Monument would be affected by agricultural practices, including irrigated and dryland crop farming and livestock ranching. Associated impacts that could reach moderate intensity are (a) the elimination of native vegetation by heavy livestock use or by its replacement by crops, (b) drift of weeds, (c) drift of herbicides, and (d) agricultural trespass, including the deposition of garbage or the removal of vegetation and planting crops on public lands adjacent to the Monument.

Intense recreational use of ice cave pools could create moderate changes in nutrient concentrations and bacteria levels. The duration of these local effects would depend on the specific site.

Under Alternative A, fires could result in major adverse impacts on some sensitive woodland and grassland wildlife species. Secondary roads and associated visitor use adjacent to sensitive wildlife areas could cause moderate disturbances of wildlife. Moderate long-term adverse impacts on wildlife from livestock use would result from competition for forage, trampling, loss of habitat, and disruption of migration corridors. The cumulative effects of agriculture and ranching on adjacent lands could adversely affect wildlife over large areas of the Monument through long-term competition for resources and habitat conversion.

### **Cultural Resources**

Livestock use under Alternative A would cause erosion, create trails, and denude areas of vegetation, which could damage cultural resources in the area.

### **Land Use and Transportation**

Livestock permittees would haul water to Laidlaw Park on the existing road network. This practice could cause a long-term moderate adverse effect on access routes.

The restoration and other actions associated with fire suppression and recovery of burned areas could result in closure to grazing for up to three years, a moderate adverse impact. Over time, increased recreation, especially in the Passage Zone, could result in conflicts, a moderate adverse impact on livestock operations.

### **Visitor Experience**

VRM inventory classifications outside the Monument boundary that would allow visual intrusions such as cell towers could cause long-term moderate adverse impacts on the natural night sky.

### **Social and Economic Conditions**

As mineral leases expired and could not be renewed, there would be moderate long-term adverse economic impacts on county leaseholders, who would have to obtain minerals from other sources. However, given that employment and income from mining total no more than 1 percent in any of the five counties in the planning area, this would be a negligible effect on the local economy.

## **ALTERNATIVE B**

### **Natural Resources**

Improved roads and trails and the resultant increased access and visitation to geologic features would lead to greater damage, theft, vandalism, foot traffic, and other human-caused disturbances that would reach moderate to major intensities at some sites. Removing cinders from materials sites in the Monument for road construction and maintenance could result in moderate to major adverse impacts on geologic resources. Fire suppression activities also could cause moderate adverse impacts on geologic processes.



Better road and trail access in Alternative B and the associated increase in public use could result in long-term moderate adverse impacts on soils. As in Alternative A, local major adverse impacts on soils would result from fire suppression activities in Alternative B, including fire line construction. Livestock use, especially in areas where livestock concentrate, would result in moderate adverse impacts, including compaction, erosion, and changes in soil fertility and production. Facility development, including the expansion of the Visitor Center, the creation of interpretation and trails in Kings Bowl, and the installation of kiosks, signs, and wayside exhibits, also would cause moderate adverse impacts on soils. Soil loss and movement resulting from the actions of Alternative B, along with the cumulative effects of agricultural and other land uses in the vicinity of the Monument, would constitute moderate adverse impacts.

More road and trail construction under Alternative B would remove vegetation and could result in spread of noxious weeds, with moderate short- and long-term negative impacts on native plants. Livestock would trample vegetation, causing its removal and the spread of invasive and noxious weeds. More fire suppression under Alternative B could result in moderate adverse local impacts from fire line construction and heavy equipment. Areas around the Monument would be affected by agricultural practices, including irrigated and dryland crop farming and livestock ranching. Associated impacts that could reach moderate intensity are (a) the elimination of native vegetation by heavy livestock use or by its replacement by crops, (b) drift of weeds, (c) drift of herbicides, and (d) agricultural trespass, including the deposition of garbage or the removal of vegetation and planting crops on public lands adjacent to the Monument.

