CHAPTER I: PURPOSE AND NEED

Background

The Crater Rim Drive Rehabilitation Environmental Assessment (EA) was prepared to help the National Park Service (NPS) evaluate the rehabilitation of 2.8 miles of Crater Rim Drive. The project addresses the section of Crater Rim Drive beginning just after the junction with State Highway 11 (just before the park entrance station) and continuing to the gate just west of the Jaggar Museum parking area. This project was initiated in 2003 to address road issues along 4.6 miles of Crater Rim Drive. The eruption of the Halemaumau Crater, and subsequent closure of Crater Rim Drive beyond Jaggar Museum, prompted a reduction in the length of road addressed by this rehabilitation project.

This EA provides an opportunity for public input on the proposed 2.8 mile Crater Rim Drive rehabilitation. The EA outlines the two different alternatives being considered. It characterizes the impacts of these different alternatives on natural and cultural resources, park operations, park visitors, and commercial operations. The public is provided 30 days to comment on this EA.

Hawaii Volcanoes National Park, which is managed by the National Park Service, is located on the southern portion of Hawaii Island, State of Hawaii (see Figure 1). Located within the 333,000-acre national park are two of the world's most active volcanoes, Kilauea and Mauna Loa. The park has significant geological, biological, and cultural resources. An average of one and a half million recreational visitors visit the park each year, with the highest visitor use occurring within the proposed project area. Another one and a half million non-recreational visitors pass through the park each year. Most non-recreational visitors are just passing through on State Highway 11; however park employees, area residents, and vendors regularly enter and use the road in the proposed project area for business and errands.

Purpose and Need for the Project

The NPS proposes to rehabilitate 2.8 miles of Crater Rim Drive, beginning just after the junction with State Highway 11 (just before the park entrance station) and continuing to the gate just west of the Jaggar Museum parking area. This road segment receives the highest visitor use of all the roadways in the park. Users of this road segment include personal vehicles, commercial tour buses, vendor and employee trucks, bicycles and pedestrians. The purpose of the proposed project would be to maintain the road for continued visitor and management use.

Action is needed because:

- The pavement surface is deteriorated and in need of replacement.
- The road's structural section needs to be improved to accommodate heavy vehicle loads, and the road's average daily traffic volume.
- The pavement width is inconsistent, averaging 21 feet, but ranging from 18 to 26.5 feet throughout the project area.

- There are narrow widths and areas with steep shoulder slopes that make passage difficult for vehicles with longer wheelbases and heavier axle weights, such as tour buses, semi tractors, construction vehicles, and vehicles towing trailers.
- Adjacent parking areas at Kilauea Visitor Center, Volcano House, Steam Vents, and Jaggar Museum need to be rehabilitated to replace deteriorated pavement, provide for accessibility, improve drainage, and to protect resources.
- Informal pullouts need to be removed and rehabilitated to protect resources.
- The road condition is beyond the scope of the park's cyclic maintenance program; large-scale road repairs are needed.

The road would be rehabilitated in a manner consistent with the goals established in the 1984 Park Road Standards (NPS 1984), which states:

The purpose of park roads remains in sharp contrast to that of the Federal and State highway systems. Park roads are not intended to provide fast and convenient transportation; they are intended to enhance visitor experience while providing safe and efficient accommodation of park visitors and to serve essential management access needs.

Proposed actions would be consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1983). The project roadway and a number of adjoining road features lie within the Crater Rim Drive Historic District which is eligible for listing on the National Register of Historic Places (National Register). This historic district also contributes to the National Register eligibility of the much larger 5,000 acre Crater Rim Historic District, which includes the road and other NPS administrative and visitor use features.

Laws and Other Plans Related to the Project

Project goals, strategies, and potential impacts need to be evaluated in the context of park purpose, which is based on the park's enabling legislation and other federal laws that affect management of the park. The NPS *Management Policies 2006* (NPS 2006a) provide guidance for implementing these laws.

