

National Park Service  
U.S. Department of the Interior

Hawai'i Volcanoes National Park  
July 2022  
Public Draft



## Hawai'i Volcanoes Disaster Recovery Project Environmental Assessment



Photograph credits: Left – NPS photo by J. Ferracane; Top Right – USGS photo; Bottom Right – USGS photo.



## PUBLIC COMMENT

Hawai'i Volcanoes National Park encourages public participation throughout the National Environmental Policy Act process. We are offering several ways for you to provide feedback.

- Visit <https://parkplanning.nps.gov/HAVODisasterRecovery> for project information and to submit your comments.
- We have a phone line dedicated to receiving your comments on this project. You can leave a detailed message or request that someone call you back at (808) 460-6212.
- Those who would prefer printed copies of the materials available on the website, can also call (808) 460-6212, or email [havo\\_planning@nps.gov](mailto:havo_planning@nps.gov)

This environmental assessment will be available for public review for a minimum of 30 days.

Comments will not be accepted by fax, e-mail, or any other way than those specified above. Bulk comments in any format (hard copy or electronic) submitted on behalf of others will not be accepted. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

## ACRONYMS AND ABBREVIATIONS

AFM	automated fee machine
Annex building	Geochemistry Annex building
APE	area of potential effect
CBA	choosing by advantages analysis
CCC	Civilian Conservation Corps
CFR	Code of Federal Regulations
CLI	cultural landscape inventory
DLNR	Hawai'i Department of Land and Natural Resources
EA	environmental assessment
GMP	General Management Plan
GSF	gross square feet
HALS	Historic American Landscape Survey
HVO	U.S. Geological Survey Hawaiian Volcano Observatory
KMC	Kilauea Military Camp
KOP	key observation point
KVC/HQ	Kīlauea Visitor Center/Headquarters
NEPA	National Environmental Policy Act
nm	nanometer
NRHP	National Register of Historic Places
Okamura building	Reginald T. Okamura building
PEPC	Planning, Environment and Public Comment
PIERC-KFS	U.S. Geological Survey Pacific Island Ecosystems Research Center-Kīlauea Field Station
ROD	Rapid 'Ōhi'a Death
USGS	U.S. Geological Survey
VA	Value Analysis
VBDM	Value Based Decision Making
VEOC	Visitor Emergency Operations Center

## TABLE OF CONTENTS

Public Comment.....	i
Acronyms and Abbreviations .....	ii
1 Purpose and Need .....	1
1.1 Introduction .....	1
1.2 Need for the Proposal .....	1
1.3 Impact Topics Considered .....	2
1.4 Impact Topics Dismissed.....	4
2 Alternatives .....	6
2.1 No-Action Alternative.....	6
2.2 Proposed Action.....	6
2.2.1 Decision Making Process for the Siting of the New Visitor Center and USGS Field Station .....	6
2.2.2 Proposed Action Description .....	8
2.2.3 Uēkahuna Bluff.....	9
2.2.4 USGS Field Station.....	9
2.2.5 Visitor Center.....	10
2.2.6 Park Entrance .....	11
2.2.7 Resources Management Complex .....	11
2.2.8 Proposed Action Activities.....	12
2.2.9 Mitigation Measures and Design Features of the Proposed Action .....	14
2.3 Alternatives Considered but Dismissed and Design Elements Refined.....	18
2.3.1 Uēkahuna Bluff.....	19
2.3.2 Kīlauea Visitor Center/Headquarters Area .....	19
2.3.3 Replacement Visitor Center and USGS Field Station Location .....	19
2.3.4 Park Entrance .....	21
2.4 Proposed Action Design Changes .....	22
3 Affected Environment and Environmental Consequences .....	23
3.1 Cumulative Impact Scenario .....	23
3.2 Nēnē.....	24
3.2.1 Affected Environment .....	24
3.2.2 No-Action Alternative .....	25
3.2.3 Proposed Action .....	25

3.2.4	Cumulative Impacts .....	25
3.3	Native Forest Removal.....	26
3.3.1	Affected Environment .....	26
3.3.2	No-Action Alternative .....	26
3.3.3	Proposed Action.....	26
3.3.4	Cumulative Impacts .....	27
3.4	Viewsheds .....	27
3.4.1	Affected Environment .....	27
3.4.2	No-Action Alternative .....	28
3.4.3	Proposed Action.....	29
3.4.4	Cumulative Impacts .....	33
3.5	Cultural Landscapes and Historic Structures .....	34
3.5.1	Affected Environment .....	34
3.5.2	No-Action Alternative .....	38
3.5.3	Proposed Action.....	39
3.5.4	Cumulative Impacts .....	41
3.6	Ethnographic Resources.....	42
3.6.1	Affected Environment .....	42
3.6.2	No-Action Alternative .....	43
3.6.3	Proposed Action.....	43
3.6.4	Cumulative Impacts .....	44
3.7	Health and Human Safety.....	44
3.7.1	Affected Environment .....	44
3.7.2	No-Action Alternative .....	45
3.7.3	Proposed Action.....	45
3.7.4	Cumulative Impacts .....	46
3.8	Visitor Use and Experience.....	46
3.8.1	Affected Environment .....	46
3.8.2	No-Action Alternative .....	47
3.8.3	Proposed Action.....	47
3.8.4	Cumulative Impacts .....	48
3.9	Park and U.S. Geological Survey Operations.....	48
3.9.1	Affected Environment .....	48

3.9.2	No-Action Alternative .....	49
3.9.3	Proposed Action .....	50
3.9.4	Cumulative Impacts .....	50
4	Consultation and Coordination .....	52
4.1	National Historic Preservation Act .....	52
4.2	Endangered Species Act .....	52
4.3	Civic Engagement Summary .....	52
4.3.1	Agency Outreach .....	52
4.3.2	Kūpuna Outreach .....	52
4.4	Scoping Summary .....	53
4.4.1	Agency Outreach .....	53
4.4.2	Kūpuna Outreach .....	53
4.4.3	News Release and Planning, Environment and Public Comment Website .....	53
4.5	Environmental Assessment Distribution: Persons, Organizations, and Agencies Contacted	54
	References Cited and Reviewed .....	55

## LIST OF FIGURES

Figure 1. Area of potential effect overview map. ....	35
---	----

## LIST OF TABLES

Table 1. Issues and Impact Topics Retained for Detailed Analysis .....	2
Table 2. Impact Topics Dismissed from detailed Analysis .....	4
Table 3. Project Elements Viewed from Each Key Observation Point Location .....	29

## APPENDICES

Appendix A Proposed Action Figures

Appendix B Civic Engagement Summary and Comment Analysis Report

Appendix C Scoping Summary and Comment Analysis Report

Appendix D Final Visual Inventory and Impact Assessment Report for the Hawai'i Volcanoes  
National Park Disaster Relief Project

Appendix E Programmatic Agreement





# 1 PURPOSE AND NEED

## 1.1 INTRODUCTION

Beginning in May 2018, the summit of Kīlauea at Hawai'i Volcanoes National Park (the park) underwent a major change as magma drained from the chamber beneath Halema'uma'u crater, and the caldera began to collapse, triggering thousands of felt earthquakes and clouds of rock and ash that did not cease until early August. Strong seismic activity was primarily centered near the crater. This impacted buildings in the immediate vicinity on Uēkahuna bluff, including the Jaggar Museum (a visitor center) and the Reginald T. Okamura (Okamura) building of the U.S. Geological Survey (USGS) Hawaiian Volcano Observatory (HVO) facility, resulting in the current closure of the area. Damage to buildings further away was minimal. Buildings located at the main National Park Service complex at the north edge of the caldera, including the Volcano House Hotel and the existing Kīlauea Visitor Center/Headquarters (KVC/HQ), received minimal to no damage.

