



## Improve Accessibility: North Crater Flow Trail Environmental Assessment



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Craters of the Moon National Monument and Preserve  
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## A. How this Environmental Assessment (EA) is Organized

**i. Executive Summary:** This section briefly recaps the contents of the EA, including the purpose and need for the project, an overview of the alternatives and other key project information.

**ii. Table of Contents:** This lists the chapters and primary sections and where they may be found within the document.

**Chapter I. Purpose and Need:** This chapter identifies the purpose and need for the proposed actions and the planning background for the project, including related laws, policy, monument plans and public participation to date. It also identifies the purpose and significance of the monument. *Impact Topics* describes the potentially affected resources and laws or policy relating to their inclusion in this EA. It also identifies those resources that have been dismissed from further analysis due to their having no or negligible potential environmental consequences.

**Chapter II. Alternatives:** This chapter describes the alternative courses of action that may be taken, including the reasons for dismissing options that do not meet the criteria for inclusion. It also identifies and provides analysis related to the selection of the Environmentally Preferred Alternative.

**Chapter III. Affected Environment/Environmental Consequences:** *Affected Environment* describes the existing environment by resource category. *Methodology* identifies the means by which impacts to various resources are analyzed, including policy and laws relating to impact analysis. *Environmental Consequences* provides a comparison of effects associated with the alternatives including cumulative impacts compared to continuing on the present course of action. The Environmental Consequences section also contains an *Impact Comparison Chart* (Table 4) to assist in discerning the differences in projected impacts between the alternatives.

**Chapter IV. Consultation and Coordination (List of Persons and Agencies Consulted / Preparers):** This chapter provides additional information about internal and public scoping to determine the impact topics that would be contained within the document, as well as preparation and review of the EA by other public agencies and Native American Tribes.

**Chapter V: References:** This chapter provides bibliographical information for sources cited in this EA.

## **B. Executive Summary**

This Environmental Assessment (EA) has been prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190, 42 U.S. C. 4321-4347, as amended), including the Council on Environmental Quality (CEQ) regulations found at 40 CFR 1500 -1508 and other applicable laws, National Park Service (NPS) Management Policies (2006) and management directives. This EA facilitates compliance with Section 106 of the National Historic Preservation Act, Section 7 of the Endangered Species Act, and other laws enacted for the protection of the environment.

This EA describes the impacts associated with the proposed modification of the North Crater Flow Trail in Craters of the Moon National Monument and Preserve. Changes to the trail are needed to increase accessibility and to improve visitor experience and resource protection.

The No Action Alternative (Alternative 1) describes the existing conditions associated with the existing trail and would be continuation of current management practices. This alternative is provided as a baseline of current conditions to compare the action alternative. Alternative 2 describes the proposed modification of the trail to improve its accessibility and to replace interpretive wayside exhibits that introduce visitors to the volcanic features along the trail and in the monument. A summary of other alternatives considered but not fully analyzed is also provided.

The action alternative (Alternative 2) is based on the purpose and need for the project and conforms to existing planning documents, including the Craters of the Moon National Monument and Preserve Management Plan (NPS 2005) and other NPS and monument policies and plans.

If reviewers do not identify significant environmental impacts, this EA will be used to prepare a Finding of No Significant Impact (FONSI), which will be sent to the NPS Pacific West Regional Director for signature.

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# Chapter I. Purpose and Need

## A. Introduction

As noted in the Monument Management Plan (NPS 2005:3), Craters of the Moon National Monument, the first national monument in Idaho, was established on May 2, 1924 (Presidential Proclamation 1694) for the purpose of protecting some of the unusual landscape of the Craters of the Moon Lava Field. This “lunar” landscape was thought to resemble that of the moon and was described in the proclamation as “a weird and scenic landscape peculiar to itself.”

Since 1924, the monument has been expanded and boundary adjustments have been made through five presidential proclamations issued pursuant to the Antiquities Act (34 Stat. 225, 16 U.S. Code [USC] 431). Presidential Proclamation 1843 of July 23, 1928, expanded the monument to include certain springs for water supply and additional features of scientific interest. Presidential Proclamation 1916 of July 9, 1930; Presidential Proclamation 2499 of July 18, 1941; and Presidential Proclamation 3506 of November 19, 1962, made further adjustments to the boundaries. In 1996, Section 205 of the Omnibus Parks and Public Lands Management Act of 1996 (PL 104-333, 110 Stat. 4093, 4106) made a minor boundary adjustment to the monument (NPS 2005:3).

The last expansion through Presidential Proclamation 7373 (November 9, 2000) expanded the boundary to 737,680 acres of federal land (from about 53,400 acres) and included many more of the area’s volcanic features. It also enlarged the monument’s administration by adding Bureau of Land Management (BLM) administration of a portion of these lands as a unit of the National Landscape Conservation System. Federal legislation (PL 107-213, 116 Stat.1052), on August 21, 2002, made one further adjustment by designating 411,627 acres of the expanded NPS boundaries as a National Preserve, and allowing for hunting on lands that were closed to this activity by the November 2000 Proclamation (NPS 2005:4).

Craters of the Moon National Monument and Preserve is located in south central Idaho in Blaine, Butte, Lincoln, Minidoka, and Power Counties. It is within approximately a one-hour drive of Twin Falls, Idaho Falls, Pocatello, and other population centers from the Interstate 84 (I-84), I-86, and I-15 corridors (NPS 2005:4). It encompasses 465,000 acres.

Craters of the Moon is located in an arid, high desert area. Annual precipitation at the proposed site averages about 16 inches. The area only has about 80 frost free days and boasts an average annual mean temperature of 42.8<sup>0</sup> F (Western Regional Climate Center 2011). The average daily minimum temperature is about 30.2<sup>0</sup> F, while the annual average daily maximum is about 55<sup>0</sup> F. Elevation in the project area is about 5,900 feet (1798 m) above sea level (NRCS 1999).

The North Crater Flow Trail is located adjacent to the monument’s Loop Road, near NPS headquarters off U.S. Highway 20/26/93 between the towns of Carey and Arco, Idaho.

## B. Scope of this Environmental Assessment

This EA has been prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190, 42 U.S. C. 4321-4347, as amended), including the Council on Environmental Quality (CEQ) regulations found at 40 CFR 1500 -1508 and other applicable laws, NPS Management Policies (2006) and management directives. This EA facilitates compliance with federal laws and executive orders enacted for the protection of the environment.

NEPA requires the documentation and evaluation of potential impacts resulting from federal actions. Federal actions may include projects financed, assisted, conducted, regulated or approved by a federal agency. An EA discloses the potential environmental consequences of implementing the proposed action and other reasonable and feasible alternatives. NEPA is

intended to provide decision-makers with sound knowledge of the environmental consequences of the alternatives available to them. In this case, the superintendent of Craters of the Moon National Monument and Preserve and the Pacific West Regional Director are faced with a decision regarding whether to improve accessibility on the North Crater Flow Trail.

The purpose of this EA is to identify, evaluate and document the potential effects of the proposed modifications to the North Crater Flow trail to improve its accessibility. Existing conditions described as the No Action Alternative (Alternative 1) constitute the baseline for evaluating the effects of the proposed rehabilitation.

An interdisciplinary team comprised of NPS staff, including natural and cultural resources and maintenance professionals determined the purpose and need for the project and identified the likely beneficial and adverse effects of the proposed actions compared to existing conditions as documented herein.

## **C. Craters of the Moon National Monument and Preserve Purpose and Significance**

### **Purpose**

Based upon the proclamations and legislation the Monument Management Plan (NPS 2005:7) characterizes the purposes of Craters of the Moon National Monument and Preserve are to:

- Safeguard the volcanic features and geologic processes of the Great Rift.
- Provide scientific, educational, and interpretive opportunities for the public to foster an understanding and appreciation of the volcanic geology and associated natural phenomena.
- Maintain the wilderness character of the Craters of the Moon Wilderness Area and of the Wilderness Study Areas.
- Perpetuate the scenic vistas and great open western landscapes for future generations.
- Protect kipukas (older vegetated terrain surrounded by lava flows) and remnant vegetation areas and preserve important habitat for sage-grouse, a BLM sensitive species.
- Continue the historic and traditional human relationships with the land that have existed on much of this landscape for generations.

### **Significance**

According to the Monument Management Plan (NPS 2005: 7-11), Craters of the Moon National Monument and Preserve is significant because:

- It contains a remarkable and unusual diversity of exquisitely preserved volcanic features, including nearly all of the familiar features of purely basaltic volcanism – craters, cones, lava flows, caves, and fissures.
- It contains most of the Great Rift area, the deepest known land-based open volcanic rift, and the longest volcanic rift in the continental United States.
- Many of the more than 400 kipukas contain representative vegetative communities that have been largely undisturbed by human activity. These communities serve as key benchmarks for scientific study of long-term ecological changes to the plants and animals of sagebrush steppe communities throughout the Snake River Plain.
- It contains the largest remaining land area within the Snake River Plain still retaining its wilderness character. The Craters of the Moon Wilderness Area and Wilderness Study Areas within the monument encompass over 500,000 acres of undeveloped federal lands.
- It is a valued western landscape of over 750,000 acres that are characterized by a variety of scenery, broad open vistas, pristine air quality, and a rich human history.
- It contains abundant sagebrush steppe communities that provide some of the best remaining sage-grouse habitat and healthiest rangelands on the Snake River Plain.

- It contains many diverse habitats for plants and animals as a result of a long history of volcanic deposition.

## **D. North Crater Flow Trail**

The North Crater Flow Trail is the first self-guided interpretive trail encountered by visitors after passing through the entrance station on the Loop Road. The trail is approximately 0.32 miles (1,730 feet) long and is often the first stop beyond the visitor center for park visitors. This short, asphalt paved trail can be traversed by visitors of many ages but is difficult for some mobility impaired visitors. Visitor use survey data suggests that about half the visitors who do a hike or walk in the park use the trail. Because the trail is at a slightly lower elevation and has more exposure to sun, it is one of the first to melt out in spring and is therefore often available for a longer season than most other trails along the Loop Road.

The North Crater Flow Trail was likely developed in the 1950s (Louter 1992). The monument generally had two phases of development – initial visitor accommodations were begun soon after its creation in 1924, primarily in the 1930s, while later improvements were made as part of the NPS 50<sup>th</sup> anniversary (Mission 66) program.

## **E. Purpose and Need**

The North Crater Flow Trail does not meet the implementing guidance of the federal equivalent of the Americans with Disabilities Act (ADA), the Architectural Barriers Act (ABA). When modifications are made to NPS facilities they must meet accessibility guidelines. The trail is currently paved and serves as an introduction to other volcanic features in the monument. Most of the trail is narrow and has steep drop-offs with no barriers. Therefore although many visitors may take advantage of it, it is inadequate for some visitors with disabilities.

The following were among the problems identified by park staff and public scoping for improvements to the trail:

- The trail varies in width from 26 to 43 inches but does not contain passing zones for wheelchair users.
- Uneven trail surfacing is a hazard for park visitors and does not meet accessibility guidelines.
- The current trail is elevated above the ground level with no barriers to prevent a wheelchair from rolling off the edge of the trail.
- The current trail grade varies from 3.6 percent to 18 percent and does not meet accessibility guidelines.
- Wayside exhibits are old, have incomplete or inaccurate information, and do not integrate key natural history features into the volcanic story.
- Pika are common along the trail (this area contains one of the largest concentrations in the monument), are an iconic species for the park and have been petitioned for listing under the Endangered Species Act.

The proposed project would improve visitor experience and resource protection on the North Crater Flow Trail by modifying trail characteristics for all visitors, especially features that provide access for those with disabilities; and by accommodating updated interpretive waysides. Trail improvements would be intended to provide improved access for visitors using wheelchairs and to improve safety. The wayside exhibits would be updated with current scientific understanding of the natural and cultural resources of the area.

To improve the visitor experience for all visitors, the following objectives have been identified for the proposed improvements:

- Widen the trail, improve its grade and surfacing, and provide passing zones to better allow for wheelchair use.
- Provide a barrier to prevent a wheelchair from rolling off the edge of the trail.

- Use surfacing and other constructed features that are compatible with the environment and that minimize the need for cyclic maintenance.
- Alter the height of and replace outdated wayside exhibits to meet accessibility guidelines and to better introduce park visitors to the volcanic features along the trail and in the monument, and to integrate key natural history components into the interpretation along the trail.
- Mitigate potential pika habitat fragmentation impacts from trail improvements by providing passageways beneath the trail.
- Improve circulation signage to identify the trail's beginning and end.
- Provide for resting areas (benches) at appropriate viewpoints along the trail.
- Replace outdated interpretive signs with new improved wayside exhibits.

## **F. Background**

### **1. Relationship to Laws, National Park Service Policy, and Monument Planning Documents**

#### **a. LAWS**

##### National Park Service Organic Act (16 USC 1)

The key provision of the legislation establishing the NPS referred to as the 1916 Organic Act is:

The National Park Service shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified . . . by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

This is the guiding management law for all units of the National Park System, including Craters of the Moon National Monument and Preserve.

##### 1970 National Park Service General Authorities Act (as amended in 1978 – Redwood amendment)

This act prohibits the NPS from allowing any activities that would cause derogation of the values and purposes for which the parks have been established (except as directly and specifically provided by Congress in the enabling legislation for the parks). Therefore, all units of the National Park System are to be managed as national parks, based on their enabling legislation and without regard for their individual titles (e.g. national monument, national historic site, national park, national historical park, national seashore, national recreation area etc.) unless differences are identified in their enabling legislation. Parks also adhere to other applicable federal laws and regulations, such as the Endangered Species Act, the National Historic Preservation Act, the Wilderness Act, and the Wild and Scenic Rivers Act. To articulate its responsibilities under these laws and regulations, the NPS has established management policies for all units under its stewardship.

##### National Environmental Policy Act (NEPA) (42 USC 4341 *et seq.*)

NEPA requires the identification and documentation of the environmental consequences of federal actions. Regulations implementing NEPA are set for by the President's Council on Environmental Quality (CEQ) (40 CFR Parts 1500-1508). CEQ regulations establish the requirements and process for agencies to fulfill their obligations under the act. This law is responsible for ensuring that federal agencies disclose the consequences of their actions in documents such as this EA.

##### Clean Water Act (CWA) (33 USC 1241 *et seq.*)

Under the Clean Water Act, it is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters, to enhance the quality of water resources, and to prevent, and control, and abate water pollution. Section 401 of the *Clean Water Act* as well as NPS policy requires analysis of impacts on water quality. *NPS Management Policies* (2006) provide direction for the preservation, use, and quality of water in national parks. Where applicable, in EAs, beneficial and adverse water quality impacts from proposed federal actions are analyzed.

Clean Air Act (as amended) (42 USC 7401 et seq.)

The Clean Air Act states that park managers have an affirmative responsibility to protect park air quality related values (including visibility, plants, animals, soils, water quality, cultural resources and visitor health) from adverse air pollution impacts. Where applicable, in EAs, beneficial and adverse air quality impacts from proposed federal actions are analyzed.

Endangered Species Act (16 USC 1531 et seq.)

The Endangered Species Act (ESA) requires federal agencies, in consultation with the Secretary of the Interior, to use their authorities in the furtherance of the purposes of the act and to carry out programs for the conservation of listed endangered and threatened species (16 USC 1535 Section 7(a)(1)). The ESA also directs federal agencies, in consultation with the Secretary of the Interior, to ensure that any action authorized, funded, or carried out by an agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat (16 USC 1535 Section 7(a)(2)). Consultation with the United States Fish and Wildlife Service (USFWS) is required if there is likely to be an effect.

Antiquities Act (1906) (16 USC 431- 433, 34 Statute 225)

This act was the first to provide protection for archeological resources. It protects all historic and prehistoric ruins or monuments on federal lands and prohibits their excavation, destruction, injury or appropriation without the departmental secretary's permission. It also authorizes the President to proclaim as national monuments public lands having historic landmarks, historic and prehistoric structures, and other objects of historic or of scientific interest. It also authorizes the President to reserve federal lands, to accept private lands, and to accept relinquishment of unperfected claims. This act was superseded by the Archaeological Resources Protection Act (ARPA) for the prosecution of antiquities violations in National Park System areas. Other parts of the Antiquities Act, however, remain in effect.