Legislation

The 1916 Organic Act (16 USC 1) establishing the National Park Service states the purpose of the national parks is "to conserve the scenery and the natural and historic objects and the wildlife 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."

Congress established Hawaii National Park (later to become Hawaii Volcanoes National Park) on August 1, 1916 (Public Law 95-635, 16 USC Sec. 1132), declaring:

That the tracts of land on the Island of Hawaii . . . shall be perpetually dedicated and set apart as a public park or pleasuring ground for the benefit and enjoyment of the people of the United States . . . and provide for, . . . the preservation from injury of all timber, birds, mineral deposits, and natural curiosities or wonders within said park, and their retention in their natural condition as nearly as possible.

Park Purpose and Significance

The park's Strategic Plan (NPS 2000) states that the Hawaii Volcanoes National Park mission is:

To protect, conserve, and study the volcanic landscapes and associated cultural and natural resources and processes, and to facilitate safe public access to active volcanism, scenic vistas, diverse geographic settings, and wilderness for public education and enjoyment. Implicit in this purpose is the preservation of Native Hawaiian spiritual and inspirational values, carried out through the practice of traditional Hawaiian cultural activities in the park.

In 2009 Hawaii Volcanoes National Park began development of a General Management Plan and Environmental Impact Statement that will guide management of the park for the next 15-20 years. The following summary statement of the park's purpose and significance was developed for Hawaii Volcanoes National Park in 2010 as part of the General Management Plan process (NPS 2010).

Park Purpose

Hawaii Volcanoes National Park protects, studies, and provides access to Kilauea and Mauna Loa, two of the world's most active volcanoes; and perpetuates endemic Hawaiian ecosystems and the traditional Hawaiian culture connected to these landscapes.

Park Significance

Park significance statements capture the park's importance to the nation's natural and cultural heritage. Understanding park significance helps managers make decisions that preserve the resources and values that are a part of the park's purpose. The following significance statements were developed for Hawaii Volcanoes National Park in 2010 as part of the long-range planning for the park's General Management Plan. These statements take into account park legislation and previous management and resource plans:

- Hawaii Volcanoes National Park protects and interprets the largest and most continuously active shield volcanoes in the United States, and provides the best physical evidence of island building processes that continue to form the 2,000 mile long Hawaiian archipelago.
- Hawaii Volcanoes National Park's active volcanoes serve as a living laboratory for scientific investigations that began over a century ago and continue to advance global understanding of volcanic processes.

- Hawaii Volcanoes National Park protects, restores, and studies unique and diverse ecosystems and endemic species that are the result of over 30 million years of evolution on an active volcanic landscape, wide climate variation, and the extreme isolation of the Hawaiian Islands.
- Hawaii Volcanoes National Park encompasses the largest and most ecologically diverse wilderness in the Pacific Islands.
- Hawaii Volcanoes National Park embraces the Native Hawaiian spiritual significance of this landscape and interprets related cultural traditions.
- Hawaii Volcanoes National Park encompasses sites, structures, objects and landscapes that document over 600 years of human life and activities on an active volcanic landscape.
- Hawaii Volcanoes National Park provides access to two of the most active volcanoes in the world and an opportunity to understand and appreciate the distinctive geology and natural and cultural adaptations to the land.

Objectives of the Project

Objectives are "what must be achieved to a large degree for the action to be considered a success" (NPS 2001a). Alternatives selected for detailed analysis must meet project objectives to a large degree and resolve the purpose and need for action. Objectives must be grounded in the park's enabling legislation, purpose, significance, and mission goals, and be compatible with direction and guidance provided by the park's management plan, strategic plan, other management guidance, and federal law.

Objectives of the proposed action are:

- Maintain the road for visitor and park administrative use.
- Improve the road for all users.
- Remedy structural deficiencies to accommodate average daily traffic loads and avoid the need for large-scale road repairs for another twenty years, aside from cyclic maintenance and natural disasters.
- Provide for accessible parking in parking areas.
- Minimize or mitigate impacts to natural and cultural resources along the road corridor, including the features that contribute to the road's eligibility for listing on the National Register of Historic Places.
- Minimize or mitigate impacts to threatened and endangered species.