The National Park Service developed a disaster recovery project (the proposed action) consisting of actions including deconstruction of buildings on Uēkahuna bluff, repair and improvements to Uēkahuna bluff viewing areas, construction of a new USGS field station, and construction of a replacement visitor center in the KVC/HQ administration area. Full details of the proposed action can be found in Chapter 2, Alternatives.

## 1.2 NEED FOR THE PROPOSAL

The purpose of the project is to repair or replace critical park and USGS infrastructure and park visitor facilities damaged in the 2018 eruption addressing the National Park Service and USGS long-term operational and visitor use needs. This project is needed to restore and enhance park visitor use and enjoyment, restore park and USGS operations, and improve interagency response to eruptive activity. Replacing the lost visitor facilities is intended to resolve the overcrowding and diminished visitor experience as a result of the 2018 eruption. Additionally, the proposal is intended to address compliance with the Architectural Barriers Act and Americans with Disabilities Act, and improve safety while protecting natural and cultural resources.

An initial post-disaster assessment conducted in October 2018 found that major investment would be necessary to make the Jaggar Museum and Okamura building safe to occupy and operational and that such investments would be compromised by continued ground movement in the area. The Jaggar/HVO complex is surrounded by cracks and active faults, and the area continues to subside on the crater side due to the caldera collapse, undermining slope stability and the building foundations.

Even when the Jaggar Museum was operational, the existing KVC/HQ building was inadequate for current visitation due to its small size and configuration. The historic building contains both National Park Service administration offices and visitor use spaces. The visitor use spaces were not designed to accommodate the current level of visitation. The exhibits are in disrepair and detract from the visitor experience. The closure of the Jaggar Museum has exacerbated the overcrowding of the facility by concentrating visitor contact in one location instead of the previous two facilities. The overcrowding has impacted the visitor circulation space to the point where visitors cannot easily approach the reception desk, negotiate between exhibits, or navigate through the lānai and non-profit partner's park store.

The loss of the HVO-occupied Okamura and Annex buildings at Uēkahuna bluff in 2018 forced HVO to relocate the majority of its personnel and equipment to Hilo, Hawai'i, as well as other satellite locations. Critical radio and telemetry infrastructure remain intact and will continue to function near the site of the Okamura building. However, it has been determined that a field station to support operations within the park would need to be constructed in a more stable area. This facility would

house HVO and USGS staff from the Resources Management Complex when they are conducting fieldwork and crisis response activities in the Kīlauea summit area.

### 1.3 IMPACT TOPICS CONSIDERED

Issues were identified during internal and external scoping (see Section 4.2, Scoping Summary, for a description of the scoping process). Issues are problems, concerns, and opportunities regarding the proposed action and the alternatives being considered. The issues are organized by *impact topics*, which are headings that represent the impacted resources associated with the issues that are analyzed in detail. Issues were retained for consideration and discussed in detail if:

- the impacts associated with the issue are central to the proposal or of critical importance;
- a detailed analysis of impacts related to the issue is necessary to make a reasoned choice between alternatives;
- the impacts associated with the issue are notable points of contention among the public or other agencies; or
- there are potentially significant impacts on resources associated with the issue.

If none of the considerations above applied to an issue or impact topic, it was dismissed from detailed analysis as described in Section 1.4, Impact Topics Dismissed. The issues and corresponding impact topics retained for analysis in this environmental assessment are presented in Table 1.

TABLE 1. ISSUES AND IMPACT TOPICS RETAINED FOR DETAILED ANALYSIS

Issues	Impact Topics Related to the Issues
The nēnē (Hawaiian goose; <i>Branta sandvicensis</i> ) is a federally listed species that occurs within Hawai'i Volcanoes National Park. Specific to this project, there is known nēnē nesting habitat at Uēkahuna bluff. Nēnē that could potentially use this habitat would be subject to noise and visual disturbance during deconstruction of existing buildings and construction of new buildings as these activities would occur during the breeding season. Therefore, due to potential impacts on the nēnē and its habitat, a detailed analysis of impacts is necessary to make a reasoned choice between alternatives and to comply with the Endangered Species Act.	Nēnē
Decommissioning and construction would directly remove native 'ōhi'a lehua ('ōhi'a) trees ( <i>Metrosideros polymorpha</i> ), koa ( <i>Acacia koa</i> ) trees, and other native trees, which would result in the loss of forest habitat. 'Ōhi'a is a keystone species in Hawaiian forests. Because of the potential impact on this native vegetation, both from a habitat and a cultural perspective, this topic is carried forward for detailed analysis.	Native Forest Removal ('Ōhi'a Trees)
Viewsheds have the potential to be both beneficial through the deconstruction of structures on Uēkahuna bluff as well as adverse through the construction of the replacement visitor center, proposed USGS field station, and road improvements along Crater Rim Drive. Many of these views are important in furthering park interpretive themes and stories in addition to their importance as sacred sites for many Native Hawaiians. Because of the potential impacts on important park viewsheds, both in terms of visitor experience and cultural landscape, this topic is carried forward for detailed analysis.	Viewsheds

HAWAI'I VOLCANOES DISASTER RECOVERY PROJECT ENVIRONMENTAL ASSESSMENT  
PURPOSE AND NEED

Issues	Impact Topics Related to the Issues
Crater Rim Historic District is eligible for the National Register of Historic Places (NRHP) under Criterion A. The Kilauea Administration and Employee Housing Area is listed under Criteria A and C. The Kilauea Military Camp (KMC) historic district is eligible under Criteria A and C. The Kilauea crater was nominated for the NRHP in 1974. Deconstruction and construction activities would have varying impacts on these cultural landscapes and NRHP site through the deconstruction of the historic and non-historic structures at the bluff, addition of new buildings in the ball field and the KVC/HQ area, and the installation of a roundabout. A detailed analysis of impacts related to the issue is necessary to make a reasoned choice between alternatives, therefore this topic is carried forward for detailed analysis.	Cultural Landscapes
Uēkahuna bluff is an important area to many Native Hawaiians, as it is considered a sacred area and it is utilized for cultural practices. The bluff will be available for cultural practices such as ho'okupu (giving offerings) during the 2-year deconstruction and construction period. However, noise and visual effects to the area from the deconstruction of the existing buildings and construction of the overlook may have impacts to the integrity of the setting as natural scenery and quiet solitude are sought after and valued during the cultural practices. The National Park Service would implement a project requirement that outdoor work activities shall be restricted to one hour after sunrise until one hour prior to sunset. However, it is expected that impacts would still occur and a detailed analysis of impacts related to the issue is necessary to make a reasoned choice between alternatives, therefore this topic is carried forward for detailed analysis.  In addition, the 'ōhi'a and native forest are considered a highly valued cultural resource, therefore the removal of 'ōhi'a and native forest is of concern from a cultural perspective. Disclosure and analysis of this removal is necessary to make a reasoned choice between the alternatives.	Ethnographic Resources
The project proposes the deconstruction of the Jaggar Museum at Uēkahuna bluff. The Jaggar Museum is a historic building that is a contributing structure to the Crater Rim Historic District. The deconstruction would be an adverse effect to the historic resource. Disclosure and analysis of this deconstruction is necessary to make a reasoned choice between the alternatives.	Historic Structures
There would be an increase in traffic and equipment movement during deconstruction and construction. A fence would be installed to keep visitors away from the construction limits and traffic controls would be implemented to manage traffic in and out of the new roundabout during construction. The roundabout is meant to improve traffic control and address the existing safety issue at the intersection.	Human Health and Safety
The project is intended to improve visitor use and experience, therefore this topic is carried forward to support the purpose and need.	Visitor Use and Experience
The 2018 eruption and subsequent inability to use the Okamura building, Annex building, and Jaggar Museum has created numerous issues with park and USGS operations. Analysis of this topic is carried forward to support the purpose and need.	Park and U.S. Geological Survey Operations

## 1.4 IMPACT TOPICS DISMISSED

Table 2 provides a brief explanation of impact topics that were dismissed from detailed analysis.