National Historic Preservation Act (1966 as amended) (16 USC 470)

Section 106 of the National Historic Preservation Act (NHPA) directs federal agencies to take into account the effect of any undertaking [a federally funded or assisted project] on historic properties. "Historic property" is any district, building, structure, site, or object that is eligible for listing in the National Register of Historic Places (National Register) because the property is significant at the national, state, or local level in American history, architecture, archeology, engineering, or culture. This section also provides the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Officer (SHPO) an opportunity to comment on the undertaking, particularly if there is likely to be an adverse effect. Section 10 of this act requires the ongoing documentation of historic resources by federal agencies. The 1992 amendments to the act further defined the roles of American Indian Tribes and the affected public in the Section 106 process.

Archaeological Resources Protection Act (ARPA) (1979) (16 USC 470aa - 470mm, Public Law 96-95)

This act secures the protection of archeological resources on public or Indian lands and fosters increased cooperation and exchange of information between the private / governmental / professional community to facilitate the enjoyment and education of present and future generations. The act regulates excavation and collection on public and Indian lands. It defines archeological resources to be any material remains of past human life or activities that are of

archeological interest and are at least 100 years old. It requires notification of Indian tribes who may consider a site of religious or cultural importance prior to issuing permits for excavation or collection of historic objects. It was amended in 1988 to require the development of plans for surveying public lands for archeological resources and systems for reporting incidents of suspected violations.

#### Native American Graves Protection and Repatriation Act (NAGPRA) (1990)

Section 3 has provisions regarding the custody of cultural items found on federal or tribal lands after November 16, 1990, while section 8 provides for repatriation of items found before that date. Section 3 also identifies procedures regarding the inadvertent discovery of Native American remains, funerary objects and objects of cultural patrimony during federal actions. NAGPRA regulations are found at 43 CFR Part 10.

#### Americans with Disabilities Act (ADA) (1990) / Architectural Barriers Act (ABA)

The Americans with Disabilities Act applies to the private sector, while the similar Architectural Barriers Act applies to actions on federal lands. This act states that all new construction and programs will be accessible. Planning and design guidance for accessibility is provided by the Architectural and Transportation Barriers Compliance Board (36 CFR Part 1191). NPS Special Directive 83-3 states that accessibility will be proportional to the degree of development, with areas of intense development (visitor centers, drive-in campgrounds, etc.) more accessible than areas of less development (backcountry trails and walk-in campgrounds, etc.) which may have fewer accessibility features.

#### Craters of the Moon Presidential Proclamation (1924)

In the Presidential proclamation that established CRMO in 1924 education was one of the primary drivers: "this area contains many curious and unusual phenomena of great educational value."

### **b. POLICIES**

#### National Park Service Management Policies (2006)

*Management Policies* governs the way park managers make decisions on a wide range of issues that come before them. *Management Policies* consolidates agency policy on a wide variety of laws, technology, resource management and other issues pertinent to management of the National Park System. Sections applicable to the proposed project are quoted below.

##### 9.2.2 Trails and Walks

*Trails and walks provide the only means of access into many areas within parks. These facilities will be planned and developed as integral parts of each park's transportation system and incorporate principles of universal design. Trails and walks will serve as management tools to help control the distribution and intensity of use. All trails and walks will be carefully situated, designed, and managed to*

- *reduce conflicts with automobiles and incompatible uses;*
- *allow for a satisfying park experience;*
- *allow accessibility by the greatest number of people; and*
- *protect park resources.*

*Heavily used trails and walks in developed areas may be surfaced as necessary for visitor safety, accessibility for persons with impaired mobility, resource protection, and/or erosion control. Surface materials should be carefully selected, taking into account factors such as the purpose and location of a trail or walk and the potential for erosion and other environmental impacts.*

##### 9.3.1.1 Signs

*Signs will be carefully planned and designed to fulfill their important roles of conveying an appropriate NPS and park image and providing information and orientation to visitors. Each park should have an approved parkwide sign plan based on Service-wide design criteria and tailored*

*to meet individual park needs. Entrance and other key signs will be distinctively designed to reflect the character of the park while meeting Service-wide standards for consistency.*

*Signs will be held to the minimum number, size, and wording required to serve their intended functions and to minimally intrude upon the natural and historic settings. They will be placed where they do not interfere with park visitors' enjoyment and appreciation of park resources. Roadside information signs are subject to the standards established in the National Park Service Sign Manual. Interpretive signs will be guided by sign and wayside exhibit plans.*

#### Natural Resources Management Guideline (NPS-77)

This comprehensive guideline directs the actions of park managers in natural resources protection so that natural resources activities planned and initiated within the national park system comply with federal law, regulations, and Department of the Interior and NPS policies.

#### Cultural Resources Management Guideline (NPS-28)

This guideline identifies the authorities for cultural resources management as derived from federal laws and the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation that guide the implementation of cultural resources management in the national park system.

### **c. PLANS**

#### **National Park Service**

##### Craters of the Moon National Monument and Preserve Management Plan (Monument Management Plan) (NPS 2005)

The Monument Management Plan serves as the guiding management strategy for the monument. It provides a framework for decision-making, including decisions regarding visitor use, the preservation of natural and cultural resources, development and park operations. Implementation plans, which provide more detailed strategies, tier off this plan. This plan replaced the 1992 Craters of the Moon General Management Plan as well as four BLM Land Use Plans.

The emphasis on education from the proclamation establishing the monument was reconfirmed by the 2005 Monument Management Plan which stated that the purpose of the now expanded monument is to "Provide scientific, educational, and interpretive opportunities for the public to foster an understanding and appreciation of the volcanic geology and associated natural phenomena."

Applicable portions of this plan include the park purpose and significance and desired future conditions (see *Chapter I: Introduction*) as well as the following sections.

Four management zones have been designated for the monument and preserve, including the Frontcountry Zone, Passage Zone, Primitive Zone and Pristine Zone (NPS 2005:29).

The proposed project site is located within the Frontcountry Zone, which at 2,300 acres comprises 0.3 percent of the monument and preserve (NPS 2005:43-45).

The Frontcountry Zone is 660 feet wide along major road corridors (Highway 20/26/93 and the Craters Loop Road). It calls for "Frequent signs for directions, safety and interpretation" and includes "Typical visitor activities: sightseeing, driving, bicycling, walking, nature study, . . ." along with "A high level of interpretation programs; [and] informational exhibits"(NPS 2005:29).

Applicable Desired Future Conditions and Management Actions for Interpretation and Visitor Understanding (NPS 2005:40/54) that pertain to the proposed project include:

- The public perceives the monument as a single entity. . .

- The public has access to monument information and learning opportunities both on and off site.
- Information/orientation materials such as travel maps, safety bulletins, resource information, and recreation information are available.
- Visitors are offered a variety of interpretive media within the Frontcountry Zone.
- Existing roads, trails, and facilities would be maintained and new facilities would be provided as appropriate in the Frontcountry Zone for resource protection and visitor enjoyment.
- Increase opportunities for educational opportunities are created throughout the monument.
- Additional interpretive facilities would be provided along the corridor of US 20/26/93 and at significant sites within the Passage Zone.

The following are the references to the North Crater Flow Trail in the MMP:

- (Introduction, page 6) In addition to guided walks and programs offered by the NPS, the monument has several self-interpreting trails with waysides and a 7-mile Loop Road.
- (Affected Environment, page 173) Most hikers hike on designated trails in the original monument. Hiking trails to features of interest in the original monument are the North Crater Flow, Devils Orchard, Inferno Cone, the Big Craters/Spatter Cones area, Tree Molds, and the Cave Area.
- (Alternatives, page 30) Class 1 Trails are restricted to non-motorized/non-mechanized travel (wheelchairs are allowed). Examples of permitted forms of travel include foot travel, pack animal, and horseback. Examples of prohibited forms of travel on Class 1 trails include mountain bikes and all motorized vehicles. Class 1 trails may be further restricted, for example, to foot travel only.

#### **Bureau of Land Management**

The BLM was a joint-lead agency on the preparation of the Monument Management Plan. As a result, information from that document is applicable to not only the NPS but also the BLM.

## **G. Impact Topics Analyzed**

Impacts of the alternatives on the following topics are presented in this EA: soils; vegetation; wildlife; prehistoric and historic archeological resources; and visitor experience. Based on initial analysis, there would be minor or greater effects on these resources.

### **1. PHYSICAL RESOURCES**

**Geology:** Management Policies (NPS 2006) call for analysis of geology and geological hazards should they be relevant. Rehabilitation of the trail would involve some alteration or covering of a portion of the North Crater lava flow and a part of the South Highway Cone to improve the trail. Therefore, geology is addressed as an impact topic.

**Soils:** Management Policies (NPS 2006) require the NPS to understand and preserve and to prevent, to the extent possible the unnatural erosion, physical removal, or contamination of the soil. Rehabilitation of the trail would involve ground disturbance and although most of the surrounding area is rock, there are pockets of soil. Therefore, soils are addressed as an impact topic.

### **2. BIOLOGICAL RESOURCES**

**Vegetation:** NEPA calls for examination of the impacts on the components of affected ecosystems. NPS policy is to protect the natural abundance and diversity of park native species and communities, including avoiding, minimizing or mitigating potential impacts from proposed

projects. There are more than 800 species of plants at Craters of the Moon. Rehabilitation of the trail would result in impacts to vegetation. Therefore, vegetation is addressed as an impact topic.

**Wildlife:** NEPA calls for examination of the impacts on the components of affected ecosystems. NPS policy is to protect the natural abundance and diversity of park native species and communities, including avoiding, minimizing or mitigating potential impacts from proposed projects. More than 270 native species of terrestrial and aquatic vertebrates have been recorded in the monument, including 58 mammals, 212 birds, and 10 reptiles and four amphibians. A variety of wildlife species reside in or use the project area. Therefore, wildlife is addressed as an impact topic.

**Special Status Wildlife:** The Endangered Species Act (ESA) requires an examination of impacts to all federally listed threatened or endangered species. NPS policy also requires an analysis of impacts to state-listed threatened or endangered species and federal candidate species. Under the ESA, the NPS is mandated to promote the conservation of all federal threatened and endangered species and their critical habitats within the park boundary. Management Policies (NPS 2006) includes the additional stipulation to conserve and manage species proposed for listing. Among the special status species that occur within Craters of the Moon National Monument and Preserve include gray wolves, Greater sage-grouse, pika and pygmy rabbits. Of these, only pika occur in the project area. As a result, special status wildlife has been retained as an impact topic.

### 3. CULTURAL RESOURCES

**Prehistoric and Historic Archeological Resources:** Conformance with the Archaeological Resources Protection Act and National Historic Preservation Act in protecting archeological resources is necessary. Because there is a potential for archeological resources to be located in or near the proposed project area, this is addressed as an impact topic.

### 4. RECREATIONAL / SOCIAL RESOURCES

**Visitor Experience:** Based on Management Policies (NPS 2006), impacts to visitors are considered with respect to park undertakings. Because rehabilitation of the trail would have effects on visitor experience, it has been retained as an impact topic.

## H. Impact Topics Dismissed From Further Consideration

The topics listed below either would not be affected or would be affected only negligibly by the alternatives evaluated in this EA. Therefore, these topics have been dismissed from further analysis. Negligible effects are localized effects that would not be detectable over existing conditions.

**Land Use:** Lands in the proposed project area are located wholly within Craters of the Moon National Monument and Preserve. Because the proposed project area would remain a trail, there would be no changes to land use associated with implementation of the alternatives.

**Air Quality:** A portion of Craters of the Moon (National Wilderness Area) is in a mandatory class I airshed under the Clean Air Act (1977). Class I areas are afforded the highest degree of protection under the Clean Air Act. This designation allows very little additional deterioration of air quality. The rest of the monument is in a class II area. Class II areas have limits on increases of particulate matter and sulfur dioxide above baseline conditions. Only negligible, temporary (during construction) air quality impacts would occur from the implementation of the alternatives described in this document. As required under mitigation measures for the Monument Management Plan (NPS 2005:75), dust control during construction activities would be

implemented and all construction machinery would meet applicable air emission standards and unnecessary idling would be restricted.

**Water Resources:** The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters, to enhance the quality of water resources, and to prevent, and control, and abate water pollution. Management Policies (NPS 2006) provide direction for the preservation, use, and quality of water in national parks. There are no surface water resources located within or near the proposed project area.

**Water Quality:** Section 401 of the Clean Water Act as well as NPS policy requires analysis of impacts on water quality. Construction would result in minor earth and rock disturbing activities, which could increase the potential for erosion and sedimentation, however because there is no source of water in the vicinity of the project area and because sediment control measures would be implemented during construction, there would be no or negligible impacts. Similarly although additional paved surface area could result in faster runoff, the additional paved surface area under Alternative 2 would be small in comparison to the existing area under Alternative 1 and would therefore have negligible adverse impacts.

**Water Quantity:** The increased/decreased use of water to provide for public use may also have an impact on park resources, such as amphibians, however there are no water sources in the project area. There would be minimal temporary additional use of water during construction, such as for dust control, a negligible impact.

**Wetlands:** Executive Order 11990 (Protection of Wetlands) requires that impacts to wetlands be addressed. Other NPS policies and guidelines also provide requirements associated with work in wetlands. There are no wetlands in the proposed project area. No impacts on wetlands would occur.

**Floodplains:** Executive Order 11988 (Floodplain Management) requires an examination of impacts to floodplains and potential risk involved in placing facilities within floodplains. NPS Management Policies, DO-2 (Planning Guidelines), and DO-12 (Conservation Planning, Environmental Impact Analysis, and Decision Making) provide guidelines for proposals in floodplains. There are no floodplains in the proposed project area. No impacts to floodplains would occur.

**Special Status Plants:** No threatened or endangered plants occur within or near the project area. Obscure phacelia (*Phacelia inconspicua*), a Type-2 BLM Sensitive Species, is a diminutive annual that occurs on north and east-facing slopes about three miles north of the project area. Its habitat is primarily in mountain shrub communities on volcanic-based mountains and buttes. Based on these habitat requirements, obscure phacelia has not been observed along or near the trail. No impacts to it would occur.

**Museum Collections:** Management Policies (NPS 2006) and other cultural resources laws identify the need to evaluate effects on NPS collections if applicable. Requirements for proper management of museum objects are defined in 36 CFR 79. The collections at Craters of the Moon would not be affected by the proposed project, except by the potential addition of material for the collections if any is found (see mitigation measures under Archeological Resources in Chapter 3: *Environmental Consequences*).

**Ethnography:** Craters of the Moon and the surrounding area have a long history of use by prehistoric and contemporary Native Americans. Analysis of impacts to known resources is important under the National Historic Preservation Act and other laws. The NPS defines ethnographic resources as any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system

of a group traditionally associated with it” (NPS 1998:181). There would be no impacts on ethnographic resources because there are no known traditional cultural places along the trail.

**Historic Structures/Cultural Landscapes:** Consideration of the impacts to cultural resources is required under provisions of Section 106 of the National Historic Preservation Act of 1966, as amended, and the 2008 *Programmatic Agreement among the National Park Service, the National Conference of State Historic Preservation Officers, and the Advisory Council on Historic Preservation*. It is also required under Management Policies (NPS 2006). Federal land managing agencies are required to consider the effects proposed actions have on properties listed in, or eligible for inclusion on the National Register of Historic Places (i.e. Historic Properties), and allow the Advisory Council on Historic Preservation a reasonable opportunity to comment. Agencies are required to consult with federal, state, local, and tribal governments and organizations, identify historic properties, assess adverse effects to historic properties, and negate, minimize, or mitigate adverse effects to historic properties while engaged in any federal or federally assisted undertaking (36 CFR Part 800). There are no historic properties in the project area. None would be affected by the proposed project.

**Wilderness:** NPS wilderness management policies are based on provisions of the 1916 NPS Organic Act, the 1964 Wilderness Act, and legislation establishing individual units of the National Park System. These policies establish consistent NPS direction for the preservation, management, and use of wilderness and prohibit the construction of roads, buildings and other man-made improvements and the use of motorized vehicles in wilderness. All park management activities proposed within wilderness are subject to review following the minimum requirement concept and decision guidelines. The public purpose of wilderness in national parks includes the preservation of wilderness character and wilderness resources in an unimpaired condition, as well as for the purposes of recreational, scenic, scientific, education, conservation, and historical use.

Approximately 80 percent of the monument is designated Wilderness. The Craters of the Moon Wilderness, designated in 1970, is located south of U.S. Highway 20/26/93 (US 20/26/93) within the original monument. There would be no impacts to wilderness from the implementation of the alternatives described herein. The proposed activity area does not occur in Wilderness or Wilderness Study Areas and is at least 1.2 miles from the nearest Wilderness or Wilderness Study Area.

**Park Operations:** Impacts to park operations are often considered in EAs to disclose the degree to which proposed actions would change park management strategies and methods. There would be negligible impacts to park operations (primarily from initial construction costs and reduced long-term maintenance) from proposed modifications to an existing trail.