• Preserve management options for future road uses as may be identified in the upcoming General Management Plan Environmental Impact Statement.

Scoping

Scoping is an effort that provides an opportunity for agencies and the general public to help determine issues that would be addressed in the EA.

Internal Scoping

In 2002 a NPS Transportation Assistance Group (TAG) assessed the park's transportation system. Issues identified for Crater Rim Drive included its narrow width and steep drop offs, as well as its use by both tour buses and bicyclists. A park interdisciplinary team was formed to address these issues. The team identified goals, objectives, and areas for Crater Rim Drive rehabilitation. An initial project was proposed to rehabilitate portions of the road. Through the Federal Highways Administration (FHWA) ground and geotechnical surveys, a historic road inventory, historic resource studies, and engineering planning and design were conducted to better understand the resources and to facilitate future proposed actions.

- Meetings were conducted with NPS and FHWA, with the first meeting in July 2003.
- Interdisciplinary scoping meetings were held with staff from the park, FHWA, and the Hawaiian Volcano Observatory from July to September 2004.

Agency Scoping

- Section 7 of the Endangered Species Act (ESA) requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) on any action that may affect endangered or threatened species or candidate species, or that may result in adverse modification of critical habitat. As part of the consultation process for this EA, NPS initiated informal Section 7 consultation with the USFWS on 8/22/05 for the Hawaiian goose/nene (*Branta sandvicensis*) and Hawaiian catchfly (*Silene hawaiiensis*). In a letter dated 3/29/06, the U.S. Fish and Wildlife Service concurred with the park's recommendations to avoid/minimize impacts to nene and *S. hawaiiensis* and the park's determination that the proposed action is not likely to adversely affect these two species. The project and mitigations have continued to be discussed with the U.S. Fish and Wildlife Service throughout the development of the project and this EA. Informal consultation with the U.S. Fish and Wildlife Service would continue with consultation on this EA and all vegetation and wildlife special status species included in the impact analysis.
- The State Historic Preservation Division was contacted and the project discussed informally. The park consulted with the State Historic Preservation Officer (SHPO) on determinations for National Register eligibility for cultural resources within the proposed project's area of potential effect (see Chapter III). The SHPO concurred with the park's recommendations.

- A meeting was held with the park's kupuna consultation group (an informal Native Hawaiian group) in July 2004. Closing the Steam Vents parking area and relocating it was discussed. A comment was made that "culturally we have adapted, leave it the way it is" (NPS 2004).
- The Section 106 consultation would continue through the Crater Rim Drive Rehabilitation design process and including consultation on this environmental assessment. NPS would consult with the State Historic Preservation Officer/State Historic Preservation Division, Historic Hawaii Foundation, and Native Hawaiian organizations, including the Office of Hawaiian Affairs, Hui Malama I Na Kupuna O Hawaii Nei, and the Big Island Burial Council. As part of the consultation process for this EA, the NPS would continue to identify concerns, assess the potential for impacts on cultural resources, develop appropriate mitigation measures, and seek concurrence with the determination of effect.

Public Scoping

A press release was sent out August 11, 2004, announcing two public scoping meetings on the Crater Rim Drive proposed project. The meetings were held in Naalehu on September 7, 2004, and in Volcano on September 8, 2004. Comments from the public included the following topics: the entrance station placement, design, traffic flow, and traffic management; add another entrance station on the Mauna Loa Road segment; have employees use an alternate entrance to reduce congestion at the entrance station; improve accessibility; Volcano House parking and the concession operation; bus parking and limit where they can park; better directional signage; start mass transit; improve pedestrian crossing between Kilauea Visitor Center and Volcano House and between Volcano House and Volcano Art Center; Native Hawaiians go to Steam Vents for cultural practices/religious reasons; Steam Vents parking area placement, capacity, area already impacted, and move parking away from vents; ohelo berry pickers and parking; road intersections, road width and roadside parking; need traffic calming techniques to reduce speeding; trails/pathways improved; pullouts; improve conditions for bicycling; restrooms; and picnic areas.