TABLE 2. IMPACT TOPICS DISMISSED FROM DETAILED ANALYSIS

Impact Topic	Reason Dismissed
Air Quality and Climate Change	There would be localized increases in fugitive dust and vehicle emissions in and around the project area throughout the deconstruction and construction period. Most increases would occur during site preparation, deconstruction, and construction and would cease once construction is completed. Air quality mitigations described in Section 2.2.9.7, Air Quality and Soundscapes, would minimize dust and emissions so that the project would not result in significant air quality impacts. The proposed action would not introduce new permanent, stationary sources that would generate measurable air pollutants or greenhouse gas emissions. Therefore, this issue is dismissed from further analysis.
Nonnative Species	For biosecurity, all equipment, materials, and vehicles used during deconstruction and construction would be inspected for nonnative species prior to entry into the park. In addition, potential presence of little fire ants ( <i>Wasmannia auropunctata</i> ) would be monitored following demolition and construction activities. If any little fire ants are detected, a determination of the full extent of infestation would occur and the infestation would be treated with an approved pesticide.  Soils used in revegetation projects would only be used sourced from within the park. If not enough soil from within the park is available, any imported soils would be steam sterilized and inspected prior to entry into the park to prevent introduction of nonnative species.
‘Ōpe‘ape‘a (Hawaiian Hoary Bat)	Deconstruction and construction would result in the removal of the federally listed ‘Ōpe‘ape‘a ( <i>Aeorestes semotus</i> ) habitat. No tree removal would occur during the hoary bat pupping season (June 1–September 15). In addition, vegetation over 15 feet would not be disturbed during that same time period. No barbed wire will be used for any fencing to eliminate the potential for bats to be impaled. Noise from deconstruction and construction could temporarily displace bats from the area; however, there is abundant habitat in the park for the bat.
Hawaiian Catchfly	Prior to deconstruction and construction, a survey for Hawaiian catchfly ( <i>Silene hawaiiensis</i> ) plant would be completed and where possible, individual plants would be avoided. If avoidance isn't possible, the National Park Service would work with the U.S. Fish and Wildlife Service to transplant plants that would be impacted. Fencing would be installed around known populations to protect them.
‘Io (Hawaiian Hawk)	Construction would result in the removal of potential habitat for the ‘io ( <i>Buteo solitarius</i> ), a state listed species. Project areas would be surveyed during the breeding season (March to September) and if ‘io nests are found, no trees would be removed in that area until after the nesting is complete.
Forest Birds	Deconstruction and construction would result in the removal of trees that could be used by forest birds. No more than seven days prior to tree removal, nest surveys would be completed. Trees with active nests would not be cut until the young are fledged.

Impact Topic	Reason Dismissed
Hawaiian Seabirds	<p>Federally listed Hawaiian seabirds (Hawaiian petrel, band-rumped storm petrel, and Newell's shearwater) nest at high elevations within the park. Hawaiian seabirds may traverse the project area at night during the breeding, nesting, and fledging seasons (March 1–December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.</p> <p>To avoid and minimize potential project impacts to seabirds the following would be required:</p> <ul style="list-style-type: none"> <li>• No nighttime construction.</li> <li>• Any temporary lighting for safety requirements would meet or exceed the park's dark sky policies (minimum necessary, full cut-off, downward directed, amber [560-nanometer {nm} or greater] lamping).</li> <li>• Any new permanent lighting would meet or exceed the park's dark sky policies (minimum necessary, full cut-off, downward directed, amber [560-nm or greater] lamping).</li> </ul>
Archeological Resources	<p>Many archeological surveys have taken place within the several areas of potential effect in the project area. In 2001 the Uēkahuna bluff and the surrounding areas were surveyed for archeological resources and the extent of the Lithic Block quarry site was documented. The Peter Lee Road archeological survey was completed in 2015. In 2021 the Tahara House site was surveyed, and a draft inventory report prepared. All known archeological sites would be avoided during construction. Sites would be flagged for avoidance and an archeological monitor would be on-site during ground disturbing activities. If unknown sites are uncovered, work would stop, the feature would be evaluated, recorded or recovered, and the State Historic Preservation Office would be notified.</p>
Lightscares	<p>All new lighting would be compliant with the park's Dark Sky/Night Lighting Avoidance and Minimization Policies (National Park Service 2018).</p>
Soundscapes	<p>There would be increased noise during the deconstruction and construction period. However, measures would be put in place to reduce noise as much as possible (see Section 2.2.9.7, Air Quality and Soundscapes). The impact of this increased noise is discussed under the applicable resource topics such as nēnē and visitor use in Chapter 3, Affected Environment and Environmental Consequences. Therefore, this topic will not be analyzed as a stand-alone topic.</p>
Socioeconomics	<p>There could be temporary impacts on commercial services in the park during deconstruction and construction periods and potential for increased employment during those times. However, it is not known if construction crews would come from local communities. There would be no long-term impact to socioeconomics.</p>
Stormwater	<p>There are some stormwater conveyance pipes in the project areas, although they are fairly limited in extent. The conveyance pipes send water to an infiltration gallery, so water does not discharge directly to a stream or water body. Therefore this topic is dismissed.</p>
Floodplains, Wetlands, Streams	<p>There are no floodplains, wetlands, or streams in the area. Therefore, this topic is dismissed.</p>
Coastal Zone Management Act	<p>The proposed activities are more than 11 miles from the coast. The risk for erosion and sediment movement from the construction sites to the coastal areas is very low. Construction best management practices will be required to prevent erosion and control sediment so it does not leave the area.</p>

## 2 ALTERNATIVES

Two alternatives, the proposed action and no action, are carried forward for evaluation in this environmental assessment (EA). A number of suggestions and alternate designs were also considered and dismissed (see Section 2.3, Alternatives Considered but Dismissed and Design Elements Refined).

### 2.1 NO-ACTION ALTERNATIVE

The no-action alternative describes the conditions that would continue to exist in the project area if no improvements, repairs, or changes were made. Under the no-action alternative, buildings would continue to be unusable at Uēkahuna bluff and would continue to be unsafe as the area continues to subside on the crater side due to the caldera collapse, undermining slope stability and the building foundations; KVC/HQ would continue to be inadequate for current visitation (visitors would continue to experience overcrowding); HVO would continue to house personnel and equipment in Hilo and other locations; the entrance station would continue to have traffic congestion problems that pose collision hazards for motorists and pedestrians; and the traffic congestion would continue to impact the visitor experience through increased waiting times to enter the park.

### 2.2 PROPOSED ACTION

#### 2.2.1 Decision Making Process for the Siting of the New Visitor Center and USGS Field Station

At the beginning of this process National Park Service Denver Service Center, regional, and local park staff and technical experts from the consulting team visited the park to evaluate locations for the replacement buildings. Following this site visit, four concepts were developed as follows. Figures detailing these concepts can be found in Appendix B.

- Concept 1: Relocate facilities and functions to an area adjacent to existing primary visitor use area, including USGS field station.
- Concept 2: Consolidate visitor use adjacent to existing primary visitor area, but USGS field station would be located across from the Visitor Emergency Operations Center (VEOC)/backcountry office parking area.
- Concept 3: Maximize reuse of existing visitor space by repurposing the existing KVC/HQ and auditorium area and constructing an adjacent, smaller replacement visitor center and expanding parking.
- Concept 4: Relocate National Park Service and USGS functions lost at Uēkahuna bluff to the former ball field area adjacent to the KMC land assignment.