**Socioeconomics:** Socioeconomic impact analysis is required, as appropriate, under NEPA and Management Policies (NPS 2006) pertaining to gateway communities. The local and regional economy and most business of the communities surrounding the park are based on tourism and resource use. Agriculture, manufacturing, professional services, and education also contribute to regional economies. There would be no measurable effects or changes in visitor attendance or visitor spending patterns as a result of the implementation of the actions described herein. Regional or gateway community economies could see a negligible beneficial effect from implementation of the proposed trail project.

**Prime and Unique Farmlands:** No unique agricultural soils exist in the vicinity of the project area due to its presence in a high desert arid environment, covered extensively with outcrops of lava rock.

**Energy Consumption:** Implementation of the alternatives would not cause major increases or decreases in the overall consumption of electricity, propane, wood, fuel oil, gas or diesel associated with visitation or for park operations and maintenance.

**Environmental Justice:** Executive Order 12898 requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. This Executive Order does not apply to the subject of this EA. The actions evaluated in this EA would not adversely affect socially or economically disadvantaged populations.

## **I. Public Participation**

Public involvement is a key part of the NEPA process. In this part of the process, the general public, federal, state, local agencies and organizations are provided an opportunity to identify concerns and issues regarding the potential effects of proposed federal actions. The opportunity to provide input is called “scoping.”

Internal scoping is the effort to engage professional staff at the park and other NPS offices to provide information regarding proposed actions that may affect Craters of the Moon resources. Craters of the Moon conducted internal scoping beginning in April 2010. A variety of comments and concerns were raised by staff regarding planning, maintenance, vegetation, wildlife and visitor experience.

Public scoping included a press release sent out on January 19, 2011 to the monument’s standard mailing list. Information from the press release was published in the *Arco Advertiser*.

During the public scoping process for this EA which occurred from January 19, 2011 until February 9, 2011, no comment letters were received. Three comments however were received regarding the campground rehabilitation project highlighted in the same press release.

This EA is being made available to the public, federal, state and local agencies and organizations through press releases distributed to a wide variety of news media, direct mailing, placement on the monument’s website and announcements in press releases as well as in local public libraries (Arco, Hailey, Bellevue, Twin Falls and Boise, and the Community Library in Ketchum). Copies of the document may also be obtained from:

*Mail:*  
Superintendent  
Craters of the Moon National Monument and Preserve  
P.O. Box 29  
Arco, Idaho 83213

*Phone:* (208) 527-3200 or *Fax:* (208) 527-3073

*Email:* [crmo\\_information@nps.gov](mailto:crmo_information@nps.gov)

Responses to comments on the EA will be addressed in the proposed Finding of No Significant Impact (FONSI) or will be used to prepare an Environmental Impact Statement (EIS) (if appropriate).

(For more information about specific agency and staff consultation, see the section in this document entitled *List of Persons and Agencies Consulted / Preparers*)

## Chapter II. Alternatives

The alternatives were developed from collaborative interdisciplinary analysis based on the expertise of interdisciplinary planning team members, as well as on internal and external scoping with Native American Tribes, federal, state and local agencies, interested organizations and individuals.

The following goals related to the North Crater Flow Trail guided development of the alternatives:

- Provide for accessibility for persons with disabilities.
- Improve the visitor experience.
- Protect resources.

### A. Alternative 1: No Action (Continue Current Management)

Under Alternative 1, the North Crater Flow Trail (a 0.32 mile one-way self-guided interpretive trail) would remain a narrow asphalt trail with uneven surfacing. Trail grade and width would continue to vary in ways that do not meet current accessibility standards. Although the first part of the trail is fairly flat, the grade of the trail rises or declines steeply elsewhere on the trail. There would continue to be no barriers that would prevent a wheelchair from rolling off the edge of the steeply elevated edges of the trail.

The current trail grade varies from 0 to 18 percent (16 percent of the trail has grades above eight percent), while its width varies from 26 inches to 43 inches. Although it is possible for wheelchair users to traverse the trail, the bumpy nature of the asphalt trail, its variable width and steep sections without barrier edging would continue to be issues that prevent wider use by visitors with disabilities. There is currently one resting area with a bench.

The trail lies in an area of concentrated pika habitat, however the current trail poses little impediment to habitat connectivity for pika or other wildlife. Pika have coexisted with the trail and visitor use for more than 50 years. The area surrounding the trail has been closed to off-trail hiking for several decades to protect geologic features.

Although ongoing maintenance (but not rehabilitation) of the existing trail would occur in Alternative 1, new wayside exhibits that offer an improved scientific understanding of what took place would replace the existing waysides; however these would likely need to be placed in former wayside locations because the existing trail cannot easily accommodate them in better locations. Although most waysides are located directly adjacent to the trail, there is one very short spur to a wayside off the trail.

Future ongoing maintenance would continue to include patching asphalt, replacing wayside exhibits, sealing asphalt, sealing and staining concrete, replacing/adding signs, removing eroded asphalt debris from edge of trail (weathered asphalt and aggregate are common along the sides of the trail and need frequent removal) and trimming of vegetation adjacent to the trail as needed to provide clearance for visitors. There would also continue to be monitoring for impacts occurring adjacent to the trail (such as damage to pahoehoe) and management actions could be taken if these impacts increased.

### B. Alternative 2: Improve Accessibility of North Crater Flow Trail (one-way trail)

Overview: Under Alternative 2, the NPS would remove asphalt from the existing trail and construct a new colored concrete trail that matches the surrounding lava. The new trail would comply with all applicable accessibility guidelines. It would be wide enough to accommodate visitors in wheelchairs, including passing zones and stopping zones as needed on steep grades and near new wayside exhibits. Compared to the asphalt trail, the concrete trail would be easier

to maintain and would have concrete curb edging to minimize the potential for wheelchairs to roll off or other visitors to step off the trail onto adjacent fragile pahoehoe lava and to damage trailside vegetation.

The trail would continue to follow its current alignment; however the grade would be modified to improve accessibility by eliminating steep grades. Protection of key natural features, including adjacent pahoehoe lava, pika habitat crossing areas and vegetation would guide the rehabilitation. To minimize potential blockages where the trail grade would be raised, open bottom culverts would be located to allow pika to cross beneath the trail.

As in Alternative 1, new wayside exhibits that offer an improved scientific understanding of the geologic story would replace outdated wayside exhibits in poor condition. Unlike Alternative 1, these waysides would be located in some of the same and some different locations and would be placed on new pedestals. In addition a new wayside exhibit would link the geologic story with the use of the area by one of the monument's iconic species – pika.

The current design of the trail calls for protecting approximately three limber pines and five syringa shrubs that occur along the trail and notes that although a construction area of 15 feet is provided overlying the trail, this area would be “disturbed as little as possible.”

Specific Improvements: To accommodate visitors with disabilities using wheelchairs, the trail grade would be modified by adding fill beneath the constructed trail surface except for one location, where a cut is required to level the trail grade. The cut and fill would provide for a consistent even trail surface with grades that would vary from approximately -7.68 percent to 9.38 percent. As required by accessibility guidelines, the trail would have adequate passing and rest zones, including two benches, between steeper sections.

Current designs call for the one-way interpretive trail to be redesigned with a consistent width of three feet with six-inch wide curbs on either side (four feet total). At passing locations and wayside exhibits, current designs show the trail width increasing to six feet with six-inch wide curbs (for a total of seven feet).

The surface of the trail and the curbs as well as retaining walls where needed by the height of the trail would be constructed of colored concrete, black or dark in color to match surrounding terrain. Compared to the current asphalt surface, the concrete would be easier to maintain because it would be less likely to degrade (sink or spall).

Current designs call for two benches placed along the trail to allow visitors to rest and to take advantage of viewpoints and provide resting areas, dividing the trail into thirds. One of these would likely be located across from a wayside exhibit and face toward the west, while the other would likely face east toward the small ridge that separates the trail from the campground.

To accommodate these changes no more than 200 cubic yards of fill is likely needed. The fill would consist of both existing asphalt already in place along the trail and additional fill imported to raise the grade. The fill would be compacted and then covered with concrete. Curb cuts would be added at low points and where needed to allow for drainage of rain and snowmelt.

Where the trail would rise 30 inches or more above the current ground surface, handrails with a height of approximately 37 inches, would be added to improve safety. Under the current design, handrails would be added on the left side of the trail in one location and would be about 13 feet long and in another location on both sides of the trail for about 52 feet. These handrails would be constructed of metal or plastic and would be black or dark in color to match the surrounding trail and terrain.

To accommodate pika, where they might need to cross the trail between existing habitat areas, open bottom culverts would be placed under sections of the trail where there were retaining walls

with a height of twelve inches or more. At these locations, the retaining walls would require extensive fill and are needed to keep the trail at an accessible grade. The culverts would have natural bottoms and would allow for potential habitat connectivity in areas where the new trail is likely to create a near vertical barrier to crossing because of the retaining walls. Under current designs approximately six pika tunnels would be provided. Additional tunnels would likely be provided where the vertical barrier is at least 12 inches high at a rate of approximately one every 30 feet.

Cyclic maintenance actions associated with the trail would be slightly reduced in Alternative 2, but would continue to include: replacing/adding signs, replacing waysides, sealing and staining concrete, and patching concrete.

## **C. Alternatives Considered But Rejected**

Under the National Environmental Policy Act (NEPA) and NPS policy, alternatives may be eliminated from detailed study based on the following reasons [40 CFR 1502.14 (a)]:

- Technical or economic infeasibility;
- Inability to meet project objectives or resolve need for the project;
- Duplicate other less environmentally damaging alternatives;
- Conflict with an up-to-date valid plan, statement of purpose and significance, or other policy; and therefore, would require a major change in that plan or policy to implement; and
- Environmental impacts too great.

The following alternative was considered during the design phase of the project.

### **Redesign Trail for Two-Way Use**

As an interpretive trail that introduces park visitors to its volcanic features while relating these to the monument as a whole, the trail is currently designed to be hiked from west to east, with an introduction and conclusion. Design of a two-way rather than one-way trail would require the trail to be widened considerably. Initial exploratory designs showed a trail that would be approximately eight feet wide with similar six-inch curbs (for a total of nine feet). This would result in damage to unique volcanic features found in concentration and interpreted along the trail, such as the pahoehoe lava formations that are more difficult to see in other areas along the Loop Road. A two-way trail would also require redesigning proposed wayside exhibits. Current regular use of the trail also does not warrant a wider trail. Therefore because this alternative would have greater impacts and would not meet project goals, it was dismissed from additional consideration.

## **D. Mitigation Measures Incorporated into the Action Alternative**

The measures below, along with other measures listed under each resource section in *Environmental Consequences* have been developed to lessen the potential adverse effects of the action alternative.

The following measures are among those that would be incorporated into the implemented alternative (see resource impact sections below for additional measures):

- The proposed project area would be located on a previously disturbed site and would have as small a footprint as possible (NPS 2005:74).
- Staging areas would be located where they would minimize new disturbance of area soils and vegetation.
- Ground disturbance would be minimized to the extent possible.
- Only certified weed-free hay, straw or mulch would be used if needed, to minimize the potential spread of nonnative invasive plants (NPS 2005:74).

- Construction vehicles and equipment would be inspected and/or cleaned prior to entry into the monument to ensure that they are free of weed seed (NPS 2005:75).
- The project area would be surveyed for sensitive species (NPS 2005:74)
- Proposed work would be conducted during daylight hours.
- Immediate work stoppage and/or relocation to a non-sensitive area would occur should unknown archeological resources be uncovered during construction to allow collection of artifacts, soil samples and recordation. The site would be secured, and the NPS would consult with the State Historic Preservation Officer and tribal representatives according to 36 CFR 800.11.
- Press releases would be distributed to local media to inform visitors about the project schedule.
- The North Crater Flow Trail would be monitored for new signs of nonnative vegetation.
- Sustainable, low-impact barriers, if needed, would be located to discourage off-trail use and to protect intact areas from disturbance (NPS 2005:75).
- Pika crossings would be provided under portions of the trail as described in Alternative 2.

## **E. Environmentally Preferable Alternative**

In accordance with NPS Director's Order-12, *Conservation Planning, Environmental Impact Analysis, and Decision-making* and CEQ requirements, the NPS is required to identify the "environmentally preferred alternative" in all environmental documents, including EAs. The environmentally preferable alternative is determined by applying the criteria suggested in the National Environmental Policy Act (NEPA) of 1969, which is guided by the CEQ. The CEQ (46 FR 18026 - 46 FR 18038) provides direction that the "environmentally preferable alternative is the alternative that would promote the national environmental policy as expressed in NEPA's Section 101," including:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. Preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5. Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources (NEPA Section 101(b)).

Generally, these criteria mean the environmentally preferable alternative is the alternative that causes the least damage to the biological and physical environment and that best protects, preserves, and enhances historic, cultural, and natural resources (46 FR 18026 – 46 FR 18038).

Alternative 2 would best meet the first, fourth and fifth criteria because it would provide visitors with disabilities, and therefore all visitors, a better opportunity to use the trail. This would fulfill the intent of providing beneficial uses of park resources. Although both alternatives would meet the second criterion, Alternative 2 would best meet it because it would improve safety conditions for wheelchair users on the trail. Alternative 1 would best meet the third criterion because it would have the fewest additional impacts on park resources. Because Alternative 1 would not require additional resource use, except associated with long-term maintenance, it would also best meet the sixth criterion. The existing asphalt trail surface is also one that can be recycled and reused, whereas the proposed concrete surface, although it will last longer, cannot. Both alternatives would meet the fourth criterion; however Alternative 2 would best meet it because it would

provide for expanded use of the trail by visitors with disabilities. Based on this analysis, Alternative 2 is the environmentally preferable alternative.

# Chapter III. Affected Environment / Environmental Consequences

Information in this section is derived from a comprehensive review of existing information pertaining to the project area within the monument. It includes information from the Monument Management Plan (NPS 2005), various natural and cultural resources management plans and other monument planning documents. Specific sections from these documents are cited appropriately in the text and the bibliographic information placed in the *References* section of this document. Information in this section has been gained from management, research and analysis throughout the history of Craters of the Moon National Monument and Preserve.

## A. Methodology

### 1. Introduction to Impact Analysis

This section contains the methods / criteria used to assess impacts for specific resource topics. The definitions of impacts adhere to those generally used under the NEPA to describe impacts as well as those used by Section 106 of the NHPA and those used under Section 7 of the ESA.

NEPA requires that environmental documents disclose the environmental impacts of the proposed federal action, reasonable alternatives to that action, and any adverse environmental effects that cannot be avoided should the proposed action be implemented. This section analyzes the environmental impacts of project alternatives on affected park resources. These analyses provide the basis for comparing the effects of the alternatives. NEPA requires consideration of context, intensity and duration of impacts, indirect impacts, cumulative impacts, and measures to mitigate impacts. In addition to determining the environmental consequences of the preferred and other alternatives, Management Policies (NPS 2006) and Director's Order-12, Conservation Planning, Environmental Impact Analysis, and Decision-making require analysis of potential effects to determine if actions would impair park resources. Impact analysis for historic properties is based on NHPA 36 CFR Part 800 criteria of effect as detailed below.

The environmental consequences for each impact topic were defined based on the following information regarding context, type of impact, duration of impact, area of impact and the cumulative context. Unless otherwise stated in the resource section in *Environmental Consequences*, analysis is based on a qualitative assessment of impacts.

#### a. Context of Impact

The context is the setting within which impacts are analyzed – such as the project area or region, or for cultural resources – the area of potential effects or APE.

#### b. Type of Impact

The type of impact is a measure of whether the impact will improve or harm the resource and whether that harm occurs immediately or at some later point in time.

- **Beneficial:** Reduces or improves impact being discussed.
- **Adverse:** Increases or results in impact being discussed.
- **Direct:** Caused by and occurring at the same time and place as the action, including such impacts as animal and plant mortality, damage to cultural resources, etc.
- **Indirect:** Caused by the action, but occurring later in time at another place or to another resource, including changes in species composition, vegetation structure, range of wildlife, offsite erosion or changes in general economic conditions tied to park activities.

#### c. Duration of Impact

Duration is a measure of the time period over which the effects of an impact persist. The duration of impacts evaluated in this EA may be one of the following:

- **Short-term:** Often quickly reversible and associated with a specific event, and lasting one to five years.
- **Long-term:** Reversible over a much longer period, or may occur continuously based on normal activity, or for more than five years.

#### **d. Area of Impact**

The area of impacts may be detectable in nearby or surrounding areas.

- **Localized:** Detectable only in the vicinity of the activity.
- **Widespread:** Detectable on a landscape or regional scale.