Issues and Impact Topics

As a result of the scoping effort, consultation with the USFWS, and discussions with the State Historic Preservation Division, members of the kupuna consultation group, and the public, issues were identified that require detailed analysis in this EA. Other issues were identified that do not require detailed analysis.

Issues

Issues are problems or concerns that initiated the need for federal action or may result from the action itself. Issues and concerns affecting this EA were identified from past NPS planning efforts; meetings with park managers, FHWA staff, and interested citizens, and input from other state and federal agencies. The primary issues are:

Visitor Use and Experience

- This road segment receives the park's highest and most concentrated visitor use.
- There is a need to improve parking to better accommodate visitors and provide for accessibility.
- Visitor experience may be affected by the degraded condition of the roadway.

Safety

- The road has inconsistent and narrow width and some steep non-recoverable slopes on roadway shoulders (meaning errant vehicles would continue to the bottom of slopes without the ability to recover control).
- There are concerns with cars, buses, pedestrians, and bicyclists sharing the road.
- There is unsafe roadside parking.

Natural and Cultural Resources

- There are impacts on natural resources, including vegetation and threatened and endangered species.
- There are impacts on Native Hawaiian traditional practices and sites.
- There are impacts on historic features and cultural landscapes.

Park Operations

- The road is in poor condition. The existing asphalt pavement has reached the end of its service life and must be replaced. Maintaining the current practice of road patching and minor asphalt pavement overlays does not address the road's structural deficiencies that contribute to the pavement deterioration.
- The condition of the road is deteriorating due to insufficient sub base in some areas.
- Vehicles with heavy axle weights are placing a strain on the road structure. The road's structural section needs to be improved to accommodate heavy vehicle loads.
- Improved traffic flow is needed at the entrance station.

Issues identified during scoping that are outside this EA's scope include:

- There is overcrowding due to the number of visitors, cars, buses, and visitors staying longer.
- Management of bus parking.
- The lack of interpretive features and contact with park interpretive staff.
- Improved visibility and surrounding appearance of key visitor areas.
- Volcanic emissions that affect air quality.
- There are no bicycle lanes.

Impact Topics Selected for Detailed Analysis

Impact topics were identified based on agency and public comment and federal laws, regulations, policies, and Executive Orders. Specific impact topics are identified to focus the analysis of alternatives on the most relevant subject matter and resources of concern. A brief rationale is given for the selection of each impact topic, as well as the rationale for dismissing impact topics from further consideration.

Geologic Resources

The NPS *Management Policies 2006* state, "the NPS will preserve and protect geologic resources as integral components of park natural systems" (NPS 2006a). Natural geologic processes, which include volcanic activity, will be allowed to proceed unimpeded. Intervention is only permitted when directed by Congress; necessary in emergencies that threaten human life and property; there is no other feasible way to protect natural resources, park facilities, or historic properties; or it is necessary to restore impacted conditions and processes, such as restoring habitat for threatened or endangered species. The project would be occurring in an area with numerous geologic resources, including a volcano; faults, cracks, lava tubes, collapse features, and geothermal features. Therefore, geological resources are addressed as an impact topic.

Geologic Hazards

As stated in the Hawaii Volcanoes National Park *Strategic Plan* (NPS 2000) the park's mission is "to protect, conserve, and study the volcanic landscapes . . . and to facilitate safe public access to active volcanism" The geologic processes that are a part of active volcanism are sometimes hazardous. NPS *Management Polices 2006* states that geologic processes would be addressed during planning and other management activities in an effort to reduce hazards that can threaten the safety of park visitors and staff and the long-term viability of the park infrastructure (NPS 2006a). This project takes place in an area where these hazards exist; therefore geologic hazards are addressed as an impact topic.

Vegetation

NEPA requires federal agencies to evaluate impacts of proposed actions on vegetation. Further, the NPS *Management Policies 2006* state that the NPS "will try to maintain all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity, and genetic and ecological integrity of the plant and animal species native to those ecosystems" (NPS 2006a). Vegetation is present throughout the project area. Therefore, vegetation is addressed as an impact topic.