These concepts were then presented to the public and agencies during the civic engagement process (further described under Section 4.1, Civic Engagement Summary). Following the civic engagement period, a Value Analysis (VA) workshop was held on June 30 to July 2, 2020. The purpose of the workshop was to select the preferred site location concept for the facilities replacing those lost at Uēkahuna bluff. The workshop was attended by National Park Service Denver Service Center, regional, and local park staff; technical experts from the consulting team; and a certified value specialist who facilitated the meeting. The study team was composed of a mix of professional disciplines and varied subject matter experts in planning, design, operations, sustainability, engineering, facilities, visitor interpretation and education, law enforcement and emergency services, natural resource management, and cultural resource management. Public and consulting parties feedback received during civic engagement were used during the VA workshop.

Function analysis is core to any value analysis study. For this project, the VA team confirmed the functions required to complete the purpose and need for this project. This information was used to help document the purpose and need for this disaster recovery project. The VA team identified the following functions to be used in the evaluation process:

- Providing safe visits and working conditions
- Protecting natural and cultural resources
- Improving visitor enjoyment through better services
- Improving park operational efficiency, reliability, and sustainability
- Providing cost-effective, environmental responsible solutions, and initial and life cycle costs

During the VA workshop, the four concepts were evaluated using a process called Value Based Decision Making (VBDM). VBDM decisions are based on a choosing by advantages analysis (CBA), a process that evaluates the importance of advantages between alternatives.

Based on the CBA analysis, the VA team identified Concept 2 as the preferred concept. The final effort in the CBA process is referred to as the Reconsideration Phase. In this process Concept 2 was further refined by considering advantages from other alternatives. These changes included relocating the USGS facilities to the former ball field in order to provide separation of visitor functions from USGS functions. The results of the Reconsideration Phase are shown on Figures 7 and 8 in Appendix A. From this initial VA process, the concept was further refined to reduce cultural and natural impacts, improve functionality, reduce initial and life cycle costs, and address staff, consulting parties, and public concerns. Modifications included removing the third full fee booth and reducing the size of the lane at the park entrance, reducing the size of the replacement visitor center by retaining the use of the existing auditorium, and optimizing outdoor visitor orientation, exhibits, and programming on the replacement visitor center lānai to allow for 24/7 access. The result of these additional modifications is the proposed action as described in this EA in detail and shown on Figures 1-6 in Appendix A.

It is important to note that all of the options have some level of impact to something, even the no-action alternative. The goal of the VA was to go through an iterative process of considering all of the pros and cons of a concept, including consideration of long-term impacts of each concept. A summary of the advantages of the proposed action over the other concepts is as follows:

**Visitor Use and Experience:** When compared to the other concepts, the proposed action better improves the function of the visitor use facilities, creates an intuitive and clear understanding of where to find facilities, improves visitor pedestrian flow, and enhances the connectivity of visitor facilities. The first facility the visitor encounters when they enter the park is the replacement visitor center where orientation and wayfinding is provided. Separation of visitor functions from USGS functions in the proposed action should create less confusion for the visitor.

**Cultural Resources:** The proposed action's advantage over the other concepts is that it avoids or minimizes effects to historic properties. These include archeological resources, historic buildings and structures, cultural landscapes, and ethnographic resources. Identified historic properties located within the project component areas that were considered during the concept selection include the following: the Kīlauea Crater NRHP site, the Footprints Historic District, the Lithic Block Quarry, Peter Lee Road, the KMC Historic District (including the ball field), the Crater Rim Historic District (which includes the viewsheds from the Volcano House and Waldron's Ledge looking toward the Uēkahuna bluff as contributing features), Crater Rim Drive NRHP site (listed on the Hawai'i Register of Historic Places), the Kīlauea Administration and Employee Housing Historic District, the Tahara House site, and known ethnographic resources such as the forested areas and Uēkahuna bluff. When deliberating the

concepts, each of these resources and/or districts were considered so that any potential adverse effects could be avoided or minimized to the extent feasible.

**Natural Resources:** Among the concepts, greater preference was given to the concept that minimized adverse impacts to native habitat including 'Ōhi'a/Hāpu'u or 'Ōhi'a /Uluhe Montane Wet Forest near the visitor center, Koa/Nonnative Grass Semi-natural Woodland near the ball field, and 'Ōhi'a/Pūkiawe/'A'ali'i Montane Woodland or sparse vegetation near Uēkahuna bluff. Within each of these habitats greater weight was given to protection of undisturbed habitat compared with sites that are recovering from previous disturbance. For example, construction near the current KVC/HQ was preferred to clearing undisturbed forest (larger older trees) near the VEOC and near the housing area. Also considered was reducing the perimeter of new construction in forested sites to reduce the amount of wounding (with subsequent disease infection) of remaining 'ōhi'a trees in the surrounding area. In addition, options that minimized disturbance to sensitive species (rare plants such as 'ilahi, forest birds), and limited impacts to threatened and endangered species ('ōpe'ape'a, 'io, nēnē, Hawaiian catchfly) were preferred. Factors for sensitive species included avoiding direct removal of habitat or increasing harmful visitor-wildlife interactions. None of the options had zero impacts. The impacts varied depending on the species. By changing Concept 2 USGS facilities location to the ball field, the undisturbed forested area near the VEOC remains intact.

**Operations:** When compared to the other concepts, the proposed action provides reduced maintenance and staffing requirements and supports long-term sustainability of park operations by maximizing use of outdoor lānai, and co-locating the replacement visitor center with existing visitor facilities and staff offices. The proposed action separates visitor functions from USGS functions. There is improved constructability by allowing for more efficient and independent phasing of both National Park Service and USGS construction.

**Safety:** The proposed action minimizes visitor and employee safety risks from vehicular sources. During emergencies, the location of the replacement buildings allows visitors and staff to exit the park quickly. The USGS building separated from visitor functions allows USGS alternative access routes during emergencies that avoid the congestion of a visitor center and park entrance.

**Costs:** The proposed action was designed to reduce initial and life cycle costs by limiting the expansion of utility systems, allows for the reduction in size of the new facility by leveraging the use of the existing theater in the KVC/HQ, and improves staff operational efficiency due to close proximity to other visitor use facilities.

### 2.2.2 Proposed Action Description

The proposed action would consist of several improvements within the summit area of Hawai'i Volcanoes National Park. The proposed elements include the following:

- Deconstructing the damaged facilities and repairing visitor use amenities in the Uēkahuna bluff area
- Replacing the HVO research facilities with a new field station in the historic ball field adjacent to KMC
- Construction of a replacement visitor center next to the existing KVC/HQ and repurpose KVC/HQ for special programs and environmental education
- Enhancing the park entrance and realigning Crater Rim Drive to improve visitor safety
- Deconstruction of non-historic National Park Service office space in the park resources management complex and relocation of National Park Service offices to former USGS Pacific Island Ecosystems Research Center-Kilauea Field Station (PIERC-KFS) buildings



Each of these elements are discussed in the following sections. Figures showing these elements are in Appendix A of this EA. Deconstruction and construction would last approximately 2 years. During this period, visitors would be restricted from entering construction areas. Specifically at the Uēkahuna bluff, half of the parking lot would remain open to visitors but the rest of the area would be closed to visitor access.