Intense recreational use of ice cave pools could create moderate changes in nutrient concentrations and bacteria levels. The duration of these local effects would depend on the specific site.

Under Alternative B, fires could result in major adverse impacts on some sensitive woodland and

grassland wildlife species. Secondary roads and associated visitor use adjacent to sensitive wildlife areas could cause moderate disturbances of wildlife. Moderate long-term adverse impacts on wildlife from livestock use would result from competition for forage, trampling, loss of habitat, and disruption of migration corridors. The cumulative effects of agriculture and ranching on adjacent lands could adversely affect wildlife over large areas of the Monument through long-term competition for resources and habitat conversion.

### **Cultural Resources**

Under Alternative B, improved access to the more remote regions of the Monument could increase visitation to those areas, as well as increasing the impacts of vehicle and foot traffic, unauthorized collections, and vandalism of cultural resources. Livestock use under Alternative B would cause erosion, create trails, and denude areas of vegetation, which could damage cultural resources in the area.

### **Land Use and Transportation**

Under Alternative B, the Carey-Kimama and Arco-Minidoka roads would be designated as Backcountry Byways, which would cause moderate to major long-term adverse impacts from more visitation and related increases in maintenance and road degradation caused by erosion or overuse. In addition, roads and trails in the Monument would be improved, causing minor to moderate long-term adverse impacts on travel and access by attracting more visitors and increasing the frequency of needed maintenance. More livestock developments (such as water troughs) in the expanded Passage Zone under this alternative could cause moderate adverse impacts on transportation and access associated with more use of the road network.

The restoration and other actions associated with fire suppression and recovery of burned areas could result in closure to grazing for up to three years, a moderate adverse impact. Over time, increased recreation, especially in the Passage Zone, could result in conflicts, a moderate adverse impact on livestock operations.

### **Visitor Experience**

VRM Inventory classifications outside the Monument boundary that would allow visual intrusions such as cell towers could cause long-term moderate adverse impacts on the natural night sky.

### **Social and Economic Conditions**

As mineral leases expired and could not be renewed, there would be moderate long-term adverse economic impacts on county leaseholders, who would have to obtain minerals from other sources. However, given that employment and income from mining total no more than 1 percent in any of the five counties in the planning area, this would be a negligible effect on the local economy.

## **ALTERNATIVE C**

### **Natural Resources**

Damage, theft, vandalism, foot traffic, and other human-caused disturbances of geologic resources, although site-specific, could reach moderate to major intensity in some instances, depending on their nearness to roads and trails. However, with less availability of maintained access under Alternative C, these impacts would be less likely. Removing cinders from materials sites in the Monument for road construction and maintenance could result in moderate to major adverse impacts on geologic resources. Fire suppression activities also could cause moderate adverse impacts on geologic processes.

Under Alternative C, livestock use could cause moderate adverse impacts on soils, including compaction, erosion, and changes in soil fertility and production, especially in areas where livestock congregate. Soil loss and movement resulting from the actions of Alternative C, along with agricultural and other land uses near the Monument, would result in cumulative moderate adverse impacts on soils.

Decreased road density under Alternative C would reduce the opportunity for noxious weeds to be dispersed, but this would also reduce the probability of detection and treatment by Monument staff. This could result in a moderate adverse impact on Monument vegetation. Livestock would trample

vegetation, causing its removal and the spread of invasive and noxious weeds.

Fire suppression activities under Alternative C could result in moderate adverse local impacts on vegetation. Areas around the Monument would be affected by agricultural practices, including irrigated and dryland crop farming and livestock ranching. Associated impacts that could reach moderate intensity are (a) the elimination of native vegetation by heavy livestock use, (b) drift of weeds, (c) drift of herbicides, and (d) agricultural trespass, including the deposition of garbage or the removal of vegetation and planting crops on public lands adjacent to the Monument.

Intense recreational use of ice cave pools could create moderate changes in nutrient concentrations and bacteria levels. The duration of these local effects would depend on the specific site.