Wildlife

NEPA requires federal agencies to evaluate impacts of proposed actions on wildlife. Further, the NPS *Management Policies 2006* state that the NPS "will try to maintain all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity, and genetic and ecological integrity of the plant and animal species native to those ecosystems" (NPS 2006a). Wildlife is present throughout the project area. Therefore, wildlife is addressed as an impact topic.

Vegetation Special Status Species (Threatened and Endangered Species and Species of Concern) The Endangered Species Act of 1973, as amended (16 USC 1531 et seq.) directs all federal agencies to consider the potential effects of their actions on species listed as threatened or endangered. If the NPS determines an action may adversely affect a federally listed species, consultation with the U.S. Fish and Wildlife Service is required to ensure the action will not jeopardize the continued existence of the species or result in the destruction or adverse modification of critical habitat. The NPS *Management Policies 2006* state that potential effects of agency actions will also be considered on state or locally listed species (NPS 2006a). The NPS is required to control access to important habitat for such species and to perpetuate the natural distribution and abundance of these species and the ecosystems upon which they depend.

The threatened Hawaiian catchfly (*Silene hawaiiensis*) is the only botanical species that is federally listed as an *endangered* or *threatened species* or a *species of concern* within or adjacent to the project area. There is a potential for the effect to be greater than minor, therefore, *Silene hawaiiensis* is addressed under Vegetation Special Status Species as an impact topic.

There are four endangered birds within or adjacent to the project area: The Hawaiian goose or nene, the Hawaiian hawk or io, the Hawaiian Petrel or uau, and the Band-rumped Storm Petrel or akeake. There is one endangered mammal, the Hawaiian hoary bat or opeapea, within or near the project area. There is a potential for impacts to be greater than minor, therefore, these four endangered birds and the Hawaiian hoary bat are addressed under Wildlife Special Status Species as an impact topic.

Cultural Resources

The National Historic Preservation Act of 1966, as amended, and the Advisory Council's implementing regulations at 36 CFR Part 800 require the consideration of impacts on cultural resources. There are archeological resources, historic structures, cultural landscapes, and ethnographic resources within the potential area of effect. The road itself has been determined eligible for listing on the National Register of Historic Places (National Register) as a historic district. There is a potential for effects to be greater than minor on these resources, therefore, archeological resources, historic structures and cultural landscapes, and ethnographic resources are addressed as impact topics.

Park Operations

The project would rehabilitate the road, remedy structural deficiencies to accommodate traffic loads, and provide another 20 to 30 years of service. The rehabilitation would result in a road that would require less time and expense to maintain. Traffic delays during construction and road closures would have an impact on staff working in the park, including emergency responders and routine activities. Impacts may be greater than minor; therefore, park operations are addressed as an impact topic.

Visitor Use and Experience

The 2.8 mile road segment is in the area of the park that receives the highest visitor use. An objective of the project is to improve the road for all users. The proposed rehabilitation would address the concerns arising from inconsistent and narrow pavement width and steep shoulder slopes. Parking areas would be rehabilitated to better accommodate visitors and provide for

accessibility. There would be traffic delays during construction. There is a potential for impacts to be greater than minor; therefore, visitor use and experience is addressed as an impact topic.

Commercial Operations

In the vicinity of the 2.8 miles proposed for rehabilitation, there are two concessioners (Volcano House and Hawaii Natural History Association), one special use permit (Kilauea Military Camp), and one cooperative agreement (Volcano Art Center). There are over 100 Commercial Use Authorizations that have been issued for operations in the park, with most of them using at least a portion of Crater Rim Drive that is within the project area. Therefore, commercial operations are addressed as an impact topic.

General Construction Schedule and Costs

The Federal Lands Highway Program (FLHP) would not fund the routine maintenance activities described in the No Action Alternative; funding would come from other sources. These other sources generally have less funding available. Any road rehabilitation proposed would take longer because it would be done as multiple projects, in shorter segments, and over a number of years, rather than one project in a shorter amount of time.