### 2.2.3 Uēkahuna Bluff

The Okamura building and the adjacent Annex building, operated by the USGS HVO as research facilities, and the historic Jaggar Museum, operated by the National Park Service as a visitor center, would be deconstructed to reduce the amount of infrastructure at the bluff. The remaining visitor amenities and utilities would be repaired and improved. Improvements and repairs at Uēkahuna bluff would include:

- Deconstruction of the Okamura building, Annex building, and Jaggar Museum
- Berm regrading. The existing earth berm north of the buildings was constructed at the time of the construction of the Okamura building from the material excavated for the project. A portion of this berm would be used to fill the basement of the Okamura building. The east end of the berm would be regraded to continue to provide screening for the replacement water tank.
- Majority of building footprints restored to natural conditions. Vegetation would reestablish naturally with some limited planting of native species.
- Relocation of the utility connections to the existing comfort station
- Development of a natural surface trail to connect to the Crater Rim Trail
- Replacement of the deteriorated water tank
- Installation of new post and cable barrier around visitor use areas
- Repair and improvements to the overlook and stone perimeter wall
- Expanding the overlook area into the Jaggar Museum footprint and including a reference to the museum by delineating the original building footprint on the ground with salvaged stone from the building
- Installation of large benches to serve as both seating and the opportunity for elevated viewing, incorporating salvaged stone from the Jaggar Museum

### 2.2.4 USGS Field Station

The USGS research facilities would be relocated to a site adjacent to KMC. The new building would be nestled among an existing grove of trees, between KMC and an open grass area. The open area includes a historic ball field that is used for recreation and also for overflow parking during peak visitation. Elements of the new USGS field station would include:

- Construction of a 15,320 -square-foot, two-story-high modern research facility, with on-grade parking wrapped around the north and east sides of the building. The building and parking area were carefully located to minimize loss of existing koa and 'ōhi'a trees on-site. Most of the parking and loading area is directly adjacent to the KMC motor pool/service area.
- The form of the building is derived from a prototypical gable building that is split into two halves—one for administrative offices and one for research laboratories and lab support

functions. The aesthetic design, including a lava rock base and vertical siding, is compatible with the architectural character of other existing park buildings.

- Minimization of physical and visual impact to adjacent, historic ball field.
- Minimization of impacts to existing trees and use of existing trees to help new building blend into the landscape.

### 2.2.5 Visitor Center

A 6,870-square-foot replacement visitor center building would be constructed next to the existing KVC/HQ building and near other visitor destinations, to replace the loss of the Jaggar Museum. This replacement visitor center follows the 2016 General Management Plan that recommended an integrated campus, or *kauhale*. Improvements related to the replacement visitor center are further described below.

- Upon construction of the replacement visitor center, the visitor use portion of the existing KVC/HQ would be adaptively reused to provide a space for indoor park programs, special events, and K-12 educational programming. The existing KVC/HQ would continue to serve as the park headquarters and retain office spaces in the back of the building, but the existing bookstore and visitor center would be moved to the replacement facility.
- The replacement visitor center would be built on a portion of existing visitor parking and a forested area to the east of the existing KVC/HQ. The building would include a sales area, orientation space, exhibit space, administrative area, public restrooms, and storage. Multiple entrances to the replacement building would accommodate access from the bus drop off and the expanded parking area.
- Expanded visitor parking would be built around the east and south sides of the replacement building to accommodate just over 200 vehicles, an increase of approximately 60 spaces compared to current parking. A new access point from Crater Rim Drive (discussed further in Section 2.2.6, Park Entrance) would serve the expanded parking lot and replacement visitor center.
- A new bus drop-off point would be located directly in front of the replacement visitor center building.
- The replacement visitor center building would be compatible with the surrounding historic landscape and aesthetic design of the existing buildings at and near the existing KVC/HQ.
- The replacement visitor center and parking would align with existing development in this visitor use area. The main entry of the building would front Crater Rim Drive, similar to the existing KVC/HQ and Volcano House.
- A covered outdoor area for orientation, exhibits, and gathering space, identified as an interpretive *lānai*, would be built adjacent to the replacement visitor center. The interpretive *lānai* would be an outdoor extension of the visitor center where visitors can get information for planning their visit and learn about the park resources without having to enter the building. This allows for a smaller indoor space, as well as orientation and interpretation that is available 24/7. This outdoor area would also serve as covered programmatic space for ranger programs and cultural demonstrations.
- The existing trails around the existing KVC/HQ would be connected to form a loop trail connecting KVC/HQ to other amenities and nearby overlooks (as funding allows).
- The existing restrooms next to the existing KVC/HQ would be renovated (as funding allows).

### 2.2.6 Park Entrance

Proposed improvements to the park entrance and Crater Rim Drive are intended to reduce traffic congestion problems that pose collision hazards for motorists and pedestrians. Approximately 50% of the traffic that comes through the entrance station is administrative traffic. Improvements between the turn off from State Highway 11, through the entrance station, and along Crater Rim Drive to the existing KVC/HQ are described further below.

- The addition of a new entrance lane for administrative-only use would result in three in-bound lanes at the entrance station. The new lane would allow administrative traffic to bypass the visitor traffic more quickly and the two existing lanes could serve as visitor queueing capacity during peak visiting times.
- The Crater Rim Drive intersection would be relocated and converted to a roundabout. The roundabout would create free-flowing traffic and would allow for safer connectivity and turns towards the replacement visitor center, Crater Rim Drive East, Crater Rim Drive West, or the exit lane.
- A section of Crater Rim Drive that is south of the entrance station would be realigned to connect to the new roundabout. The new section of road would follow an older alignment of Crater Rim Drive as much as possible to minimize impacts to cultural resources on each side of the old road and older stands of trees.
- Entrance station staff parking would be relocated within the existing Crater Rim Drive road footprint. The new parking area would include one accessible stall and three standard stalls. A security camera and light complying with dark sky standard operating procedures would be installed for staff safety. An accessible route from staff parking to the entrance station would also be added.
- The exit lane would be separated from the entrance station by a vegetated median. A speed table would be added where the accessible route from staff parking crosses the exit lane. An exit pull-off area would be formalized on the side of the exit lane before State Highway 11 for visitors to safely pull off if needed before turning onto the highway.
- The existing section of Crater Rim Drive and current staff parking that would be vacated would be removed and revegetated with native plants.

### 2.2.7 Resources Management Complex

In the Resources Management Complex, the following existing non-historic National Park Service office space would be deconstructed:

- 1) Building 217, the Vegetation Management office (built post-1978)
- 2) Building 321, the Turtle Program office (built post-1988)
- 3) Building 322, Resources Management Administration office (built post-1988)

The National Park Service offices would be relocated to the former USGS PIERC-KFS buildings (343, 344, 216, 295). The majority of PIERC-KFS staff and functions would move to a new facility in Hilo. The remainder would relocate to the new USGS field station in the park, which would house both PIERC-KFS and HVO field operations.

## 2.2.8 Proposed Action Activities

The following sections detail the type of activities that would occur under the proposed action. The intent is to disclose the types of activities that have the potential to cause impacts to the issues analyzed in Chapter 3 of this EA. Deconstruction and construction of the proposed action would last approximately 2 years. Each type of activity is summarized below.

### 2.2.8.1 Deconstruction and Demolition

- Cutting and removing of asphalt would occur in Crater Rim Drive, parking lots, and Uēkahuna bluff overlook.
- The Okamura building, Annex building, Jaggar Museum, and existing non-historic National Park Service office space in the Resources Management Complex would be deconstructed.

### 2.2.8.2 Clearing and Grading

- Clearing and grading would occur for new parking areas, field station building, replacement visitor center building and interpretive lānai, utilities for the new structures, new road alignment, and the Uēkahuna bluff berm.
- Clearing for the new parking area and new road alignment would include tree removal.
- Prior to clearing, tree seedlings and cuttings, and hāpu'u ferns (*Cibotium glaucum*) would be salvaged for park staff to use in revegetation efforts.

### 2.2.8.3 Revegetation

- Ground disturbance in areas not covered by structures or pavement at the end of construction would have topsoil replaced and would be revegetated.
- The majority of building footprints at Uēkahuna bluff would be restored to natural conditions by relying largely on the natural return of the vegetation augmented by planting of native species.
- 'Ōhi'a seedlings, hāpu'u ferns, and other appropriate native plants would be replanted in the former roadbed of Crater Rim Drive.