Under Alternative C, fires could result in major adverse impacts on some sensitive woodland and grassland wildlife species. Secondary roads and associated visitor use adjacent to sensitive wildlife areas could cause moderate disturbances of wildlife. Moderate long-term adverse impacts on wildlife from livestock use would result from competition for forage, trampling, loss of habitat, and disruption of migration corridors. The cumulative effects of agriculture and ranching on adjacent lands could adversely affect wildlife over large areas of the Monument through long-term competition for resources and habitat conversion.

### **Cultural Resources**

Livestock use under Alternative C would cause erosion, create trails, and denude areas of vegetation, which could damage cultural resources in the area.

### **Land Use and Transportation**

Fewer miles of roads would be maintained under Alternative C, which would cause minor to moderate adverse impacts on Monument access because a smaller range of vehicles would be accommodated by the transportation system. In this alternative, the WSA boundaries would serve as the boundaries for the Pristine Zone. Two-track roads in this area



would be either closed or obliterated, resulting in moderate long-term adverse effects on access.

The restoration and other actions associated with fire suppression and recovery of burned areas could result in closure to grazing for up to three years, a moderate adverse impact. Over time, increased recreation, especially in the Passage Zone, could result in conflicts, a moderate adverse impact on livestock operations.

### **Visitor Experience**

VRM Inventory classifications outside the Monument boundary that would allow visual intrusions such as cell towers could cause long-term moderate adverse impacts on the natural night sky.

### **Social and Economic Conditions**

As mineral leases expired and could not be renewed, there would be moderate long-term adverse economic impacts on county leaseholders, who would have to obtain minerals from other sources. However, given that employment and income from mining total no more than 1 percent in any of the five counties in the planning area, this would be a negligible effect on the local economy.

## **ALTERNATIVE D (PROPOSED PLAN)**

### **Natural Resources**

Damage, theft, vandalism, foot traffic, and other human-caused disturbances of geologic resources, although site-specific, could reach moderate to major intensity in some instances, depending on their closeness to roads and trails, among other things. Removing cinders from materials sites in the Monument for road construction and maintenance could result in moderate to major adverse impacts on geologic resources. Fire suppression activities also could cause moderate adverse impacts on geologic processes.

Restoring 80,000 acres of sagebrush steppe communities under Alternative D (Proposed Plan) would lead to the exposure of the soils over this acreage, which would result in more wind erosion and potential nutrient loss, resulting in short-term moderate adverse impacts. Livestock would cause compaction,

erosion, and changes in soil fertility and production, especially in areas where livestock congregate. This would cause moderate adverse impacts.

Facility development, including expanding the Visitor Center, adding interpretation and trails in Kings Bowl, and installing kiosks, signs, and wayside exhibits, would cause moderate adverse impacts on soils. Soil loss and movement resulting from the actions of Alternative D (Proposed Plan), along with the cumulative effects of agricultural and other land uses in the vicinity of the Monument, would constitute moderate adverse impacts.

More road density in Alternative D (Proposed Plan) would increase the potential for noxious weed dispersal, but it also would increase the probability of detection and treatment by Monument staff. This could result in moderate short- and long-term negative impacts on native plants. Livestock would trample vegetation, causing its removal and the spread of invasive and noxious weeds. Fire suppression activities could result in moderate local impacts from fire line construction and the use of heavy equipment.

Areas around the Monument would be affected by agricultural practices, including irrigated and dryland crop farming and livestock ranching. Associated impacts that could reach moderate intensity are (a) the elimination of native vegetation by heavy livestock use or by its replacement by crops, (b) drift of weeds, (c) drift of herbicides, and (d) agricultural trespass, including the deposition of garbage or the removal of vegetation and planting crops on public lands adjacent to the Monument.

Intense recreational use of ice cave pools could create moderate changes in nutrient concentrations and bacteria levels. The duration of these local effects would depend on the specific site.