The FLHP would fund Alternative 2, the Preferred Alternative. This would enable the road rehabilitation to be done as one project. It is currently scheduled for funding in Fiscal Year 2011 or later. The NPS applied for and received Public Lands Highway Discretionary (PLH-D) funds to complete preliminary engineering and compliance work, and PLH-D funds may also contribute to future design and construction stages. The work in Alternative 2 would take approximately six months and occur in approximately three to four segments. Only portions of the project area would be under construction at any given time. Depending on how construction coincides with the nene breeding season, the work schedule may need to be altered and lengthened.

Impact Topics Considered and Dismissed From Further Analysis

The following impact topics have been considered and dismissed from further analysis. These topics would not be affected by the alternatives or the impacts would be negligible or minor.

Topography, Soils, and Drainage

NPS *Management Policies 2006* require the consideration of impacts on topography, soils, and drainage (NPS 2006a). The proposed action is in areas that have been previously disturbed by past construction activities. No major earthmoving activities are proposed that would alter the topography.

The Crater Rim Drive Rehabilitation Project Rare Plants Survey (NPS, Belfield 2005) summarizes information from a previous 1987 paper (Decker 1987): The soils in the project area are most developed in the east where rainfall is highest and the vegetation is most developed and are poorer in the southwest area of the project. All soils are developed from parent material

originating from volcanic activity of Kilauea volcano. The road corridor from Steam Vents to Kilauea Military Camp is in an area of geothermal activity. The soils are well-drained and there are concentrations of deep earth cracks. From Kilauea Military Camp to Hawaiian Volcano Observatory, a significant substrate change takes place with consolidated tephra, rock fall, porous soils, and ash pockets.

Under both alternatives there would be little to no change in natural drainage patterns. There are constructed features, such as culverts, that facilitate drainage and are within the project area; the drainage would be maintained. There are some areas where water collects; this is generally associated with constructed road features such as the road edge by the entrance station, parking areas, and the road segment below Volcano House. These areas are included in the action alternative where drainage would be improved; however there would be no unacceptable impacts. Because impacts to topography, soils, and drainage would be localized, long-term, beneficial, and minor, this impact topic is dismissed as an impact topic.

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 and to enhance the quality of water resources and to prevent, control, and abate water pollution. The 2006 NPS *Management Policies* provides direction for the preservation, use, and quality of water originating, flowing through, or adjacent to park boundaries. The NPS seeks to restore, maintain, and enhance the quality of all surface and ground waters within the parks consistent with the 1972 Federal Water Pollution Control Act, as amended, and other applicable federal, state, and local laws and regulations. There is no surface water within the project area.

Under both alternatives, mitigation measures would reduce the level of impact to negligible. To minimize the potential for water pollution from erosion, sediment traps, erosion checks, and/or filters would be constructed preceding or following all culvert drains (if such drains are required) and in all other ditches before the water (runoff) leaves the project construction limits. At all cut and fill areas, erosion and sedimentation control would be implemented to minimize impacts to water quality. Surface restoration and revegetation of disturbed soils (as appropriate for the area, with most revegatation occurring naturally) would be implemented to minimize long-term soil erosion. Water needed for construction and dust control would come from the existing developed water systems within the park until water supplies are low (park is on water catchment). The park would give one week notice to the contractor when the park-supplied water would be discontinued. The contractor would then need to haul water (as the park does when water supplies are low) obtained from county water supplies.

There would be no unacceptable impacts. The impacts to water resources would be negligible. Therefore, water resources are dismissed from further analysis.

Wetlands and Floodplains

Executive Order 11990 (*Protection of Wetlands*) requires an examination of impacts to wetlands. The 2006 *NPS Management Policies* and Director's Order – 77-2, provide guidelines for

proposed actions in floodplains. There are no wetlands or floodplains within or adjacent to the project area. There would be no unacceptable impacts. The impacts to wetlands and floodplains would be negligible. Therefore, water wetlands and floodplains are dismissed from further analysis.