### 2.2.8.4 Utilities and Stormwater Facilities

- Existing electric and water lines that are currently fed through the buildings to be deconstructed at the Uēkahuna bluff would be replaced on-site to continue servicing the comfort station. The two existing water tanks would be removed. Because deconstructing the buildings would decrease the water demand, only one new water tank would be required to serve the existing comfort station, Nāmakanipaio Campground, and fire suppression needs. The new tank to be installed would be similar in size to the existing large tank.
- A portion of the site lighting along the path to the overlook at Uēkahuna bluff would be removed. New site lighting would be installed along the path to the overlook, along the north side of the overlook extension, and on the ends of each proposed bench to improve safety for visitation at night. All site lighting would be compliant with the park's dark sky requirements.
- Electric, water, communication, and septic services would be installed at the replacement visitor center and field station to serve the new buildings and site facilities.
- Electric and communication lines would be installed at the park entrance to serve the new traffic loop counters, parking area light, and security cameras.

#### **2.2.8.5 Traffic Control**

- Temporary traffic control measures (e.g., signs, temporary closures, potential parking reservations) would be implemented for both vehicles and pedestrian foot traffic in the following areas:
  - Crater Rim Drive at entrance station, replacement visitor center parking area, Uēkahuna bluff parking area, Uēkahuna bluff overlook and comfort station, Crater Rim Drive at KMC, and KMC Road R-9.

#### **2.2.8.6 Pavement and Concrete Work**

- Various areas throughout the project site would be re-surfaced and would involve pavement and concrete work.

#### **2.2.8.7 Staging, Equipment, and Deliveries**

- Topsoil intended for reuse in revegetation would be stripped from the sites prior to construction and stored at the existing Mauna Loa Horse Corral.
- Construction staging is customary for a project of this scope, and would involve storage and parking of construction equipment, materials, and vehicles in already developed areas of the park during the deconstruction and construction period. Staging would occur at the existing Mauna Loa Quarry area (not an active quarry) for National Park Service work and part of the ball field for USGS work. Additional staging may occur in existing parking areas or other existing disturbed areas.
- Truck deliveries and transports to and from staging areas would occur during construction, plus additional vehicle traffic would be generated from construction workers accessing the site daily.

#### **2.2.8.8 Earth Cracks and Steam Vents**

- If earth cracks or steam vents are discovered, the construction contractor would follow National Park Service standards for addressing them. For earth cracks, Hawai'i Volcanoes National Park standards stipulate that construction dig down to solid substrate, and layer rocks and geotextile to create solid ground. This could also be applied to steam vents, or the contractor would vent the steam.

#### **2.2.8.9 Fill Material**

- Deconstruction of the buildings and restoration of the bluff would require filling the basement of the Okamura building and the crawl space of the Annex building. A portion of the fill material would be sourced from the east end of the existing berm north of the Okamura building. The berm was built with soil excavated during the construction of the Okamura building. The rest of the fill material would be sourced from the park stockpiles. This material has been generated from other projects within the summit area of the park and would not include any imported or synthetic material.
- Prior to excavating the berm for use as fill, the topsoil layer would be salvaged to be reused as the final topsoil layer in the areas to be restored with native vegetation. The finished grading would leave enough of the berm to screen the replacement water tank when viewed from Crater Rim Trail. The building areas to be restored would be graded to have an undulating topography like the surrounding natural landscape where swales and depressions provide places for plants and water to collect.

## 2.2.9 Mitigation Measures and Design Features of the Proposed Action

In accordance with the National Park Service Organic Act, National Historic Preservation Act, Endangered Species Act, Coastal Zone Management Act, Clean Water Act, and Clean Air Act the following mitigation measures would be implemented to minimize the degree or severity of adverse impacts during deconstruction and construction. The design features have been incorporated into the project during the design phase to minimize impacts. In addition to these measures, the proposed action was designed to reduce impacts. See Section 2.2.1, and Section 2.4, Proposed Action Design Changes, for further discussion on changes to the proposed action.

### 2.2.9.1 Wildlife and Species of Concern

- Nighttime construction would be prohibited to prevent impacts to the Hawaiian petrel, Newell's shearwater, and band-rumped storm-petrel.
- Disturbance, removal, or trimming woody plants greater than 15 feet tall during the 'ōpe'ape'a (Hawaiian hoary bat) birthing and pup rearing season (June 1 through September 15) would be avoided.
- Bird nest surveys would be completed prior to tree cutting. No trees would be cut if there are active nests found in them.
- Barbed wire would not be used for fencing to remove the potential impalement of hoary bats.
- Construction staff would be educated to not approach, feed, or disturb nēnē.
- National Park Service biologists would monitor the project component areas for any nēnē activity prior to work starting and regularly during the project.
- Project specifications would include specific measures to ensure project work does not impact nēnē, such as requiring all food-related waste to be in fully sealed refuse containers and removed from the site daily to ensure birds and predators do not have access to the food waste.
- All construction vehicles, materials, and equipment would be inspected for nonnative species, including little fire ants, prior to entering the park. Preventing the introduction of harmful species would protect nēnē nesting habitat.
- All work would cease immediately if a nēnē nest is discovered within a radius of 150 feet of proposed work, or a previously undiscovered nest is found within said radius after work begins. Work would not start in that area until the nest is no longer active and the birds have left the area.
- If nēnē are observed loafing or foraging in the project area during the breeding season (September through April), work would halt and a biologist familiar with the nesting behavior of nēnē would survey for nests in and around the project area prior to the resumption of work. Surveys would continue for 3 or more days following the observation of nēnē presence (during which the birds may attempt to nest).
- No blasting would occur.
- In areas where nēnē are known to be present, the National Park Service would post and implement reduced speed limits, and inform project personnel and contractors about the presence of threatened species on-site.
- Project component areas would be fenced at the limits of the construction zone. Fencing would be chain link with skirting at the base that can be removed if a bird is inside the fenced area. In addition, at Uēkahuna bluff, an additional fence would be installed approximately

150 feet from the edge of the construction zone. The distance to the second outer fence may be adjusted based on the practicalities of the landscape and locations of known nesting sites. Fencing will be installed in advance of breeding season to allow time for the birds to become aware of it.

- Post construction revegetation would not include species known to be nēnē food plants to minimize the attractiveness of the landscaped areas. In addition, signs would continue to be posted to inform visitors that feeding nēnē is prohibited. At Uēkahuna bluff, the lawn around the existing bathroom would be removed in summer 2022, well in advance of construction, to minimize the attractiveness of the area. No new lawn would be established post construction to reduce human-bird conflicts.
- Rock and soil material stockpiled from past summit area projects would be transported from the Mauna Loa Quarry to Uēkahuna bluff to fill the building basement. This area would be frequently monitored by a biologist during nēnē breeding season. If a nest is discovered within 150 feet of the quarry piles, contractors would cease all work immediately at this site. Work would not begin again until the family leaves the area (at least 150 feet between family and project area). The contractor would not have access to the quarry area during the duration of the pause.
- Lighting needed for traffic control signs or barriers would be dark sky compliant. Any temporary lighting for safety requirements would meet or exceed the park's dark sky policies (minimum necessary, full cut-off, downward directed, amber [560-nm or greater] lamping).
- Any new permanent lighting would meet or exceed the park's dark sky policies (minimum necessary, full cut-off, downward directed, amber [560-nm or greater] lamping).