#### **e. Impact Mitigation**

Impacts may be reduced in the following ways. Projects can:

- **Avoid** conducting management activities in an area of the affected resource
- **Minimize** the type, duration or intensity of the impact to an affected resource

Impacts may also be reduced by additional actions such as by:

- **Repairing** localized damage to the affected resource immediately after an adverse impact.
- **Rehabilitating** an affected resource with a combination of additional management activities.
- **Compensating** a major long-term adverse direct impact through additional strategies designed to improve an affected resource to the degree practicable.

#### **f. Intensity for All Impacts Except Special Status Species and Cultural Resources**

*Note:* Special Status Species and Cultural Resources impact determinations are formally determined under the Endangered Species Act (Section 7) and the National Historic Preservation Act (Section 106), respectively. Cultural resources impacts are also initially characterized as noted below, however the conclusion follows the format below, and makes a formal determination of effect under Section 106 of the National Historic Preservation Act.

- **Negligible:** Measurable or anticipated degree of change would not be detectable or would be only slightly detectable. Localized or at the lowest level of detection.
- **Minor:** Measurable or anticipated degree of change would have a slight effect, causing a slightly noticeable change of approximately less than 20 percent compared to existing conditions, often localized.
- **Moderate:** Measurable or anticipated degree of change is readily apparent and appreciable and would be noticed by most people, with a change likely to be between 21 and 50 percent compared to existing conditions, may be localized or widespread.
- **Major:** Measurable or anticipated degree of change would be substantial, causing a highly noticeable change of approximately greater than 50 percent compared to existing conditions, often widespread.

In accordance with *Management Policies* (NPS 2006), the analysis in this Environmental Assessment fulfills the responsibilities of the NPS under Section 106 of the National Historic Preservation Act.

#### **g. Intensity for Special Status Species**

- **No Effect:** The project (or action) is located outside suitable habitat and there would be no disturbance or other direct or indirect impacts on the species. The action will not affect the listed species or its designated critical habitat (USFWS 1998).
- **May Affect, Not Likely to Adversely Affect:** The project (or action) occurs in suitable habitat or results in indirect impacts on the species, but the effect on the species is likely

to be entirely beneficial, discountable, or insignificant. The action may pose effects on listed species or designated critical habitat but given circumstances or mitigation conditions, the effects may be discounted, insignificant, or completely beneficial. Insignificant effects would not result in take. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not 1) be able to meaningfully measure, detect, or evaluate insignificant effects or 2) expect discountable effects to occur (USFWS 1998).

- **May Affect, Likely to Adversely Affect:** The project (or action) would have an adverse effect on a listed species as a result of direct, indirect, interrelated, or interdependent actions. An adverse effect on a listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions and the effect is not: discountable, insignificant, or beneficial (USFWS 1998).

#### **h. Intensity for Cultural Resources Impacts**

- **No effect:** There are no historic properties in the Area of Potential Effect (APE); or, there are historic properties in the APE, but the undertaking will have no impact on them.
- **No adverse effect:** There will be an effect on the historic property by the undertaking, but the effect does not meet the criteria in 36 CFR Part 800.5(a)(1) and will not alter characteristics that make it eligible for listing on the National Register. The undertaking is modified or conditions are imposed to avoid or minimize adverse effects. This category of effects is encumbered with effects that may be considered beneficial under NEPA, such as restoration, stabilization, rehabilitation, and preservation projects. Under the terms of the 2008 PA, data recovery can mitigate affect to archaeological properties that are eligible for listing on the NR under criterion D. However, some archaeological sites are eligible as traditional cultural places under criterion A, and such mitigation may not be sufficient or appropriate.
- **Adverse effect:** The undertaking will alter, directly or indirectly, the characteristics of the property making it eligible for listing on the National Register. An adverse effect may be resolved in accordance with the Stipulation VIII of the 2008 Programmatic Agreement, or by developing a memorandum or program agreement in consultation with the SHPO, ACHP, American Indian tribes, other consulting parties, and the public to avoid, minimize, or mitigate the adverse effects (36 CFR Part 800.6(a)).
- **Significant Impact:** An impact to a National Register historic property would be considered significant when an adverse effect cannot be resolved by agreement among SHPO, ACHP, American Indian tribes, other consulting and interested parties, and the public. The impact will diminish the integrity of location, design, setting, materials, workmanship, feeling or association characteristics that make the historic property eligible for inclusion in the National Register Historic Places. The resolution must be documented in a memorandum or programmatic agreement or the FONSI.

## **2. Cumulative Impacts**

Cumulative impacts are the effects on the environment that would result from the incremental impacts of the action when added to other past, present and reasonably foreseeable future actions.

The Council on Environmental Quality (CEQ) describes a cumulative impact as follows (Regulation 1508.7):

*A cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

The cumulative projects addressed in this analysis include past and present actions, as well as any planning or development activity currently being implemented or planned for implementation

in the reasonably foreseeable future. Cumulative actions are evaluated in conjunction with the impacts of an alternative to determine if they have any additive effects on a particular resource. Because most of the cumulative projects are in the early planning stages, the evaluation of cumulative impacts was based on a general description of the project. These projects are included in the cumulative effects analysis presented in this chapter.

**Projects Included in the Cumulative Effects Analysis for the North Crater Flow Trail**  
Northern Rocky Mountains Invasive Plant Management Plan (Environmental Assessment January 2011)

This plan for 10 parks located in the northern Rocky Mountains served by the Northern Rocky Mountains Exotic Plant Management Team is intended to reduce the adverse effects of nonnative invasive plants on native plant communities and other natural and cultural resources within the 10 parks.

Lava Flow Campground Rehabilitation (proposed)

The proposed rehabilitation of this campground is intended to improve accessibility and visitor experience.

Resurface and Improve Park Spur Roads and Parking Areas (Completed)

This project expanded and improved the roads and parking areas off the Loop Road within the monument.

Install Solar Photovoltaic System (Completed)

This project is likely to produce approximately 60 percent of the monument's energy needs.

Entrance Sign Replacement (Completed, FONSI 2008)

This project marked the expanded boundary of the monument and preserve for travelers along U.S. Highway 20/26/93.

### **3. Impairment**

In addition to determining the environmental consequences of the preferred and other alternatives, Management Policies (NPS 2006) and NPS Director's Order-12, Conservation Planning, Environmental Impact Analysis, and Decision-making, require analysis of potential effects to determine if actions would impair park resources. The following sections from Management Policies define impairment and highlight the difference between an impact and impairment.

1.4.3 The NPS Obligation to Conserve and Provide for Enjoyment of Park Resources and Values

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 park resources and values. This mandate is independent of the separate prohibition on impairment and applies all the time with respect to all park resources and values, even when there is no risk that any park resources or values may be impaired. NPS managers must always seek ways to avoid, or to minimize to the greatest extent practicable, adverse impacts on park resources and values. The laws do give the Service the management discretion, however, to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impact does not constitute impairment of the affected resources and values.

The fundamental purpose of all parks also includes providing for the enjoyment of park resources and values by the people of the United States. The enjoyment that is contemplated by the statute is broad; it is the enjoyment of all the people of the United States and includes enjoyment both by people who visit parks and by those who appreciate them from afar. It also includes deriving benefit (including scientific knowledge) and inspiration from parks, as well as other forms of enjoyment and

inspiration. Congress, recognizing that the enjoyment by future generations of the national parks can be ensured only if the superb quality of park resources and values is left unimpaired, has provided that when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant. This is how courts have consistently interpreted the Organic Act.

#### 1.4.4 The Prohibition on Impairment of Park Resources and Values

While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the NPS. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

The impairment of park resources and values may not be allowed by the Service unless directly and specifically provided for by legislation or by the proclamation establishing the park. The relevant legislation or proclamation must provide explicitly (not by implication or inference) for the activity, in terms that keep the Service from having the authority to manage the activity so as to avoid the impairment.

#### 1.4.5 What Constitutes Impairment of Park Resources and Values

The impairment that is prohibited by the Organic Act and the General Authorities Act is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

An impact to any park resource or value may, but does not necessarily, constitute an impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- identified in the park's GMP or other relevant NPS planning documents as being of significance.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated. An impact that may, but would not necessarily, lead to impairment may result from visitor activities; NPS administrative activities; or activities undertaken by concessioners, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park. . .

#### 1.4.6 What Constitutes Park Resources and Values

The "park resources and values" that are subject to the no-impairment standard include: the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and

native plants and animals; appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them; the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and any additional attributes encompassed by the specific values and purposes for which the park was established.

#### 1.4.7 Decision-making Requirements to Identify and Avoid Impairments

Before approving a proposed action that could lead to an impairment of park resources and values, an NPS decision-maker must consider the impacts of the proposed action and determine, in writing, that the activity will not lead to an impairment of park resources and values. If there would be an impairment, the action must not be approved.

In this EA determinations of impairment are provided in the conclusion section under each applicable resource topic for each alternative. Impairment determinations, however, are not made for health and safety, visitor use, maintenance, operations, socio-economic resources and other non-natural or cultural resources topics.

## **B. Affected Environment and Impacts**

### **1. Geology Affected Environment**

The purpose and significance of Craters of the Moon is related to its unique geology. Volcanism has generated an array of features and habitats that draw scientists and visitors from around the world to study and experience this unique area.

Craters of the Moon is located in the Snake River Basin-High Desert and is primarily comprised of three geologically young (Late Pleistocene-Holocene) lava fields that lie along the Great Rift (Omernik 1986 in NPS 2005). The Great Rift volcanic rift zone is a belt of open cracks, eruptive fissures, shield volcanoes, and cinder cones. Craters of the Moon protects most of the Great Rift area, which includes the numerous lava flows and other eruptions from the volcanic rift zone. It is comparable to other volcanic rift zones such as those found in Hawaii and Iceland. The Great Rift varies in width between one and five miles and extends for more than 50 miles (NPS 2005:5).

Most volcanic features and landforms associated with basaltic volcanism are found along the Great Rift, including various kinds of lava flows, volcanic cones, and lava tubes. There are lava tube features, such as lava stalactites, lava curbs and remelt features. In the monument there are good examples of steam explosion pits, lava lakes, squeeze-ups, domes called tumuli, spatter cones and spatter ramparts, hornitos, blankets of ash and volcanic bombs, and low gently arching shield volcanoes. Some lava flows diverged or flowed around areas of higher ground and rejoined downstream to form isolated islands of older terrain surrounded by new lava. These older areas, called "kipukas," tend to have more soil because of their age and often have more vegetation. In many instances, the expanse of rugged lava surrounding these small pockets of soil has protected the kipukas from people, animals, and even nonnative plants. As a result, these kipukas represent some of the last undisturbed vegetation communities in the Snake River Plain (NPS 2005:5).

Young lava flows and other young volcanic features cover about 450,000 acres of Craters of the Moon. The remaining 300,000 acres are also volcanic in origin, but are older and covered with a thicker mantle of soil. This older terrain supports a sagebrush steppe ecosystem consisting of diverse communities of grasses, sagebrush, and other shrubs that provide suitable habitat for a variety of wildlife. These older areas are also made up of lava tube caves, volcanic cones and other volcanic formations and features. Some of these older volcanic edifices are called buttes (NPS 2005:5-6).

Craters of the Moon contains the youngest and most geologically diverse section of basaltic lava terrain found on the eastern Snake River Plain, an extensive area of volcanic formations that reaches across southern Idaho east to Yellowstone National Park. It includes the three youngest lava fields on the eastern Snake River Plain: Craters of the Moon, Kings Bowl, and Wapi.

The Craters of the Moon Lava Field is significant in that it is the largest basaltic lava field of predominantly Holocene age (less than 10,000 years old) in the lower 48 states (Kuntz *et al.* 1992 in NPS 2005:5). The Craters of the Moon Lava Field also contains a tremendous diversity of volcanic features, with nearly every type of feature associated with basaltic systems (Hughes *et al.* 1999). The Craters of the Moon Lava Field is made up of at least 60 lava flows, 25 tephra cones, and eight eruptive fissure systems aligned along the northern part of the Great Rift (Kuntz *et al.* 1992 in NPS 2005:105).

The observable geology of the North Crater Flow Trail project area formed during the most recent eruptive period of the Craters of the Moon Lava Field (about 2-2.5 thousand years), which was a complex and protracted series of events that affected much of the northern end of the Craters of the Moon Lava Field. Most of the project area (the trail) rests directly upon the North Crater flow. The only exception is the area immediately adjacent to the parking lot, which rests upon cinders thought to be part of the South Highway Cone.

The hill just north of the trailhead parking lot and adjacent to the northern segment of the North Crater Flow Trail is believed to be one of the remaining remnants of the South Highway Cone (Rivera *et al.* 2009). The South Highway Cone is thought to have lain between the visitor center and North Crater. It was largely destroyed by being both rafted away on thick pasty flows (transporting flows may have been one or some combination of the Highway Flow, Devil's Orchard Flow, or Serrate Flow) and also by being swallowed by a collapse back into the magma chamber. This collapse was equal in age with the end of the Highway Flow eruption and produced the Highway Fault. The Highway Fault forms the prominent fault scarp visible from the trail, which runs along the edge of the campground and continues on to the west for about 0.5 mile (0.8 km).

The large rafted block of cinder cone material just south of the trail along the northern segment of the trail is likely a piece of the South Highway Cone (Rivera *et al.* 2009). It was being rafted away, much like an iceberg, by one of the candidate thick and pasty flows mentioned earlier. The North Crater flow masks or hides the transporting flow beneath the rafted block. The monoliths that are also made of cinder cone material likely represent volcanic necks or conduits that fed and helped build the South Highway Cone (Rivera *et al.* 2009; Maley 2005).

Most of the trail lays directly upon the North Crater flow which in proximity to most of the trail except the western segment, is largely inflated spiny pahoehoe. This pahoehoe has well-developed ropes and billows, inflation pits, and other inflation structures including a flow/pressure ridge or elongate tumulus along the southern segment of the trail that also has good examples of squeeze-ups. As a result of the inflated nature of the flow, when the trail was constructed, fill was placed to bridge gaps between some of the inflated highs and to allow the existing trail to pass between them. This fill is primarily comprised of local lava fragments.

The area to the west of the existing trail near the monoliths is mapped as slab lava on the Geologic Map of the Inferno Cone Quadrangle (Kuntz *et al.* 1989) and is composed predominantly of slabby pahoehoe. There are several good examples of slabs of surface crust upturned near the monoliths. Existing waysides (planned for replacement as part of the proposed project) have this slabby pahoehoe identified as aa. Though some of it approaches aa in appearance it is not.

## **1. Impacts to Geology**

### Alternative 1 Geology Impacts

There would be no additional impacts to geology from retention of the existing trail. Existing impacts from visitors wandering around in the vicinity of the existing trail, especially near wayside signs and toward the large rock outcrop on the northeast side of the trail would continue at the current level even through the area is closed to off-trail hiking. This would continue to result in indirect impacts from access and occasional damage to nearby fragile lava rock from trampling. These impacts are and would remain negligible to minor but long-term. Cracks and disruptions caused by pressure on the surface of fragile lava flows are permanent impacts. Additional minor long-term effects (discoloration and damage to the lava surface) would also remain visible, despite previous closure of the former Devil's Sewer spur trail. The trail would continue to weather and degrade over time and continue to spall pieces of asphalt and non-native aggregate degrading the appearance of the areas adjacent to the trail until these were removed.

### Alternative 2 Geology Impacts

As with original construction of the North Crater Flow Trail, modifications to this trail to increase accessibility would require the placement of a large amount of fill to bridge gaps between high and low points, to decrease the amount of trail rise and fall. Modifications would also be made to increase the width of the trail to accommodate wheelchair users and to locate new interpretive wayside exhibits and one additional bench.

Modifications to one section of the trail would require reducing the height of the existing rock surface beneath the current asphalt trail (cut). This cut would result in long-term minor adverse effects from permanent alteration of a small section of the lava flow formation, which is now concealed by the existing asphalt trail.

Most other grade modifications to the trail would require fill. Current plan cross-sections show the need to raise the trail grade from six to 36 inches, depending on the section (Table 1). This fill would likely include retention of the existing asphalt surface through the placement of concrete retaining walls in some locations and its removal and crushing for use as fill in other locations. Altogether, approximately 200 cubic yards of fill would be required to raise the grade of the trail to improve its accessibility. The placement of fill over the existing asphalt trail would increase the cover over, but would generally not affect the underlying geology. Where the existing trail was removed to locate open bottom culverts to allow for connectivity in pika habitat, the existing asphalt trail and any fill would be removed and replaced and additional fill added to raise the grade to the proposed new level.