Wilderness and Wild and Scenic Rivers

The Wilderness Act of 1964 (16 USC 1131 *et seq.*) requires an assessment of the proposed action's impact on wilderness values, including the primeval character and influence of the wilderness, the preservation of natural conditions (including the lack of human-made noise), and assurances there would be outstanding opportunities for solitude. Approximately 40 percent of the park is designated wilderness, distributed in four units: Mauna Loa, Kau Desert, Olaa, and Napau. None of these units encompass the Crater Rim Drive project area, which is located about five miles from the nearest wilderness boundary.

There are no surface water features or rivers in the project area designated under the Wild and Scenic Rivers Act of 1968, as amended (16 USC 1271-1287). There would be no unacceptable impacts. The impacts to wilderness resources and wild and scenic rivers wetlands and floodplains would be negligible. Therefore, wilderness resources and wild and scenic rivers are dismissed from further analysis.

Air Quality

The Clean Air Act of 1963, as amended (42 USC 7401 *et seq.*) stipulates that federal land managers have an affirmative responsibility to protect a park's air quality-related values from adverse air pollution impacts. These values include effects on visibility, plants, animals, soils, water quality, cultural resources, and human health. The park is designated as a federal "Class 1" air shed. This places the most stringent constraints on construction and operation of pollution-emitting facilities in the park's vicinity. Under both alternatives, mitigation measures would be implemented to control dust. Mitigation measures would also control vehicle emissions both from non-operation related construction vehicles (i.e. worker vehicles traveling from point to point, not construction vehicles involved in ongoing work) and other vehicles waiting for construction delays to end. Both would be required to limit idling of engines (engines turned off after idling for three minutes). Mitigation would reduce impacts, but even without mitigation there would be no unacceptable impacts. Potential impacts to air quality would be local, short-term, and negligible to minor at the park level. Therefore, air quality is dismissed as an impact topic.

Greenhouse Gas Emissions, Climate Change, and Energy Conservation

There is strong evidence linking global climate change to human activities, particularly greenhouse gas emissions associated with the burning of fossil fuels (IPCC 2007). Hawaii Volcanoes National Park is actively engaged in reducing greenhouse gas emissions and energy use associated with park facilities and operations. In 2007 the park instituted numerous parkwide goals related to reducing greenhouse gases as part of the NPS Climate Friendly Parks

Program (NPS 2007b). Since 2007, Hawaii Volcanoes has reduced the park's greenhouse gas emissions by 19%.

Activities associated with the 2.8 mile Crater Rim Drive rehabilitation would result in an increase in fossil fuel consumption due to construction activities. The increase would be temporary; there would be no long-term increase in fossil fuel consumption. The park has a 'no idling' campaign that requires all vehicles to be turned off if idling more than three minutes. On this project, this rule would be enforced for all non-operation related construction vehicles (i.e. workers traveling from point to point) and visitor vehicles waiting in construction delays. To reduce the amount of vehicles stacked in traffic delays at construction sites, a temporary card gate would be installed that would allow employees of NPS/HAVO, Hawaii Volcanoes Observatory, and possibly Kilauea Military Camp to enter the park at an alternate site. This would reduce up to 20% of the vehicles stacked in traffic delays over the duration of the construction project. The construction contractor would also be encouraged to use alternative fuels to power their equipment.

Construction would require the use of depletable resources and energy, but the activities would not be significant in scope, and the construction period is temporary. The existing asphalt on the road would be pulverized and recycled into the structural base of the rehabilitated road, reducing the need for new depletable resources and keeping waste out the landfills. The resulting improved road would require considerably less maintenance and materials over the service life of the road. There project would not result in an increase in vehicle traffic in the park other than the temporary construction-associated vehicles, which would be limited to the duration of the project. The resulting improved road for all users would assist in promoting the use of alternative transportation modes in the park in the future.

The project would result in a minor, short-term increase in greenhouse gas emissions for the duration of the project. There would be no unacceptable impacts. Therefore greenhouse gas emissions, climate change, and energy conservation is dismissed as an impact topic.