#### 2.2.9.2 Vegetation

- Native plants would be salvaged as much as possible prior to ground disturbance. 'Ōhi'a trees would be propagated and replanted using local sources of materials (e.g., air layering, seeds and salvaged seedlings).
- Equipment used for clearing vegetation (including vehicles) would be cleaned prior to entering the park to decrease the likelihood of transporting nonnative species and the pathogens that cause Rapid 'Ōhi'a Death (ROD). Crews would follow the latest protocols on nonnative species prevention: Hawai'i Volcanoes National Park Invasive Pest Protocols (2022) and Hawai'i Volcanoes National Park Green Waste Standard Operating Procedures (2022).
- Tree removal would be minimized as much as possible.
- Surveys for the Hawaiian catchfly would be completed prior to any ground disturbance and individual plants would be fenced and avoided. Surveys would be completed during the peak time for flowering when identifiable features of the plants are more likely to be visible. If avoidance is not possible, the National Park Service would work with the U.S. Fish and Wildlife Service to transplant the plants to suitable undisturbed habitat.
- The National Park Service would monitor plants periodically during construction to monitor health and any impacts. If dust buildup on Hawaiian catchfly plants is evident, dust would be gently removed with compressed air or water by the National Park Service botanist.
- Invasive plants colonizing the area post construction would be removed and the area revegetated with native species.

#### 2.2.9.3 Soils

- Any topsoil removed from construction sites would be salvaged and used for revegetation in the project component areas.

- Soils used in revegetation projects would only be sourced from within the park. If not enough soil from within the park is available, any imported soils would be steam sterilized and inspected prior to entry into the park to prevent introduction of invasive species
- To prevent erosion and protect both soil and vegetation, including the threatened Hawaiian catchfly, erosion-control measures that provide for soil stability and prevent movement of soils, such as silt fence structures made of burlap or biodegradable mesh, would be implemented in areas where there is high potential for runoff.

#### 2.2.9.4 Cultural Resources

- All ground-disturbing activities would be monitored by a qualified archeologist meeting the Secretary of the Interior's Professional Qualification Standards.
- If previously unknown archeological resources are discovered during construction, all work in the immediate vicinity of the discovery would be halted until the resources are identified and documented and an appropriate mitigation strategy developed, if necessary, in accordance with pertinent laws and regulations, including the stipulations of the 2022 Programmatic Agreement Among the National Park Service Hawai'i Volcanoes National Park, U.S. Geological Survey, Hawai'i State Historic Preservation Officer, and the Advisory Council On Historic Preservation (Appendix E).
- In the event that human remains are discovered during construction activities, all work on the project in that area would stop and as required by law, and the Cultural Resources Program Manager notified immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.
- Known historic and prehistoric sites and isolated occurrences would be fenced or flagged and avoided during project activities.
- The National Park Service would prepare a revised and updated Crater Rim Historic District NRHP nomination, incorporating the historic resources identified in the 2006 Crater Rim Historic District Cultural Landscape Inventory (CLI) report and the 2009 Hawai'i Register of Historic Places Crater Rim Drive Historic District nomination form. Changes resulting from the 2018 eruption and from the current project will be included.
- The National Park Service would conduct a Traditional Cultural Property study of Hawai'i Volcanoes National Park and, based on the results of the report findings, prepare an NRHP nomination form for the Traditional Cultural Property(ies) identified.
- The National Park Service would prepare a Historic American Landscape Survey (HALS) of the Uēkahuna bluff area that will meet the National Park Service HALS documentation requirements. The details of the history of the landscape change, including building changes and the viewing platform at the summit, will be covered in the HALS documentation. Demolition shall not proceed until the HALS documentation package is accepted by the National Park Service Heritage Documentation Program.
- Stone from the deconstructed buildings at Uēkahuna bluff would be salvaged for reuse in the replacement visitor center and at the bluff.
- The roundabout has been designed to maximize the amount of forest being retained, and to reduce the amount of visible pavement. Low-growing vegetation would be planted in the islands around and within the roundabout.
- The National Park Service will ensure that some of the existing berm material at Uēkahuna bluff would be used for the fill material that would be needed for the basement of the Okamura Building. The remaining fill would come from sources within the park that are left over from previous projects.



- The National Park Service would ensure that the expanded viewing platform at the summit will include the former Jaggar Museum footprint.
- The National Park Service would complete the Kilauea Administration and Employee Housing District NRHP nomination form.
- The design of the replacement visitor center would respect many of the materials and forms of the existing KVC/HQ building.
- All new National Park Service buildings would use the park's standard park brown and tan paint colors for the exterior paint and trim.
- The roof of the replacement visitor center would have a similar roof slope and massing similar to the existing KVC/HQ.
- The windows of the replacement visitor center would be the same form and size as those of the existing KVC/HQ.
- The siding of the replacement visitor center would be horizontal siding with the same exposure pattern as that of the existing KVC/HQ and other park buildings.
- The eave soffits of the replacement visitor center would match those of the existing KVC/HQ.

#### **2.2.9.5 Visitor Use and Experience**

- During construction, the park anticipates roadway and parking lot congestion and associated safety hazards; reduced visitor access to some popular destinations; and overcrowding at some parking lots and overlooks that diminishes visitor experience. To improve the visitor experience during construction, the park may implement strategies such as parking restrictions, reservations, or other measures to better distribute vehicles and visitors throughout the day in the summit areas. In addition, signs, news releases, social media, and other communication methods would be used to inform visitors about facility and access restorations or closures during construction.

#### **2.2.9.6 Visual Resources**

- The height of proposed structures would be reduced to the extent possible to decrease their visibility (and level of visual dominance) from viewpoints and to blend them with the existing setting.
- Building materials, paint, stain, and other color treatments would be selected to match existing park structures and the natural, existing setting to minimize their visual intrusion and adverse effects on natural and cultural resources; this would include selecting the replacement visitor center roof color to match adjacent structures.
- Additional site interpretation opportunities (e.g., signs, ranger-led activities, or additions to National Park Service app) would be introduced to describe historic, cultural, or natural elements modified by the project. For example, this could include describing the cultural importance of Uēkahuna bluff, the construction of structures on the bluff, and the subsequent deconstruction of most of these structures to return the area to a more natural condition after the 2018 volcanic activity.
- Landscape plantings adjacent to the replacement visitor center and USGS field station would be maintained or expanded, including selective clearing of mature 'ōhi'a and koa during construction to maintain existing vegetative screening.
- Landscape plantings along Crater Rim Drive would be maintained or expanded to minimize visibility of structures proposed for the project. Additional plantings within the proposed traffic circle, in medians, and along the roadside would visually break up expanses of pavement to

blend with the natural setting, minimize visibility of the traffic circle, minimize the visual width of entry into the park, and minimize visibility of the project within historic districts. Plantings within the traffic circle would be low-growing species to ensure they do not hinder traffic safety.

- Enough of the redesigned berm would be retained to reduce the visibility of the replacement water tank on Uēkahuna bluff as viewed from the Crater Rim Trail.
- Landscape plantings would be expanded on and adjacent to the redesigned berm to further screen views of the replacement water tank.
- A paint color for the replacement water tank on Uēkahuna bluff would be chosen to blend in with the natural setting.
- All of the park's Dark Sky/Night Lighting Avoidance and Minimization Policies (National Park Service 2018) would be followed.

#### **2.2.9.7 Air Quality and Soundscapes**

- All construction motor vehicles and equipment would have mufflers conforming to original manufacturer specifications that are in good working order to prevent excessive or unusual noise, fumes, or smoke.
- To reduce noise and air pollutant emissions, construction equipment would not be permitted to idle for longer than 3 minutes when not in use.
- Dust generated by construction would be controlled as necessary by spraying water on the construction site, or other best management practices for dust control.
- Outdoor work activities shall be restricted to one hour after sunrise until one hour prior to sunset.