**Table 1: Approximate Grade of Proposed Trail in Alternative 2**

Current Design Section	Proposed Trail Grade: From (percent)	Proposed Trail Grade: To (percent)
C5	-1.86	4.25
C6	-7.68	4.59
C7	-1.83	6.89
C8	-6.96	0.36
C9	-1.86	0.37
C10	-7.68	1.29
C11	-4.44	4.06
C12	-2.19	-0.91
C13	-1.48	1.39
C14	7.64	--
C15	-1.84	0.52
C16	-0.40	-7.44
C17	-7.82	5.66
C18	0.83	7.51
C19	0.30	7.96
C20	1.52	9.38

The fill would be comprised of sterile material, including lava rock, asphalt from the existing trail and road base (3/4-inch minus gravel), which would be encapsulated by the trail surface and concrete retaining walls where necessary. Although the source of this material would be determined by the contractor, it would require NPS approval, ensuring that materials were clean and weed-free and that its procurement would not result in environmental impacts other than those described herein.

Additional impacts to geology would occur from cutting/breaking out holes in the lava formations for placement of the wayside exhibits. These holes would be approximately 20 inches in diameter and 24 inches deep and would be backfilled with colored concrete, a long-term minor adverse effect on geology from the need to drill approximately two holes per wayside exhibit (20 holes).

### **Impact Avoidance, Minimization and Mitigation Measures**

Measures that would be included in the proposed project (as appropriate to the alternative actions) to minimize impacts to geology include:

- Locating the proposed project areas in previously disturbed sites and/or carefully selected sites with as small a footprint as possible (NPS 2005:74).
- Minimizing ground disturbance to the extent possible to retain the natural appearance of geologic materials and features.
- Using geologic material as fill to the degree possible due to the overall lack of soil and soil development.
- Minimizing the project area boundaries to reduce the overall footprint of disturbance.
- Retaining fill material under the trail surface.
- Using colored concrete to match the appearance of the existing rock.

**Cumulative Impacts:** Adverse impacts to geology from past, present and potential future actions include loss of geologic continuity from the covering over or removal of rock to create monument developed areas. These impacts include the construction of roads, buildings, utility corridors, trails and other developed areas for visitor and/or administrative use. Where possible for some trails, a route has been delineated, such as with rock cairns over the surface of the lava flow, rather than constructed using excavation, fill or another surface material. Past impacts have primarily been limited to providing access to unique areas and areas representative of the monument's resources to allow visitors to see and understand these. As a result, unique features are interpreted and preserved. Overall actions have been localized and minor to moderate but have not affected key resources. Future actions, such as proposed modifications to Lava Flow Campground, would continue to have mostly minor localized adverse impacts. Actions associated with modifications to the North Crater Flow Trail would also result in the retention of unique and characteristic features of the monument to fulfill this trail's role in providing an introduction to monument volcanic resources. Past actions, such as the closure of the Devil's Sewer Trail have had long-term beneficial effects, following adverse effects from visitors trying to collect a pipe-like structure then present. There would be no additional contribution of cumulative impacts from modifications to the North Crater Flow Trail under Alternative 1 and the contribution to cumulative impacts under Alternative 2 would be negligible to minor. Cumulative impacts would remain localized and minor to moderate under both Alternative 1 and 2.

**Conclusion:** There would be no additional impacts to geology from Alternative 1. Ongoing negligible to minor impacts would continue. There would be no additional contribution to cumulative impacts under Alternative 1. Alternative 2 would have minor to moderate localized adverse impacts and long-term minor adverse impacts. Alternative 2 would have a negligible contribution to cumulative impacts, which would remain localized and minor to moderate. There would be no impairment of geological resources or the values for which these have been preserved.

## **2. Soils Affected Environment**

The soils in the Craters of the Moon area are variable, reflecting the differences and interactions among parent material, topography, vegetation, climate, and time. The biggest differences in soil formation involve the presence or absence of lava flows and the degree of soil development on volcanic substrates. The lava flows, which occupy two-thirds of the monument, are made up of basalt lava rock. The soils on the younger basalt flows and cinder beds are limited to the initial decomposition of rock and cinders and deposition of windblown loess within crevices, cracks, and fissures (NPS 2005:110-11).

The soils in Craters of the Moon and the surrounding area developed from rocks deposited during a sequence of geologic events that began almost 600 million years ago. During the latter part of the Tertiary Period, from about 16 million years ago, until recently in the Yellowstone area, explosive volcanic activity across the Snake River Plain deposited layers of pyroclastic tuffs and silica rich lavas. More recent basalt lava flows and windblown loess have subsequently covered these rhyolite rocks. The windblown dust (loess) from sources further west, weathering of rock and basic soil development processes have resulted in varying depths of soils on recent and older basalt flows at Craters of the Moon (NPS 2005:11).

Sagebrush steppe, mountain areas, and kipukas within the monument have deeper, well-formed soils. The high desert environment results in lighter colored soils with low organic matter content. Most of the soils in the monument area are silt loam to sandy loam in texture and vary in depth. They are moderately drained to well drained, except where clay horizons are present. Soils that are disturbed, not properly vegetated, or located on steep slopes are highly susceptible to water and wind erosion (NPS 2005:111).

North Crater Flow Trail Project Area: Soil in the project area is scant because the trail primarily crosses geologically young (Holocene) lava. The lava still has glassy surfaces that have not devitrified to form soil and which still function to armor the lava against weathering. What little soil present, loess, is brought in and deposited by the wind (Aeolian) in cracks in the lava and between/among cinders. This loess is typically characterized by silt size particles representing the various rock types in and surrounding the Snake River Plain that were ground up by glaciers during the last ice age and liberated upon ice melting.

Older lava flows (those greater than 14-15 thousand years) in the region can be mantled with many feet of loess, but younger lava flows, as is the case for the North Crater Flow Trail project area (approximately two thousand years old), tend to have very little accumulation because the lava formed thousands of years after the glaciers retreated. Vegetation growth which occurred during the intervening time between deglaciation and the eruption of these younger lava flows has served to anchor the abundant loess generated by glaciation and to greatly reduce the supply available for transport and redeposition on young flows. Fire and human disturbance are the active agents that can re-liberate loess from other areas to be deposited in/on younger flows.

There is enough existing vegetation growing in the trail area to contribute minor amounts of organic matter to the limited soils. Wildlife, including pika, chipmunks, weasels, foxes, and numerous birds use the area, which contributes some organic matter in the form of droppings or from their feeding and food storage practices as well as from decay after their death.

## **3. Impacts to Soils**

### **Alternative 1 Soils Impacts**

There would be no additional impacts to soils from the retention of the existing trail. Existing areas of impact would remain and would continue to be affected by visitors in the area. Observable changes in the area of impact would continue to be negligible. Most of the area surrounding the trail is comprised of rock. In pockets here and there adjacent to the trail, some

forbs, shrubs and even a few trees have found enough soil to persist. The soils that hold these would not be disturbed under Alternative 1.

### **Alternative 2 Soils Impacts**

Actions would occur along an existing trail over its entire length of approximately 1,730 feet. Actions to widen the trail would primarily impact loose rock and volcanic features along the edges of the current trail. Because there is little soil development along the North Crater Flow Trail and because provisions in the proposed design have been made to avoid the few shrubs and trees that do grow along the trail, however, there would be negligible to minor adverse impacts to soils from construction of a wider trail with fewer steep grades. These impacts would be consistent with those associated with trail maintenance and construction as noted in the GMP: "trail maintenance and construction would involve site-specific negligible to minor long-term adverse impacts on soils such as compaction and altered fertility" (2005:17). Altogether up to 0.23 acres would be affected by construction, most of which has already been disturbed from the original construction of the North Crater Flow Trail. Overall disturbance to the natural basalt surface structure would be limited in scale but because of the area's unique composition this disturbance could not be recreated and would be noticeable. Where black naturally weathered surfaces were exposed, they would lighten to reddish oxidized basalt because of disturbance. Some areas of native rock would be removed to place signs and to widen the trail.

During construction, the existing trail surface and adjacent rock could be mixed, removed, and replaced with fill throughout the project areas, causing a minor, localized but long-term, adverse effect to the area's soil profile where present. Once the trail was constructed, curb cuts along the new asphalt surface would allow for drainage, but could also channel that drainage and erode pockets of soil, a long-term minor to moderate adverse effect because of the sparse distribution of soil.

### **Impact Avoidance, Minimization and Mitigation Measures**

Measures that would be included in the proposed project (as appropriate to the alternative actions) to minimize impacts to soils include:

- Locating the proposed project areas in previously disturbed sites and/or carefully selected sites with as small a footprint as possible (NPS 2005:74).
- Locating staging areas where they will minimize new disturbance.
- Using geologic material as fill to the degree possible due to the overall lack of soil and soil development.
- Discouraging establishment of undesirable plants, by avoiding the use of soil fill or surfacing in distinctly rocky, unvegetated areas.
- Using only weed free fill and surfacing material.
- Directing contractor equipment access to reduce the overall footprint of disturbance.

**Cumulative Impacts:** Adverse impacts to soils and geology as a result of other past, present and proposed future actions include compaction, soil mixing, and soil loss from removal and erosion. In some cases soils have been disturbed and revegetation has not yet occurred naturally or been undertaken by the monument. Other impacts include an overall decrease in soil infiltration, where placement of impermeable hardened surfaces (such as roads, walkways, buildings) has occurred. Some restoration and development projects (e.g. addition of new visitor service facilities, restoration of old roads or building sites) could occur within the monument and project vicinity. These projects could contribute to both beneficial and adverse impacts to soils. Because most of the monument continues to be undisturbed by human impacts, including designated wilderness and wilderness study areas, the amount of area affected by past and possible future projects is not substantial and soil and geology impacts are minor compared to areas that remain unaffected by development in the monument. Impacts from past, present and future proposed actions, together with the impacts of Alternative 1 or 2, would continue to result in long-term minor adverse and negligible beneficial cumulative impacts to soils in the monument. There would be no additional contribution to cumulative impacts under Alternative 1. Alternative 2 would contribute localized negligible to minor adverse effects on soils which would be

permanently disturbed in a small area. When the impacts from project actions are combined with other actions, cumulative impacts would remain minor.

**Conclusion:** Alternative 1 would continue to result in long-term negligible localized impacts to soils but no additional cumulative impacts. Taken together, actions in Alternative 2 would result in negligible to moderate localized long-term adverse impacts and negligible to minor cumulative adverse impacts on soils. There would be no significant impact and no impairment of soils or geology or associated values from the actions proposed in this EA.

#### 4. Vegetation Affected Environment

Craters of the Moon National Monument and Preserve is located in the Snake River Basin/High Desert (Omernik 1986) and encompasses a small portion of the Idaho Batholith/Foothill Shrublands-Grassland ecoregion and a large portion of the Snake River Plain/Lava Fields ecoregion (McGrath *et al.* 2002). Existing vegetation is broadly characterized as belonging to montane, foothill, steppe, or plain formations and includes mostly dry and some mesic forest, woodland, shrubland, herbaceous vegetation, and sparse vegetation within volcanic, foothill, and plateau settings. Vegetation distribution is a result of elevation, aspect, substrate, and disturbance history with the most obvious being the lava substrate. From a casual perspective most of the lava at Craters of the Moon appears to be unvegetated but the Gap Analysis of Idaho Land Cover from 1996, shows approximately 33 percent to be vegetated lava compared to just 20 percent of exposed or non-vegetated lava flows (Landscape Dynamics Lab 1999). In fact, the volcanic geology and its complex interaction of rock outcrops, slope exposure, colluvium, soils, hydrology, and disturbance creates many unique niches for vegetation that would likely not occur on a more homogenous site.

Five major vegetation types (including at least 35 different plant communities and 785 species of plants) have been identified in the monument:

- Vegetated lava complex
- Sagebrush steppe complex
- Grasslands complex
- Mountain complex, and
- Cinder cone complex.

##### North Crater Flow Trail Plant Communities

The North Crater Flow Trail area contains three plant communities as identified by Bell *et al.* (2009):

- Limber Pine / Fernbush / Sandberg Bluegrass Sparse Vegetation (*Pinus flexilis* / *Chamaebatiaria millefolium* / *Poa secunda*)
- Pahoehoe Lava (Barren) and
- Aa Lava (Barren).

##### Limber Pine / Fernbush / Sandberg Bluegrass Sparse Vegetation

The vegetation of this association is characterized by sparse total cover of less than 10 percent. Limber pine (*Pinus flexilis*) individuals are scattered throughout this vegetation type, but do not occur with high enough abundance to form a tree canopy. The shrub layer is dominated by mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), fernbush (*Chamaebatiaria millefolium*) and mock orange (*Philadelphus lewisii*). Fernbush occurs with sparse cover, but is a characteristic species of this association. Other, less frequently occurring shrubs may include oceanspray (*Holodiscus dumosus*), rubber rabbitbrush (*Ericameria nauseosa*) and antelope bitterbrush (*Purshia tridentata*). The minimal herbaceous layer includes the grasses, Sandberg bluegrass (*Poa secunda*) and bluebunch wheatgrass (*Pseudoroegneria spicata*). Forb cover is also low but highly variable in terms of species composition, and may include species such as hawksbeard (*Crepis acuminata*), woodfern (*Dryopteris filix-mas*), delicate gilia (*Gilia leptomeria*), prickly phlox (*Leptodactylon pungens*), woodland star (*Lithophragma tenellum*), desert parsley (*Pteryxia terebinthina*), and valley violet (*Viola nuttallii*). This association, like all associations in

the Inter-Mountain Basins Volcanic Rock and Cinder Land Ecological System, is limited to barren and sparsely vegetated volcanic substrates of basalt and basaltic andesite origin including tuffs, cinder cones, spatter cones, pressure plateaus, or cinder fields. It may occur in large-patch, small-patch or linear spatial patterns.

#### Pahoehoe Lava (Barren)

This association represents non-vegetated pahoehoe lava flows within and adjacent to Craters of the Moon. This type differs from sparsely vegetated pahoehoe lava types due to the lack of vegetation cover (less than 1 percent on average). This type also includes barren areas that have too fine a mix of aa, pahoehoe lava, and cinders to reliably delineate. The predominant plants that do occur include limber pine, mock orange, rock spirea, prickly phlox, hotrock penstemon (*Penstemon deustus*), and sticky cinquefoil (*Potentilla glandulosa*).

#### Aa Lava (Barren)

This association represents non-vegetated aa lava flows within and adjacent to Craters of the Moon. This type differs from sparsely vegetated aa lava due to the lack of vegetation cover (less than 1 percent on average). Small areas of barren and sparsely vegetated pahoehoe lava occur and are likely included in polygons of non-vegetated aa lava. Plants are similar to that of barren pahoehoe associations including rock spirea, fernbush, prickly phlox, hotrock penstemon, and sticky cinquefoil.

#### **North Crater Flow Trail Vegetation**

The limber pine vegetation association occurs primarily on lava and cinder fields commonly located across northeast sections of the monument and preserve. This plant community occurs at the entry and exit points of the North Crater Flow Trail along the parking area on the eastern edge. Plants on this section of the trail are primarily bitterbrush and rabbitbrush shrubs and annuals such as dwarf monkeyflower (*Mimulus nanus*) that are using as their base sediments placed during initial road construction.

A large barren aa lava field occurs on the northwest edge of North Crater Flow Trail. This area has mostly broken lava fragments uncharacteristic from the remainder of the trail. Little soil development is associated with these fragments and thus, vegetation is extremely limited. Plants locally adapted to these conditions, namely fernbush and hotrock penstemon, are common but scattered.

The remainder of the trail overlies a portion of a large pahoehoe lava field. Vegetation growth on pahoehoe lava is quite striking because various adapted plants use soil and water resources in lava cracks and cinder collection areas. The paved trail itself has also created microhabitats along the edges for plants to establish. Predominant plants include limber pine, mock orange, prickly phlox, hotrock penstemon, and sticky cinquefoil. There are several unique and important limber pines along the trail, including a locally known “triple twist” limber pine snag.

#### **Non-Native Invasive Plants**

Several nonnative invasive plants are known to occur near the North Crater Flow Trail including cheatgrass (*Bromus tectorum*), prickly lettuce (*Lactuca serriola*), and mullein (*Verbascum thapsus*). These plants are essentially absent throughout the trail, likely due to the predominantly rocky terrain and harse environmental conditions. Cheatgrass does occur along the parking area for the trail. Its presence is likely due to added base sediment from road construction as well as from consistent seed dispersal by park visitors and their vehicles.