Soundscapes

NPS *Management Policies 2006* (NPS 2006a) state that the park's natural soundscape resources "encompass all the natural sounds that occur in the park, including the physical capacity for transmitting those natural sounds and the interrelationships among natural sounds of different frequencies and volumes." It also states that "the NPS will preserve, to the greatest extent possible, the natural soundscapes of parks." The frequencies, magnitudes, and durations of human-caused sound considered acceptable vary in the park, and are generally greater along roadways and in developed areas and less in undeveloped areas. The entire project is along a roadway and adjacent to a road receiving high visitor use. The project section from the entrance station to Volcano House is within a more concentrated developed area than the section from Volcano House to the Jaggar Museum. In this latter section, development is spread out along the road and includes the Steam Vents parking area, Kilauea Military Camp, Kilauea Overlook and Picnic Area, Jaggar Museum/Hawaiian Volcano Observatory, as well as the road and trails.

As occurs with the No Action Alternative, construction under the Preferred Alternative would be limited to the daytime. For both alternatives, the No Action and the Preferred, the impacts to soundscapes would be limited to the duration of the proposed project. The soundscape associated with road improvements would be local, short-term, and minor. The soundscape impacts on wildlife special status species (nene) and ethnographic resources are addressed under these considered but dismissed impact topics. Therefore, soundscapes were dismissed from further analysis.

Viewsheds

The park was established in part due to its accessible active volcanism. The viewsheds of the park, including its geothermal, natural, and cultural features, are affected by existing roads and vehicles transiting the project area. Viewsheds on either side of Crater Rim Drive could be affected by changes in the roadway profile and there could be impacts to the viewshed during construction. Viewsheds are addressed under the cultural landscape impact topic. Therefore, viewsheds is dismissed as from further analysis.

Night Sky/Natural Lightscapes

2006 NPS *Management* Policies (NPS 2006a) state that "the service will preserve, to the greatest extent possible, the natural lightscapes of parks, which are natural resources and values that exist in the absence of human-caused light." Under both alternatives there would be no construction at night and there would be no construction-associated night lighting. Pathway lighting would be added to some sidewalks leading from the front door of the Kilauea Visitor Center to the overflow parking area, and the sidewalk leading from the Jaggar Museum front door to the parking area. The lighting would be dim, low to the ground, and directed downward. Potential impacts to the night skies would be local, long-term, and negligible. There would be no unacceptable impacts. Therefore, night sky was dismissed as an impact topic.

Socioeconomics

National Park Service policy is to maintain all the components and processes of naturally evolving park ecosystems while fulfilling the social and economic requirements of present and future generations. Crater Rim Drive would remain open under both alternatives. Potential impacts to socioeconomics would be local, short-term, and negligible. There would be no unacceptable impacts. Therefore, socioeconomics is dismissed from further analysis.

Prime or Unique Farmlands

The Council on Environmental Quality requires federal agencies to assess the effect of their actions on farmland soils classified by the U.S. Department of Agriculture (USDA) as "prime" or "unique." These are defined as soil that particularly produces general crops such as fruits, vegetables, and nuts. There are no prime or unique farmlands in the park. There would be no unacceptable impacts. Therefore, prime or unique farmlands are dismissed from further analysis.

Indian Trust Resources

Secretarial Order 3175, Indian Trust Assets, requires federal agencies to address environmental impacts of proposed projects on Indian trust resources. There are no Indian trust resources in the park. There would be no unacceptable impacts. Therefore, this topic is dismissed from further analysis.

Environmental Justice

Executive Order 12898, Environmental Justice in Minority and Low-Income Populations, requires federal agencies to take the appropriate steps to identify and avoid any disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority and low-income populations. The populations in the park region are considered mixed and not predominantly minority or low-income. No alternative under consideration would have disproportionate impacts on the health or environment of minority or low-income populations or communities. There would be no unacceptable impacts. Therefore, environmental justice was dismissed from further analysis.