Under Alternative D (Proposed Plan), fires could result in major adverse impacts on some sensitive woodland and grassland wildlife species. Secondary roads and associated visitor use adjacent to sensitive wildlife areas could cause moderate disturbances of wildlife. Moderate long-term adverse impacts

on wildlife from livestock use would result from competition for forage, trampling, loss of habitat, and disruption of migration corridors. The cumulative effects of agriculture and ranching on adjacent lands could adversely affect wildlife over large areas of the Monument through long-term competition for resources and habitat conversion.

### **Cultural Resources**

Livestock use under Alternative D (Proposed Plan) would cause erosion, create trails, and denude areas of vegetation, which could damage cultural resources in the area.

### **Land Use and Transportation**

Access to many routes would be limited to administrative use under Alternative D (Proposed Plan), which would cause moderate adverse impacts on access and transportation.

The restoration and other actions associated with fire suppression and recovery of burned areas could result in closure to grazing for up to three years, a moderate adverse impact. Over time, increased recreation, especially in the Passage Zone, could result in conflicts, a moderate adverse impact on livestock operations.

### **Visitor Experience**

VRM inventory classifications outside the Monument boundary that would allow visual intrusions such as cell towers could cause long-term moderate adverse impacts on the natural night sky.

### **Social and Economic Conditions**

As mineral leases expired and could not be renewed, there would be moderate long-term adverse economic impacts on county leaseholders, who would have to obtain minerals from other sources. However, given that employment and income from mining total no more than 1 percent in any of the five counties in the planning area, this would be a negligible effect on the local economy.

## **IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES**

### **ALTERNATIVE A**

If roads or trails are improved, the resultant increased access and visitation would lead to greater damage, theft, or vandalism of geologic features. In most cases, such changes would be irreversible and the resources lost would be irretrievable. The possibility of this occurring would be greatest in the Passage Zone, 4,700 acres under this alternative. Cinders removed from materials sites in the Monument for road construction and maintenance also would be irretrievable.

Soil loss resulting from the cumulative effects of Alternative A and agricultural and other land uses in the vicinity of the Monument would be irreversible and irretrievable.

In some circumstances, the loss of sagebrush steppe habitat either by direct disruption or by the spread of noxious weeds or other invasive species would be irreversible. In other instances, reversing the loss of this habitat would take many years to complete. Wildlife that depend on habitats irreversibly lost would be similarly affected.

Irreversible and irretrievable losses of resources would result from unauthorized collection and vandalism of cultural resources and from the disruption of cultural resource sites by livestock or vehicles. It is anticipated that such losses would be commensurate with the level of access and visitation to the Monument, which is low under this alternative.

For all alternatives, the materials and energy used for habitat restoration and facility improvements or maintenance would be irretrievably lost. The funds expended for labor and materials for habitat restoration, facility improvements and maintenance, and Monument operations would be irreversibly and irretrievably committed.



## **ALTERNATIVE B**

If roads or trails are improved, the resultant increased access and visitation would lead to greater damage, theft, or vandalism of geologic features. In most cases, such changes would be irreversible and the resources lost would be irretrievable. The possibility of this occurring would be greatest in the Passage Zone (68,900 acres inside the Monument and 9,000 acres outside the Monument) in Alternative B. Cinders removed from materials sites in the Monument for road construction and maintenance also would be irretrievable.

Soil loss resulting from the cumulative effects of Alternative B and agricultural and other land uses in the vicinity of the Monument would be irreversible and irretrievable.

In some circumstances, the loss of sagebrush steppe habitat either by direct disruption or by the spread of noxious weeds or other invasive species would be irreversible. In other instances, reversing the loss of this habitat would take many years to complete. Wildlife that depend on habitats irreversibly lost would be similarly affected.

Irreversible and irretrievable losses of resources would result from unauthorized collection and vandalism of cultural resources and from the disruption of cultural resource sites by livestock or vehicles. It is anticipated that such losses would be commensurate with the level of access and visitation to the Monument, which is greatest under Alternative B.

For all alternatives, the materials and energy used for habitat restoration and facility improvements or maintenance would be irretrievably lost. The funds expended for labor and materials for habitat restoration, facility improvements and maintenance, and Monument operations would be irreversibly and irretrievably committed.