Because vehicles and hikers readily spread weed seed along road corridors and around park facilities, several state-listed noxious plants are known to occur within this area of the monument. Plants discovered and treated at nearby park facilities include spotted knapweed (*Centaurea stoebe*), diffuse knapweed (*Centaurea diffusa*), and rush skeletonweed (*Chondrilla juncea*). Though the North Crater Flow Trail is at high risk from a number of vectors, no noxious weeds

have been observed directly alongside the trail to date. This may be due to the lack of soil formation and the generally inhospitable habitat.

## 5. Impacts to Vegetation

### Alternative 1

There would be no new impacts to vegetation as a result of the implementation of Alternative 1. Ongoing negligible adverse impacts would continue to occur from occasional trimming of vegetation lying close to the trail and from trampling when visitors step off the trail.

### Alternative 2

The following plants are those that could potentially be disturbed because they are within the 15-foot construction limits for the proposed modifications to the trail: dwarf monkeyflower (*Mimulus nanus*), antelope bitterbrush (*Purshia tridentata*), syringa (*Philadelphus lewisii*), hotrock penstemon (*Penstemon deustus*), fernbush (*Chamaebatiaria millefolium*), and sticky cinquefoil (*Potentilla glandulosa*). Because the following language is proposed to be included in the Special Contract Requirements or SCRs, however, these effects may be limited: "Contractor to remain inside construction boundary. All areas outside the boundary are to be undisturbed. All areas inside construction boundary are to be disturbed as little as possible." In addition, all nearby limber pines and syringa shrubs have been identified in design drawings and noted as "retain and protect." Nonetheless, it is likely that small shrubs and forbs would be affected, even though vegetative cover within the project area, where present is noted as being of less than 10 percent as associated with the *Limber Pine / Fernbush / Sandberg Bluegrass Sparse Vegetation* type. Because there are so few plants in the project area and because those that are present grow very slowly in the scant soil that is present, loss of a small number of shrubs would be a minor to moderate adverse effect. In addition, because of new disturbance and the presence of nonnative invasive species near the trailhead parking area, it is likely that nonnative species could be detected along the trail following construction, a possible long-term minor to moderate adverse effect. As a result there would be ongoing monitoring of the trail to detect these species at the earliest possible time.

### Impact Avoidance, Minimization and Mitigation Measures

Measures that would be included in the proposed project (as appropriate to the alternative actions) to minimize impacts to vegetation include:

- Using only certified weed-free hay, straw or mulch to minimize the potential spread of exotic plants (NPS 2005:74).
- Using only clean fill, including approval of the source(s).
- Inspecting and/or cleaning construction vehicles and equipment prior to entry into the monument to ensure that they are free of weed seed (NPS 2005:75).
- Surveying project areas for sensitive species (NPS 2005:74) (none were found).
- Monitoring the trail for noxious weeds and treating them upon discovery.
- Monitoring areas for effects from trampling and mitigating potential impacts as appropriate (including through signs, barriers or other means).

**Cumulative Impacts:** Human activities, particularly associated with fire and grazing, along with a small contribution from visitor and administrative use, have altered the structure and composition of some monument plant communities. In contrast to broad scale changes in vegetation characteristics that have occurred as a result of natural ecological processes, compared to the amount of area preserved, relatively small patches and corridors of habitat have been lost in the monument in areas that have been developed for visitor and administrative facilities, roads and trails. These impacts have also resulted in small changes to vegetation community size, integrity, function and characteristic wildlife. Past and reasonably foreseeable future actions would have both beneficial and adverse effects on vegetation. Activities such as restoration, non-native plant removal and rehabilitation would result in both beneficial and adverse effects, while additional development or redevelopment of visitor facilities would result in

mostly adverse effects. The eventual restoration of nearly 80,000 acres of degraded sagebrush steppe, as called for in the Monument Management Plan (NPS 2005:94 *et seq.*) would result in cumulative long-term beneficial effects on vegetation. Past, present and future proposed actions, such as those under the Northern Rocky Mountains Invasive Plant Management Plan would continue to have minor beneficial and negligible adverse cumulative impacts. Alternative 1 would contribute negligible cumulative beneficial and adverse impacts while Alternative 2 would contribute localized minor cumulative adverse effects. Overall cumulative effects would remain minor, with some localized moderate adverse effects and some beneficial effects.

**Conclusion:** Alternative 1 would have negligible adverse and beneficial effects. Alternative 2 would have localized minor to moderate adverse effects. Cumulative impacts would remain minor under both alternatives, with some localized moderate adverse effects and some beneficial effects. There would be no significant impact to and no impairment of vegetation or associated values from the implementation of either Alternative 1 or 2 following the actions proposed in this EA.

## **6. Wildlife and Special Status Wildlife Affected Environment**

Approximately 200 species of birds, 60 mammals, 10 reptiles and at least three amphibians have been found in the monument. In addition, more than 2,000 insect species have been identified (NPS 2005:131). Birds include northern harriers, American kestrels, common nighthawks, burrowing owls, golden eagles, common ravens, horned larks, lazuli buntings, savannah sparrows, rock wrens, and western meadowlarks. Large mammals include mule deer, pronghorn, elk, cougar, black bear and moose. Medium-sized mammals include red and kit foxes, coyotes and bobcats, badgers, raccoons, and yellow-bellied marmots. The monument also provides habitat for a wide variety of bats. Small mammals include ground squirrels, pikas, chipmunks, deer mice, voles, and gophers. Reptiles include rubber boas, gopher snakes, night snakes, western skinks, short- and desert-horned lizards, and long-nosed leopard lizards. Amphibians include the boreal chorus frog and the Pacific tree frog (NPS 2005:132 *et seq.*).

The lava flow that underlies the North Crater Flow Trail is among the youngest in the Craters of the Moon Lava Field. As a result, vegetation is limited and many animal species that occur in the monument do not occur regularly in the immediate area. Rock specialist wildlife; however, such as pika, yellow-pine chipmunk, golden mantled ground squirrel, mountain bluebird, and rock wren are common. Other wildlife, including red squirrels, use the rock formations especially where isolated limber pines grow in crevices. There are numerous invertebrate species known to use the area, although detailed survey information about their diversity is very limited. Table 2 shows the vertebrate species expected to occur in the area. Of these species, ten are rock specialists. Three other species are dependent on the isolated limber pines along the trail and the rest are opportunistic in their habitat use but are known to use the area on a regular basis. Other species, such as large mammals and a variety of birds pass through or over the area intermittently.

Scattered limber pines can be found along the trail and on nearby cinder deposits. These trees are regularly used by species including Clark's nutcracker, red squirrel, and yellow-pine chipmunk. There are numerous species of migratory birds which may occasionally use these trees as well. Clark's nutcracker may be seasonally common because limber pines are an important food source. Small mammals such as yellow-pine chipmunk and red squirrel have much smaller home ranges and the project area includes multiple territories for these species. Both species are found only in close proximity to limber pines but would use a range of habitats in the project area either intermittently or seasonally. Among the habitat requirements fulfilled in the project area include foraging, food storage, denning, and winter hibernation.

Several of the more generalist species in Table 2 also use the project area extensively. Some of these such as deer mice have very small home ranges and numerous territories likely occur in the project area. Others such as red-tailed hawks have territories much larger than the project

area and may only occasionally use this part of their home range. Long-tailed weasels and red fox are also known to regularly hunt in the project area.

Among the rock specialist species that are most notable in the project area include violet-green swallows, mountain bluebirds, rock wrens, bats (including the little brown bat, long-legged bat and small-footed bat), yellow-bellied marmot, golden-mantled ground squirrel, and pika.

Violet-green swallows and mountain bluebirds are typically cavity nesting birds. Within the Craters of the Moon Lava Field they nest in large numbers utilizing small pockets in the lava flow. Both of these birds are frequently seen in the project area and it is expected that they nest in the area.

Based on surveys within the monument, rock wrens are the most common bird occupying the lava flows (NPS 2009). They use small crevices and ledges for nesting and do most of their foraging on insects within the rock formations. They are common throughout the North Crater Flow, including within the project area.

The little brown bat, long-legged bat, and the small-footed bat all roost in rock crevices and are known to occur in the vicinity of the North Crater Flow. The little brown and long-legged bats are particularly common and can be seen in the project area during the summer. The long-legged bat and small-footed bat are easily disturbed and are classified as watch species by the BLM, Twin Falls District (BLM 2010). Most other bat species found at the monument are cave roosters and are not expected to occur in the project area.

Yellow-bellied marmots are commonly associated with rocky outcrops throughout western North America. Golden-mantled ground squirrels are found in high elevation rocky areas throughout the Rocky Mountain region. Multiple territories of both species are known to occur in the project area. They spend much of their time below ground in crevices and depressions in the lava flow.

Bushy-tailed woodrats occur in cave and crevice habitats throughout western North America. They are nocturnal and difficult to find even when common. Droppings and other woodrat signs are common on the North Crater Lava Flow, including within the project area. It is expected that several territories occur in the project area.

Craters of the Moon National Monument and Preserve include gray wolves, Greater sage-grouse, pika and pygmy rabbits. Of these, only pika occur in the project area. Greater sage-grouse (*Centrocercus urophasianus*) are candidate species for federal listing and are a BLM sensitive species. No sage-grouse leks, nesting or brood-rearing area, are found within a quarter mile of the proposed project area. Gray wolf (*Canis lupus*) (formerly threatened) are occasionally seen near the northern monument, however construction activity would be temporary and would affect an existing developed area and trail, where no gray wolves have been seen.

American pika are rock specialists. They are only known to occur in alpine talus systems and in lava flows in mid- to high elevations. They range throughout the Rocky Mountains as well as farther west in the Cascades and Sierra Nevadas. Pika are listed as a species of Conservation Concern by the USFWS and are a priority species for monitoring at Craters of the Moon. The species is dependent on the cool spaces between rocks. Pika occupy a wide range in the northern portion of monument and preserve, including the project area (Rodhouse *et al.* 2010). Surveys conducted at Craters of the Moon indicate that pika are found in high densities within the project area (NPS 2011a). The North Crater Flow contains the highest numbers of pika currently known at Craters of the Moon and multiple territories are known in the project area. Due to high temperatures the species is nocturnal or crepuscular during the summer. Pikas regularly cross the existing trail. Pika territories are small and several individuals den, breed, forage, store food within the project area.

**Table 2: Vertebrate Animal Species Known From or Likely to Occur in the Vicinity of the North Crater Flow Trail**

Species	Rock Specialist	Special Status		
		BLM	Idaho	USFWS
MAMMALS				
Dusky Shrew ( <i>Sorex monticolus</i> )				
Little Brown Bat ( <i>Myotis lucifigus</i> )	Y	S	S	CC
Western Small-footed Myotis ( <i>Myotis ciliolabrum</i> )	Y	W		
Long-eared Myotis ( <i>Myotis evotis</i> )	Y	W		
American Pika ( <i>Ochotona princeps</i> )	Y			CC
Mountain Cottontail ( <i>Sylvilagus nuttallii</i> )				
Yellow-Pine Chipmunk ( <i>Tamias amoenus cratericus</i> )				
Yellow-bellied Marmot ( <i>Marmota flaviventris</i> )	Y			
Golden-mantled Ground Squirrel ( <i>Spermophilus lateralis</i> )	Y			
Red Squirrel ( <i>Tamiasciurus hudsonicus</i> )				
Deer Mouse ( <i>Peromyscus maniculata</i> )				
Bushy-tailed Woodrat ( <i>Neotoma cinereus</i> )	Y			
Montane Vole ( <i>Microtus montanus</i> )				
Red Fox ( <i>Vulpes vulpes</i> )				
Long-tailed Weasel ( <i>Mustela frenata</i> )				
BIRDS				
Red-tailed Hawk ( <i>Buteo jamaicensis</i> )				
American Kestrel ( <i>Falco sparverius</i> )				
Great Horned Owl ( <i>Buteo virginianus</i> )				
Say's Phoebe ( <i>Sayornis saya</i> )				
Loggerhead Shrike ( <i>Lanius ludovicianus</i> )		S	S	CC
Northern Shrike ( <i>Lanius excubitor</i> )				
Pinyon Jay ( <i>Gymnorhinus cyanocephalus</i> )		W	S	CC
Clark's Nutcracker ( <i>Nucifraga columbiana</i> )				
Common Raven ( <i>Corvus corax</i> )				
Violet-green Swallow ( <i>Tachycineta thalassina</i> )	Y			
Barn Swallow ( <i>Hirundo riparia</i> )				
Rock Wren ( <i>Salpinctes obsoletus</i> )	Y			
Mountain Bluebird ( <i>Sialia currucoides</i> )	Y			
American Robin ( <i>Turdus migratorius</i> )				
Spotted Towhee ( <i>Pipilo maculatus</i> )				
Dark-eyed Junco ( <i>Junco hyemalis</i> )				
House Finch ( <i>Carpodacus mexicanus</i> )				
Gray-crowned Rosy-finch ( <i>Leucosticte tephrocotis</i> )				
REPTILES				
Gopher snake ( <i>Pituophis catenifer</i> )				

#### BLM

S = Bureau of Land Management Sensitive Species; includes species listed as BLM Type 2 through 4 Sensitive Species  
W = Watch list species: Type 5 sensitive species that are not BLM otherwise classified but current population or habitat information suggests that the species may warrant sensitive species status in the future.

#### Idaho

S = Species of Greatest Conservation Need as listed in the Idaho Comprehensive Conservation Strategy (IDFG 2006)

## 7. Impacts to Wildlife and Special Status Wildlife

### Alternative 1

There would be no new impacts to wildlife or special status species wildlife from the implementation of Alternative 1. Ongoing impacts related to the presence of the trail would continue to cause localized long-term negligible to minor adverse effects, primarily from intermittent noise and disturbance associated with highway traffic, visitor use and maintenance activities.

### Alternative 2

There would be a variety of negligible to minor short- and long-term impacts to wildlife. These would include disturbance of large- and medium-sized mammals (deer, elk, coyotes) using nearby habitat from noise and activity associated with construction. Effects would be minimized because work would take place during daylight hours. Persistent, but temporary, disturbance of birds in the vicinity would also occur as a result of construction activities. Effects would increase as human activity and presence in the area increased during project construction. Wildlife that is tolerant of human presence, however, would continue to inhabit and/or use the area. At night and when construction was complete, wildlife disturbed by the project would likely return to the area.

Those species dependent on limber pines for habitat requirements could be affected by disturbance, but because limber pines would not be removed as part of the proposed North Crater Flow Trail improvements, these species would continue to be able to fulfill habitat requirements associated with dependence on limber pines before and after construction activities.

Many other species may also be found in the area but would be unlikely to be affected by the project. For example many bird species may be seen flying over the project site but would not be expected to land in the area or otherwise be affected. In addition, migrant species are numerous in the spring and early summer but are unlikely to be affected by this project due to wide ranges and limited habitat available in the project area.

Rock specialist species would be most sensitive to disturbance of rock piles or lava bedrock and some long-term minor adverse or localized moderate adverse effects could occur. These rock specialist species include: violet-green swallows, mountain bluebirds, rock wrens, and bats, such as the little brown bat, long-legged bat and small-footed bat, as well as yellow-bellied marmots, golden-mantled ground squirrels, bushy-tailed woodrats and pika. Potential effects are noted below.

*Violet-green Swallows, Mountain Bluebirds, Rock Wrens, Little Brown Bat, Long-legged Bat and Small-footed Bat:* These species would be at risk of disturbance and/or direct mortality if roosting sites are disturbed while occupied, a localized long-term adverse effect. Because it is likely that roosting areas occur away from the trail in larger rock formations and because most disturbance would be through fill on the trail surface rather than surrounding it, disturbance of roosting areas would be less likely to occur.

*Yellow-bellied Marmot, Golden-mantled Ground Squirrel and Bushy-tailed Woodrat:* These species would be at risk of direct mortality if denning or hibernation sites are filled in or rock formations are disturbed while occupied, a localized long-term adverse effect. As with disturbance to the birds and bats above, because it is likely that roosting areas occur away from the trail in larger rock formations and because most disturbance would be through fill rather than cuts, disturbance of roosting areas would be less likely to occur.

### **Alternative 1 and 2 Impacts to Special Status Wildlife**

*Species of Conservation Concern: Pika (Ochotona princeps):* Due to ambient high temperatures pikas are nocturnal or crepuscular during the summer construction season. Given their habit of retreating to crevices during the day they would be at high risk of mortality during construction if occupied sites are filled or heavy equipment or explosives are used to remove rock formations. Interruption of activities, such as denning, breeding, and foraging, or food storage would impact pikas and if prolonged could result in a population decline in the project area. Because construction work would be accomplished during the day, impacts to pika during their normal morning, evening and night activities in summer would be limited.