## **ALTERNATIVE C**

Even though few roads or trails would be improved under this alternative, some damage, theft, or vandalism of geologic features would occur. In most

cases, such changes would be irreversible and the resources lost would be irretrievable. The possibility of this occurring would be greatest in the Passage Zone, 3,200 acres under this alternative. Cinders removed from materials sites in the Monument for road construction and maintenance also would be irretrievable.

Soil loss resulting from the cumulative effects of Alternative C and agricultural and other land uses in the vicinity of the Monument would be irreversible and irretrievable.

In some circumstances, the loss of sagebrush steppe habitat either by direct disruption or by the spread of noxious weeds or other invasive species would be irreversible. In other instances, reversing the loss of this habitat would take many years to complete. Wildlife that depend on habitats irreversibly lost would be similarly affected.

Irreversible and irretrievable losses of resources would result from unauthorized collection and vandalism of cultural resources and from the disruption of cultural resource sites by livestock or vehicles. It is anticipated that such losses would be commensurate with the level of access and visitation to the Monument, minimal under this alternative.

For all alternatives, the materials and energy used for habitat restoration and facility improvements or maintenance would be irretrievably lost. The funds expended for labor and materials for habitat restoration, facility improvements and maintenance, and Monument operations would be irreversibly and irretrievably committed.

## **ALTERNATIVE D (PROPOSED PLAN)**

If roads or trails are improved, the resultant increased access and visitation would lead to greater damage, theft, or vandalism of geologic features. In most cases, such changes would be irreversible and the resources lost would be irretrievable. The possibility of this occurring would be greatest in the Passage Zone, 6,700 acres inside the Monument and 4,100 acres outside the Monument, under this alternative. Cinders removed from materials sites in the

Monument for road construction and maintenance also would be irretrievable.

Soil loss resulting from the cumulative effects of Alternative D (Proposed Plan) and agricultural and other land uses in the vicinity of the Monument would be irreversible and irretrievable.

In some circumstances, the loss of sagebrush steppe habitat either by direct disruption or by the spread of noxious weeds or other invasive species would be irreversible. In other instances, reversing the loss of this habitat would take many years to complete. Wildlife that depend on habitats irreversibly lost would be similarly affected.

Irreversible and irretrievable losses of resources would result from unauthorized collection and vandalism of cultural resources and from the disruption of cultural resource sites by livestock or vehicles. It is anticipated that such losses would be commensurate with the level of access and visitation to the Monument, moderate under this alternative.

For all alternatives, the materials and energy used for habitat restoration and facility improvements or maintenance would be irretrievably lost. The funds expended for labor and materials for habitat restoration, facility improvements and maintenance, and Monument operations would be irreversibly and irretrievably committed. This commitment would be largest under Alternative D (Proposed Plan), with 80,000 acres slated for restoration.

## **RELATIONSHIP OF SHORT-TERM USES OF THE ENVIRONMENT TO LONG-TERM PRODUCTIVITY**

Under all alternatives, the short-term disturbances of soils, vegetation, wildlife habitat, and possibly visitor enjoyment of the Monument from the restoration efforts and limited facility construction would be more than offset by the long-term productivity of the restored sagebrush-steppe habitat and the enhanced facilities available for visitor use. This would be particularly true for Alternative D (Proposed Plan), with its greater emphasis on long-term restoration of habitat. Developing and constructing improved roads and facilities, especially under Alternative B, would result in short-term socioeconomic benefits. After construction work was finished, long-term benefits would result from the improved facilities, access, and programs.

Under all alternatives, grazing and mineral extraction would constitute short-term uses of the environment in various locations. These short-term uses would be balanced by the long-term productivity of these industries overall. The disturbance of soils, vegetation, and wildlife habitat from these uses and from visitor use would reduce the long-term productivity of the environment in local areas where revegetation or the restoration of the natural environment could not be fully realized over time.