There are some concerns regarding potential effects on pika from the current design height of the curb that would be located to prevent wheelchair roll-offs along the edge of the trail. Existing designs show the height of this curb to be similar to that used for sidewalks and streets (approximately 6 inches). Ongoing consultation is continuing to determine whether the height of these curbs can be reduced to a height similar to that used on many boardwalk trails (approximately two inches).

Because most work on the trail would be comprised of raising, rather than lowering, the grade, there would be fewer construction activities that would remove loose rock or rock formations. Removal of rock would occur, however, for the construction of passageways under the trail. These passageways would be constructed wherever the trail is likely to be 12 or more inches above existing grade and would be comprised of open bottom culverts laid on the existing surface materials. These would be located approximately 25-30 feet apart in affected areas to facilitate passage beneath steep sections of trail and to avoid severing territories. These tunnels would potentially mitigate adverse impacts to from the project.

### **Impact Avoidance, Minimization and Mitigation Measures**

Measures that would be included in the proposed project (as appropriate to the alternative actions) to minimize impacts to wildlife include:

- Analyzing the proposed project area for the presence of rare, threatened or endangered species.
- Conducting proposed project work during daylight hours.
- Constructing passageways under the trail approximately 25-30 feet apart where it would have a vertical surface of 12 inches or more.
- Determining whether the curb height can be decreased.
- Designing the trail with limited removal of cut to avoid extensive impacts from rock removal, such as blasting.

**Cumulative Impacts:** The combined effects of development in the monument and in the surrounding area over time coupled with the purposeful eradication of many predator species during the 1800s and early 1900s throughout the west have likely contributed to low level or extirpated wildlife populations of some key species in the monument. Past, present and reasonably foreseeable development projects planned for the monument have resulted in and would continue to result in additional negligible to minor cumulative effects to wildlife. The effects of existing development would continue to take a toll on wildlife primarily from collisions on U.S. Highway 20/26/93 (0.25 miles north of the project area and the loop road) as well as from noise and disturbance from visitor use and inappropriate wildlife-human interactions. The existence and maintenance of the road and other monument developed areas under Alternatives 1-2 would continue to contribute to long-term negligible to minor adverse effects on wildlife increasing some species while decreasing the presence of others. Projects such as the Northern Rocky Mountains Invasive Plant Management Plan would have both short-term adverse effects and long-term beneficial effects, while projects such as the rehabilitation of the Lava Flow Campground would have additional negligible cumulative adverse effects.

The eventual restoration of nearly 80,000 acres of degraded sagebrush steppe, as called for in the Monument Management Plan (NPS 2005:94 *et seq.*) would result in long-term beneficial

effects on wildlife associated with this habitat and would overshadow the negligible to minor adverse effects of the proposed improvements to the trail. Under Alternative 1, there would continue to be negligible to minor cumulative adverse and beneficial effects. When actions under Alternative 2 are combined with these, cumulative effects would remain negligible to minor and adverse and beneficial.

**Conclusion:** There would be ongoing negligible to minor adverse effects under Alternative 1. Alternative 2 would have a series of negligible to minor adverse and some localized moderate adverse effects on wildlife but would also provide some potential negligible beneficial effects. There would be no significant impact to and no impairment of wildlife or wildlife habitat values from the implementation of either Alternative 1 or 2 following implementation of the actions proposed in this EA. Similarly, there would be no significant impact to and no impairment of special status species or values. There would be no effect on gray wolf or sage grouse, however the project may affect, but would be not likely to adversely affect pika.

## **8. Prehistoric and Historic Archeology Affected Environment**

Both the Great Rift Volcanic Rift Zone and sagebrush steppe ecosystem contain a wealth of cultural resources dating back to the last volcanic eruptions, which were likely witnessed by the Shoshone people (NPS 2005:6). There are more than 500 known, recorded cultural resources sites in the monument and preserve, representing a variety of types and chronological periods, with data from at least 8,000 years old to the present. Prehistoric sites include lithic scatters, rock shelters, rock structures and cairns, and pictographs and stone quarry tool manufacture sites can also be found.

A cultural resources records search for archaeological and historical information in the project area was made by the park's former cultural resources specialist (now at Hagerman Fossil Beds / Minidoka). There are no known sites in the project area (adjacent to the trail), however there are sites located nearby.

## **9. Impacts to Prehistoric and Historic Archeology**

### **Alternatives 1 and 2**

Because no archeological sites have been located adjacent to the North Crater Flow Trail, there would be no new impacts to and therefore no effect on prehistoric or historic archeological sites.

### **Impact Avoidance, Minimization and Mitigation Measures**

Measures that would be included in the proposed project (as appropriate to the alternative actions) to minimize impacts to prehistoric and historic archeological resources include:

- Survey of project areas by a professional archaeologist for prehistoric and historic cultural remains (NPS 2005:75) (none were found).
- Immediate work stoppage and/or relocation to a non-sensitive area would occur should unknown archeological resources be uncovered during construction to allow collection of artifacts, soil samples and recordation. The site would be secured, and the NPS would consult with the Idaho State Historic Preservation Officer and tribal representatives according to 36 CFR 800.11.
- Additional consultation would occur if appropriate, according to provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990. In compliance with this act, the NPS would also notify and consult concerned tribal representatives for the proper treatment of human remains, funerary, and sacred objects should these be discovered during the course of the project.

### **Cumulative Impacts**

Archeological resources in the monument have likely been adversely impacted to varying degrees from past construction-related disturbances (prior to the advent of archeological resources protection laws); visitor impacts and vandalism; and from erosion and other natural

processes. Because mitigation measures would be employed to minimize impacts to potentially unidentified cultural resources in other proposed and future monument projects, it is likely that these would protect archeological resources from additional impacts. There would be no construction-related contributions to cumulative impacts from Alternative 1 and there would be no anticipated impacts from Alternative 2, however, if archeological remains were inadvertently discovered during construction, Alternative 2 could contribute additional negligible to minor adverse impacts which would be mitigated by additional investigation of the find immediately upon discovery or relocation of the work to a non-sensitive area.

## Conclusion

If archeological resources were discovered during implementation, the preferred action would be to avoid further impact to the site by modifying project implementation as needed. If this is not possible, as much information as possible would be collected about the site in accordance with applicable laws and regulations and additional consultation with applicable agencies and tribes would occur as specified above. The proposed actions under Alternative 1 would have no additional effects on and would not impair archeological resources or values. Alternative 2 would have no adverse effect on and would not impair archeological resources or the values for which they have been protected.

## 10. Visitor Experience Affected Environment

Access: U.S. Highway 20/26/93 which traverses the northern boundary of the monument is the primary access point for most visitors. The original monument boundary and access to the visitor center, campground and 7-mile Loop Road is off this highway which passes through the towns of Carey, Idaho on the west and Arco, Idaho on the east.

Visitor Facilities and Services: Most monument visitor and educational opportunities are located near the monument's visitor center south of U.S. 20/26/93 between the "gateway" communities of Carey and Arco. In addition to guided walks and programs offered by the NPS, the monument has several self-guided interpretive trails with waysides and a 7-mile Loop Road. Visitor facilities include the visitor center complex, which consists of a campground, museum, and bookstore (NPS 2005:6). The Loop Road contains several short spur roads to points of interest, pullouts and parking areas, giving access to scenic vistas and hiking trails, including to the North Crater Flow Trail.

Through interpretive and educational programs, NPS and BLM desire to provide visitors with an understanding, appreciation, and enjoyment of the significance of the monument. Interpretive and educational programs encourage the development of a personal stewardship ethic and broaden public support for preserving our nation's natural and cultural resources (NPS 2005:169).

Visitation: An average of 200,000 people per year visit the monument. Between 2001 and 2010, monument visitation varied from a low of 178,824 people (2003) to a high of 227,179 people (2008) (Table 3) (NPS 2011). BLM estimates an additional 20,000 people per year visit the expanded portions of the monument (NPS 2005:172).

**Table 3: Craters of the Moon Visitation 2000-2010**

2000	211,642
2001	185,799
2002	183,573
2003	178,824
2004	183,111
2005	203,332
2006	176,998
2007	221,672
2008	227,179

2009	194,046
2010	215,698

Visitation occurs primarily in the spring through fall, with the highest visitation in July, but also occurs scattered throughout the year. In winter the 7-mile Loop Road, closed to motor vehicles, is groomed as a cross-country ski trail. For a short period between being closed to motor vehicles and groomed but before it fully opens in the spring (after snow removal), while the road is mostly clear of ice and snow, it also attracts bicyclists.

Based on analysis of visitors to the original monument (Machlis *et al.* 1989 in NPS 2005), visitors generally spend less than three hours within it, with approximately five percent remaining overnight to camp. Of these 80 percent are in family groups and the same percentage are on their first visit to the monument. While most visitors are from the U.S. primarily the Rocky Mountain and western states (Idaho, Wyoming, California, Colorado, Oregon and Washington), approximately 19 percent come from outside the U.S.

Visitor activities in the original monument include scenic driving, photography, caving, hiking, cross-country skiing, snowshoeing and camping, while visitor activities in the expanded monument and preserve include hunting, driving for pleasure, geologic exploration, including caving, hiking, sightseeing, primitive camping, photography, and mountain biking.

North Crater Flow Trail: The North Crater Flow Trail is a high use trail located about 0.75 mile from the visitor center along the Loop Road and is often the first stop beyond the visitor center for visitors entering the park. Visitor use survey data suggests that about half the visitors who do a hike/walk in the park use this trail. It is about 1,730 feet (0.32 miles) in length. The existing trail averages 43 inches in width and has a minimum width of 26 inches.

Visitor use in the past destroyed a feature on the south side of the trail, known as the Devil's Sewer, which was a large hollow squeeze up in the tension fracture of the flow/pressure ridge. The Devil's Sewer was on a short spur trail that branched off of the North Crater Flow Trail about 210 feet from its start. As a result of this visitor impact, the area adjacent to the trail was closed and remains closed to off-trail use to minimize additional impacts.

## **11. Impacts to Visitor Experience**

### **Alternative 1**

There would be no changes in visitor experience, including access to visitor facilities or visitor use opportunities as a result of the implementation of Alternative 1, except that current outdated wayside exhibits would be replaced. Visitors would continue to be able to park at the North Crater Flow trailhead and to walk the 1,730-foot trail. Although sections of the trail would remain bumpy and the trail would continue to have a variable width with steep up and down sections, periodic maintenance, such as asphalt patching, staining concrete (near the entrance to the trail), removing eroded asphalt debris from the edge of the trail and branch trimming would continue to occur as needed. The trail would remain difficult to traverse by visitors in wheelchairs but could be used with assistance. Combined there would continue to be long-term beneficial and negligible to minor adverse effects in Alternative 1.

### **Alternative 2**

During construction of a rehabilitated trail there would be short-term minor to moderate adverse impacts on access to visitor facilities from the closure of the North Crater Flow trailhead and trail to public use. This closure could last for up to five months and would occur during the highest visitation period of the year. During this time visitors could use any one of the other monument trails located along the Loop Road.

There would be long-term beneficial effects on visitor use opportunities from improvements made to the trail. After construction all visitors would have an improved experience from traveling a newly rehabilitated trail in good condition. The greatest beneficial impacts would be associated with visitors who use wheelchairs, because they would be able to more easily traverse the rehabilitated trail because of its increased width and reduced overall grade. Groups, such as schoolchildren would also find the trail easier to traverse because of its increased width. All visitors could also come to a greater understanding of the monument's resources based on reading text and seeing features in the new interpretive wayside exhibits. An additional bench would provide another location for visitors to rest and/or to take in scenic views and/or to observe wildlife, such as pika.

### **Impact Avoidance, Minimization and Mitigation Measures**

Measures that would be included in the proposed project (as appropriate to the alternative actions) to minimize impacts to visitor experience include:

- Distributing press releases to local media, and state highway information recordings to inform visitors about the project schedule.
- Monitoring the trail for signs of native vegetation disturbance (NPS 2005:75).
- Locating sustainable, low-impact barriers, if needed, to discourage off-trail use and to protect intact areas from disturbance (NPS 2005:75).

### **Cumulative Impacts**

As a result of the establishment and subsequent expansion of the monument, there has been and would continue to be a slight to moderate increase in visitor services over time that would result in enhanced visitor access, facilities and services to broaden visitor understanding, and thereby protection, of monument resources. Although Alternative 1 would likely contribute to increased visitor understanding with eventual replacement of wayside exhibits and Alternative 2 would contribute to improved visitor services and understanding, there would be a negligible contribution to cumulative impacts associated with these improvements because they would occur in an existing area of development. Cumulative impacts would remain localized and negligible to moderate.

### **Conclusion**

Alternative 1 would continue to have long-term beneficial and negligible to minor adverse effects. Alternative 2 would have short-term minor to moderate adverse effects and long-term beneficial effects. There would be no significant impact on visitor experience as a result of the implementation of the proposed actions under either Alternative 1 or 2 as described in this EA.

**Table 4: Impact Comparison Chart\***

<b>IMPACTS</b>	<b>ALTERNATIVE 1</b>	<b>ALTERNATIVE 2</b>
<b>Geology</b>	<p>No additional impacts or cumulative impacts to geology.</p> <p>Negligible to minor impacts associated with prohibited off-trail visitor use would likely continue.</p>	<p>Minor to moderate localized adverse impacts from cut and fill over the existing trail and long-term minor adverse impacts from covering over geologic features.</p> <p>Negligible contribution to cumulative impacts, which would remain localized and minor to moderate.</p>
<b>Soils</b>	<p>Long-term negligible localized impacts to soils.</p> <p>No additional cumulative impacts</p>	<p>Negligible to moderate localized long-term adverse impacts from potential disturbance and erosion of scant soils near the trail.</p> <p>Negligible to minor cumulative adverse impacts.</p>
<b>Vegetation</b>	<p>No new impacts to vegetation – ongoing negligible adverse and beneficial effects.</p> <p>Minor cumulative adverse effects, with some localized moderate adverse effects and some beneficial effects.</p>	<p>Localized minor to moderate adverse effects.</p> <p>Cumulative effects would be the same as in Alternative 1.</p>
<b>Wildlife and Special Status Wildlife</b>	<p>No new impacts to wildlife or special status species wildlife.</p> <p>No effect on special status wildlife.</p> <p>No contribution to cumulative effects.</p>	<p>Variety of negligible to minor short- and long-term impacts from disturbance during construction and alteration of wildlife habitat from widening and decreasing the grade of the trail. Potential negligible beneficial effects.</p> <p>No effect on gray wolf or greater sage-grouse. May affect, but not likely to adversely affect pika.</p> <p>Cumulative effects would remain negligible to minor, adverse and beneficial.</p>
<b>Prehistoric and Historic Archeology</b>	<p>No new impacts to and therefore no effect on prehistoric or historic archeological sites. No contribution to cumulative effects.</p>	<p>Same as Alternative 1.</p>
<b>Visitor Experience</b>	<p>No changes in visitor experience, including access to visitor facilities or visitor use opportunities, except that current outdated wayside exhibits would be replaced. Long-term beneficial and negligible to minor adverse effects.</p>	<p>Short-term minor to moderate adverse impacts on access to visitor facilities from the closure of the trail during rehabilitation.</p> <p>Long-term beneficial effects on visitor use opportunities from improvements made to the trail.</p>

\*Note: There would be no significant impacts to and no impairment to resources identified above.

# Chapter IV. Consultation and Coordination

## A. Public Review

### 1. Internal and External Scoping

The public scoping period for this Environmental Assessment (EA) began on January 19, 2011 and ended on February 9, 2011. During this time, the public was encouraged to submit comments. During the public scoping period, no letters or emails were received. Three letters were received during scoping for another project included in the press release.

The public outreach called for in Section 106 of NHPA was integrated into the NEPA process in accordance with National Park Service Management Policies (NPS 2006).

This EA is being made available to the public, federal, state and local agencies and organizations through press releases distributed to a wide variety of news media, direct mailing, placement on the monument's website and announcements in local newspapers and on local radio stations as well as in local public libraries (Arco, Hailey, Bellevue, Twin Falls and Boise, and the Community Library in Ketchum).

Responses to comments on the EA will be addressed in the proposed Finding of No Significant Impact (FONSI) or will be used to prepare an Environmental Impact Statement (if appropriate).

### 2. Agency Consultation

As required under Section 106 of the National Historic Preservation Act (NHPA), consultation has been initiated with the Idaho State Historic Preservation Officer regarding the anticipated *no effect* to historic properties. A request for concurrence with this determination of effect will be sent during the public review period for this EA.

No further consultation is required with the U.S. Fish and Wildlife Service (USFWS). There would be no effect on any species listed under the Endangered Species Act.

### 4. Native American Consultation

Consultation with the Shoshone-Bannock Tribes was initiated for this project on May 16, 2009 with a letter sent to the Tribal Chairman at Fort Hall. To date, no concerns have been brought forward by tribal members regarding the proposed implementation of the trail project. Follow-up consultation will occur during the public review period for this EA.

### 5. Public Review

This EA is available for a **thirty-day** public review period (the exact dates will be determined by the document printing / release date). At that time, a press release will be distributed to people and businesses who have expressed an interest in the project and/or projects at Craters of the Moon. Included will be organizations such as The Wilderness Society, Sierra Club, etc. The EA will also be available at the following local libraries: Arco, Hailey, Bellevue, Twin Falls and Boise libraries, and the Community Library in Ketchum. In addition, organizations and individuals that have requested to will receive a copy of the EA. Other EAs will be sent to those who request copies during the review period. The EA will also be available on the monument's website, located at <http://www.nps.gov/crmo> and at the Planning, Environment and Public Comment (PEPC) website: <http://parkplanning.nps.gov>.

Comments on this EA should be directed to:

Superintendent  
Craters of the Moon National Monument and Preserve  
P.O. Box 29  
Arco, Idaho 83213

Comments may also be sent via electronic mail to:

[crmo\\_information@nps.gov](mailto:crmo_information@nps.gov)

or submitted to PEPC at <http://parkplanning.nps.gov>.

If reviewers do not identify substantial environmental impacts, this EA will be used to prepare a Finding of No Significant Impact (FONSI), which will be sent to the National Park Service Pacific West Regional Director for signature.

During the public review period, additional consultation will occur to affirm determinations of effect with the Idaho State Historic Preservation Office. Notice of the concurrence with the determinations of effect for historical resources will be identified in the FONSI for this EA, if prepared (see above).

For more information concerning this EA, please contact NPS Facility Manager, Dwayne Moates at (208) 527-1340 or Chief of Resources, John Apel at (208) 527-1350. For a copy of this document, please call Craters of the Moon National Monument and Preserve at (208) 527-1300.

## **B. List of Persons and Agencies Consulted / Preparers**

The following people and agencies were consulted during the preparation of this EA:

### **National Park Service, Pacific West Region (Seattle)**

909 First Avenue, Seattle, Washington 98104

Joe Dunstan, Landscape Architect (Regional Accessibility Coordinator)

Hoa Lam, Civil Engineer

c/o Craters of the Moon National Monument and Preserve, P.O. Box 29, Arco, Idaho 83213

Rose Rumball-Petre, Environmental Protection Specialist (preparer)

### **National Park Service, Craters of the Moon National Monument and Preserve**

P.O. Box 29, Arco, Idaho 83213

Doug Neighbor, Superintendent

John Apel, Integrated Resources Program Manager (preparer)

Steven Bekedam, Plant Ecologist (preparer)

Marci Garrison, Administrative Assistant

Dwayne Moates, Facility Manager

Mike Munts, Biological Science Technician (preparer)

Doug Owen, Geologist (preparer)

Ted Stout, Chief of Interpretation

### **National Park Service, Hagerman Fossil Beds National Monument and Minidoka National Historic Site**

221 North State Street, P.O. Box 570, Hagerman, ID 83332

JoAnn Blalack, Integrated Resource Manager (Craters of the Moon Section 106 Coordinator)

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## **Appendix 1: Draft Impairment Analysis for Improve Accessibility: North Crater Flow Trail Environmental Assessment Preferred Alternative**

### **Alternative 2: Alternative 2: Improve Accessibility of North Crater Flow Trail (one-way trail) (Preferred)**

New NPS guidelines require this draft analysis be prepared for the preferred alternative.

The following impact topics are considered in the Improve Accessibility: North Crater Flow Trail Environmental Assessment (EA).

#### **Step 1: Resource Impact Topics Considered in the Improve Accessibility: North Crater Flow Trail Environmental Assessment**

##### Physical Resources

- Geology
- Soils

##### Biological Resources

- Vegetation
- Wildlife
- Special Status Species

##### Cultural Resources

- Prehistoric and Historic Archeological Resources

##### Recreational / Social Resources

- None

Impairment analyses are not provided for the following topics also considered in the Improve Accessibility: North Crater Flow Trail EA because these are not required:

- Visitor Experience

Impairment findings relate to park resources and values and these impact topics are not generally considered to be park resources or values according to the Organic Act, and therefore cannot be impaired the same way that an action can impair park resources and values.

#### **Step 2: Brief Description of Condition of Resource**

See descriptions combined under d) below.

#### **Step 3: Analysis of Impairment**

- a) Whether the resource is necessary to fulfill the purposes for which the park was established;
- b) Whether the resource is key to the natural or cultural integrity of the park or to the opportunity for enjoyment of the park;
- c) Whether the resource is identified as a significant resource in the park's planning documents; and
- d) A "because statement" as to why the action will or will not result in impairment of the resource. This "because statement" should include a discussion of the context, severity, duration and timing of any impacts and also discussion of any mitigation measures, if applicable.

**a) Whether the resource is necessary to fulfill the purposes for which the park was established**

**b) Whether the resource is key to the natural or cultural integrity of the park or to the opportunity for enjoyment of the park**

All of the following park resources analyzed in the EA are among those necessary to fulfill the purposes for which the park was established and are important to the natural or cultural integrity of the park or to the opportunity for enjoyment of the park:

- Geology/Soils
- Vegetation
- Wildlife
- Special Status Species
- Prehistoric and Historic Archeological Resources

In addition, park values were enhanced by the designation of wilderness.

These resources contribute to the purpose and significance identified in the enabling legislation for the park, including the purposes and significance of the park as identified in the General Management Plan (NPS 2005) and as noted in the EA.

**c) Whether the resource is identified as a significant resource in the park's planning documents**

Of the resources noted above that would be affected by actions proposed in the EA the following resources are recognized as significant (named) in the park planning documents, notably the proclamations and legislation and the GMP significance statements (NPS 2005):

Purpose:

Geology

- Safeguard the volcanic features and geologic processes of the Great Rift.
- Provide scientific, educational, and interpretive opportunities for the public to foster an understanding and appreciation of the volcanic geology and associated natural phenomenon.

Vegetation and Wildlife

- Protect kipukas (older vegetated terrain surrounded by lava flows) and remnant vegetation areas and preserve important habitat for sage-grouse, a BLM sensitive species.

Scenic Resources and Other Values

- Perpetuate the scenic vistas and great open western landscapes for future generations.

Wilderness

- Maintain the wilderness character of the Craters of the Moon Wilderness Area and of the Wilderness Study Areas.

Cultural Resources

- Continue the historic and traditional human relationships with the land that have existed on much of this landscape for generations.

Significance:

Geology

- It contains a remarkable and unusual diversity of exquisitely preserved volcanic features, including nearly all of the familiar features of purely basaltic volcanism – craters, cones, lava flows, caves, and fissures.
- It contains most of the Great Rift area, the deepest known land-based open volcanic rift, and the longest volcanic rift in the continental United States.

Vegetation and Wildlife

- Many of the more than 400 kipukas contain representative vegetative communities that have been largely undisturbed by human activity. These communities serve as key

benchmarks for scientific study of long-term ecological changes to the plants and animals of sagebrush steppe communities throughout the Snake River Plain.

- It contains abundant sagebrush steppe communities that provide some of the best remaining sage-grouse habitat and healthiest rangelands on the Snake River Plain.
- It contains many diverse habitats for plants and animals as a result of a long history of volcanic deposition.

#### Wilderness

- It contains the largest remaining land area within the Snake River Plain still retaining its wilderness character. The Craters of the Moon Wilderness Area and Wilderness Study Areas within the monument encompass over 500,000 acres of undeveloped federal lands.

#### Scenic Resources and other Values

- It is a valued western landscape of over 750,000 acres that are characterized by a variety of scenery, broad open vistas, and pristine air quality.

**d) A “because statement” as to why the action will or will not result in impairment of the resource. This “because statement” should include a discussion of the context, severity, duration and timing of any impacts and also discussion of any mitigation measures, if applicable.**

- **Geology**

Craters of the Moon protects most of the Great Rift area, which includes the numerous lava flows and other eruptions from the volcanic rift zone. It is comparable to other volcanic rift zones such as those found in Hawaii and Iceland. Most volcanic features and landforms associated with basaltic volcanism are found along the Great Rift, including various kinds of lava flows, volcanic cones, and lava tubes. There are lava tube features, such as lava stalactites, lava curbs and remelt features. In the monument there are good examples of steam explosion pits, lava lakes, squeeze-ups, domes called tumuli, spatter cones and spatter ramparts, hornitos, blankets of ash and volcanic bombs, and low gently arching shield volcanoes.

Geological resources are necessary to fulfill the purposes for which the monument was established, are identified in park planning documents as significant, and are key to the natural integrity and enjoyment of the park. The preferred alternative would have short-term minor to moderate localized adverse impacts and long-term minor adverse impacts from modifications to this trail to increase accessibility would require the placement of a large amount of fill to bridge gaps between high and low points, to decrease the amount of trail rise and fall. Modifications would also be made to increase the width of the trail to accommodate wheelchair users and to locate new interpretive wayside exhibits and one additional bench. As a result, there would be no impairment of geological resources or values.

- **Soils**

The soils in the Craters of the Moon area are variable, reflecting the differences and interactions among parent material, topography, vegetation, climate, and time. The soils in Craters of the Moon and the surrounding area developed from rocks deposited during a sequence of geologic events that began almost 600 million years ago. The biggest differences in soil formation involve the presence or absence of lava flows and the degree of soil development on volcanic substrates. The lava flows, which occupy two-thirds of the monument, are made up of basalt lava rock. The soils on the younger basalt flows and cinder beds are limited to the initial decomposition of rock and cinders and deposition of windblown loess within crevices, cracks, and fissures (NPS 2005:110-11). Sagebrush steppe, mountain areas, and kipukas within the monument have deeper, well-formed soils. The high desert environment results in lighter colored soils with low organic matter content. Most of the soils in the monument area are silt loam to sandy loam in texture and vary in depth. They are moderately drained to well drained, except where clay horizons are present. Soils that are disturbed, not properly vegetated, or located on steep slopes are highly susceptible to water and wind erosion (NPS 2005:111).

Healthy soils are necessary to fulfill the purposes for which the monument was established and are key to the natural integrity and enjoyment of the park. Actions to widen the trail would primarily impact loose rock and volcanic features along the edges of the current trail. Because there is little soil development along the North Crater Flow Trail and because provisions in the proposed design have been made to avoid the few shrubs and trees that do grow along the trail, however, there would be negligible to minor adverse impacts to soils from construction of a wider trail with fewer steep grades. During construction, the existing trail surface and adjacent rock would be mixed, removed, and replaced with fill throughout the project areas, causing a minor, localized but long-term, adverse effect to the area's soil profile where present. Once the trail was constructed, curb cuts along the new asphalt surface would allow for drainage, but could also channel that drainage and erode pockets of soil, a long-term minor to moderate adverse effect because of the sparse distribution of soil. Taken together, actions in Alternative 2 would result in negligible to minor localized long-term adverse impacts on soils. As a result, there would be no impairment of soils resources or values.

- **Vegetation**

The North Crater Flow Trail area contains three plant communities: Limber Pine / Fernbush / Sandberg Bluegrass Sparse Vegetation, Pahoehoe Lava (Barren) and Aa Lava (Barren).

The limber pine vegetation association occurs primarily on lava and cinder fields commonly located across northeast sections of the monument and preserve. This plant community occurs at the entry and exit points of the North Crater Flow Trail along the parking area on the eastern edge. Plants on this section of the trail are primarily bitterbrush and rabbitbrush shrubs and annuals such as dwarf monkeyflower (*Mimulus nanus*) that are utilizing base sediments placed during initial road construction.

A large barren aa lava field occurs on the northwest edge of North Crater Flow Trail. This area has mostly broken lava fragments uncharacteristic from the remainder of the trail. Little soil development is associated with these fragments and thus, vegetation is extremely limited. Plants locally adapted to these conditions, namely fernbush and hotrock penstemon, are common but scattered.

The remainder of the trail overlies a portion of a large pahoehoe lava field. Vegetation growth on pahoehoe lava is quite striking because various adapted plants use soil and water resources in lava cracks and cinder collection areas. The paved trail itself has also created microhabitats along the edges for plants to establish. Predominant plants include limber pine, mock orange, prickly phlox, hotrock penstemon, and sticky cinquefoil. There are several unique and important limber pine along the trail, including a locally known "triple twist" limber pine snag.

Vegetation resources are necessary to fulfill the purposes for which the park was established, are identified in park planning documents as significant, and are key to the natural integrity and enjoyment of the park. Because there are so few plants in the project area and because those that are present grow very slowly in the scant soil that is present, loss of a small number of shrubs would be a minor to moderate adverse effect. The following plants are those that could potentially be disturbed because they are within the 15-foot construction limits for the proposed modifications to the trail: dwarf monkeyflower (*Mimulus nanus*), antelope bitterbrush (*Purshia tridentata*), syringa (*Philadelphus lewisii*), hotrock penstemon (*Penstemon deustus*), fernbush (*Chamaebatiaria millefolium*), and sticky cinquefoil (*Potentilla glandulosa*). Because there would be impacts to individual plants, but not communities, vegetation along the North Crater Flow Trail would remain intact and there would be no impairment of vegetation or the values associated with it.

- **Wildlife**

Approximately 200 species of birds, 60 mammals, 10 reptiles and at least three amphibians have been found in the monument. In addition, more than 2,000 insect species have been identified

(NPS 2005:131). The lava flow that underlies the North Crater Flow Trail is among the youngest in the Craters of the Moon Lava Field. As a result, vegetation is limited and many animal species that occur in the monument do not occur regularly in the immediate area. Rock specialist wildlife; however, such as pika, yellow-pine chipmunk, golden mantled ground squirrel, mountain bluebird, and rock wren are common. Other wildlife, including red squirrels, use the rock formations especially where isolated limber pines grow in crevices.

Healthy wildlife populations are necessary to fulfill the purposes for which the park was established, are identified in park planning documents as significant, and are key to the natural integrity and enjoyment of the park. Alternative 2 would have a series of negligible to minor adverse and some localized moderate adverse effects on wildlife but would also provide some potential negligible beneficial effects. There would be a variety of negligible to minor short- and long-term impacts to wildlife. These would include disturbance of large- and medium-sized mammals (deer, elk, coyotes) using nearby habitat would from noise and activity associated with construction. Effects would be minimized because work would take place during daylight hours. Persistent, but temporary, disturbance of birds in the vicinity would also occur as a result of construction activities. Effects would increase as human activity and presence in the area increased during project construction. Wildlife that is tolerant of human presence, however, would continue to inhabit and/or use the area. At night and when construction was complete, wildlife disturbed by the project would likely return to the area. Rock specialist species would be most sensitive to disturbance of rock piles or lava bedrock and some long-term minor adverse or localized moderate adverse effects could occur. Because individual animals, rather than wildlife populations and communities would be affected, there would be no impairment of wildlife or wildlife values.

- **Special Status Wildlife**

Craters of the Moon contains habitat for five special status wildlife species, including gray wolves, greater sage grouse, pika and pygmy rabbits. Of these only pika are found in the project area.

Viable populations of special status species are necessary to fulfill the purposes for which the park was established and are key to the natural integrity of the park. There would be no effect on gray wolf or sage grouse, however the project may affect, but would be not likely to adversely affect pika. Because effects to special status wildlife would result primarily from noise and disturbance, because mitigation measures would be applied to limit impacts, and because the proposed actions under Alternative 2 are not expected to result in the loss of individuals or in jeopardy to species, there would be no impairment of special status species or values associated with them.

- **Prehistoric and Historic Archeological Resources**

A cultural resources records search for archaeological and historical information in the project area was made by the park's former cultural resources specialist (now at Hagerman Fossil Beds / Minidoka). There are no known sites in the project area (adjacent to the trail), however there are sites located nearby.

Intact prehistoric and historic archeological resources are necessary to fulfill the purposes for which the park was established, are identified in park planning documents as significant, and are key to the cultural integrity and enjoyment of the park. Because mitigation measures would be employed in the unlikely event that archeological resources are found, Alternative 2 would have no adverse effect on and would not impair archeological resources or the values for which they have been protected.

## **Conclusion**

Because there would be no significant adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the park's establishing legislation, (2) key to the natural or cultural integrity of the park or to opportunities for the enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other

relevant National Park Service planning documents, there would be no impairment of park resources and values.