#### **2.2.9.8 Public Health, Safety, and Park Operations**

- To reduce potential impacts on public health and safety, appropriate signage, barriers, and barricades would be used to clearly delineate work areas and prevent visitor travel near construction areas. Visitors would not be allowed into construction zones.
- To reduce potential safety hazards, construction crews would employ a hierarchy of hazard controls to protect themselves and visitors from hazards. The construction contractor would be required to develop a safety plan that would include (but is not limited to) securing areas of work, a traffic control plan, and fire protections.
- To reduce potential impacts on public health and safety, trucks hauling debris and other loose materials would be covered to prevent spillage.
- Emergency response protocols would be developed for implementation during construction. Construction activities would be conducted in accordance with established safety protocols to reduce potential safety hazards for visitors, employees, and construction crews.
- To reduce potential impacts on normal park operations during construction, employees and construction crews would be required to park their vehicles in designated locations.
- Existing water, gas, sewer, fire, fiber optic, and electric utility lines would be protected during construction activities.

### **2.3 ALTERNATIVES CONSIDERED BUT DISMISSED AND DESIGN ELEMENTS REFINED**

The National Park Service initially evaluated four site concepts with additional elements that all concepts would have in common. Through the civic engagement process and the value analysis

process, these site concepts were narrowed down to the proposed action. In addition, as the proposed action was developed, including public input during scoping, different design elements were further refined to reduce impacts on cultural and natural resources. These elements are described below.

Alternatives and alternative elements may be dismissed for the following reasons:

- Technical or economic infeasibility. This means the alternative could not be implemented if it were selected or would be unreasonably expensive.
- Inability to resolve the purpose and need for taking action, to a large degree
- Duplication with other, less environmentally damaging or less expensive alternatives
- The alternative conflicts with an up-to-date and valid park plan, statement of purpose and significance, or other policy, such that a major change in the plan or policy would be needed
- The alternative would require a major change to a law, regulation, or policy
- Too great of an environmental impact
- The alternative addresses issues beyond the scope of the National Environmental Policy Act (NEPA) review
- If the alternative would not be allowed by another agency from which a permit is required, it should be eliminated as "environmentally infeasible"

### **2.3.1 Uēkahuna Bluff**

- An open-air viewing shelter was considered for the Uēkahuna bluff overlook to provide visitors with protection from sun and rain. This was dismissed to minimize the amount of development and infrastructure at the sacred site.
- The repair and reuse of the Annex building was considered to maintain administrative office space at Uēkahuna bluff. This was dismissed due to safety and operations and maintenance concerns related to maintaining buildings so close to the crater. Another factor was the cost to relocate/reroute utilities from the Okamura building into the Annex building. This was also dismissed due to the desire to decrease the amount of infrastructure on the sacred site.
- Paving the western unpaved overlook was considered to provide visitor access to another viewing area. This was dismissed to minimize potential impacts of development on the ethnographic, cultural, and natural resources.
- Expansion of visitor parking was considered to alleviate severe congestion and resource damage that occurs during summit eruptions. This was dismissed to reduce the amount of new development and potential impacts to ethnographic, cultural, and natural resources.

### **2.3.2 Kīlauea Visitor Center/Headquarters Area**

- Reducing the existing covered lānai at the existing KVC/HQ in size to restore the integrity of the historic KVC/HQ building was considered.

### **2.3.3 Replacement Visitor Center and USGS Field Station Location**

- To create a consolidated interpretive, education, and research campus, relocating all facilities and functions formerly at Uēkahuna bluff to the existing KVC/HQ area was considered. A new stand-alone visitor center on the south/caldera side of Crater Rim Drive was proposed to be constructed to enhance pedestrian connectivity to most visitor facilities and caldera views. The visitor use portion of the existing KVC/HQ was proposed to be repurposed as an environmental education center to provide more space and accessibility than the current

location. USGS functions were proposed to be relocated adjacent to the existing KVC/HQ, on the north side of Crater Rim Drive. This concept was intended to leverage existing parking and utilities with minor realignment and expansion needed to accommodate replacement facilities and visitor use levels.

This concept was dismissed to reduce impacts to the forested area south of Crater Rim Drive. It was also dismissed due to the greater distance of USGS operations from their primary field observation area overlooking Halema'uma'u crater and the difficulty for USGS operations to enter and exit an area of heavy visitor use.

- To consolidate visitor-use facilities adjacent to the existing primary visitor area, constructing a new stand-alone visitor center east of the existing KVC/HQ and repurposing the visitor use portion of KVC/HQ as an environmental education center was considered. The stand-alone visitor center would have been a 7,000 square-foot facility with a 1,300-square-foot restroom building to accommodate all functions of the existing KVC/HQ including the auditorium, and 12,200-square-foot exterior space. The building numbers were derived from a facility model that indicated the park needs 7,800 gross square feet (GSF) of visitor center space and 1,500 GSF of restroom space for its level of visitation. This concept would also leverage existing parking and utilities with expansion needed to accommodate replacement facilities and visitor use levels.

The new facility as a stand-alone visitor center was dismissed in favor of constructing a smaller new building that would house most of the visitor use, while the existing KVC/HQ would continue to support indoor park programs, special events, and overflow orientation when needed. The proposed site for the new building (east of the existing KVC/HQ) was retained in the proposed action.

- To separate USGS functions from the main visitor use area but keep them near park emergency operations, locating the USGS field station next to VEOC was considered.

This concept was dismissed due to the greater distance of USGS operations from the crater. It was also dismissed due to the greater distance of USGS operations from their primary field observation area overlooking Halema'uma'u crater and the difficulty for USGS operations to enter and exit through an area of heavy visitor use.

- To maximize reuse of existing visitor-use facilities, repurposing the existing KVC/HQ and auditorium area and constructing an adjacent smaller new visitor use building to the west of the existing KVC/HQ and expanding the parking area in front of the existing KVC/HQ was considered. This concept was to leverage existing parking and utilities and expand them to accommodate the replacement facilities and visitor use levels and to minimize impacts to the forest east of the existing parking lot. The USGS functions would be separated from National Park Service functions and relocated to the historic ball field area, west of the KMC land assignment.

The visitor center actions of this concept were dismissed due to impacts to the historic buildings and landscape of the existing KVC/HQ and the 1877 Volcano House. It was also dismissed because it was determined it would not function well for visitors. The proposed USGS field station location in the historic ball field area was retained in the proposed action.

- To consolidate all new development of replacement facilities in one area, relocating all functions lost at Uēkahuna bluff to the historic ball field area adjacent to the KMC land assignment was considered. Visitor services currently provided at the existing KVC/HQ and formerly provided at Jaggar Museum would be combined in a replacement visitor center at the historic ball field. A new USGS field station would be constructed adjacent and west of the replacement visitor center. New parking and utility infrastructure to support the new facilities

would be constructed. The existing KVC/HQ would be repurposed as an environmental education center to provide more space and accessibility than the current location.

The visitor center actions of this concept were dismissed due to impacts to the natural area beyond the historic ball field, historic KMC landscape, and USGS operations with USGS functions being so close to visitor use. To provide adequate separation between USGS and visitor functions, the development footprint would need to be increased and would increase impacts to the surrounding landscape. Separating the replacement visitor center from the other visitor use facilities near the park entrance would place a higher demand on maintenance and staffing requirements, as it would create two distinct locations of visitor-use facilities that attract many visitors. Initial costs would also be higher due to the need to extend utilities out to this location. The visitor experience would be less intuitive, because as a stand-alone visitor center, the new building would be a typical first stop for visitors. When located next to KMC, the new building would be more hidden and require a further drive after entering the park.

- The USGS building entry drive was proposed to connect from Crater Rim Drive. This was changed to connect to the KMC road to reduce impacts to natural area, a historic road, and views along Crater Rim Drive.

#### 2.3.4 Park Entrance

- To increase vehicle queuing capacity and speed of processing incoming vehicles at the entrance station, adding a third booth and inbound lane was considered. This was dismissed due to concerns about park managers' ability to staff the additional booth and to reduce the amount of widening of the entrance road and the related impacts to forested area. It was determined that traffic improvements of a third booth would not outweigh the natural resource impacts of the increased roadway width all the way out to the highway.
- To increase the speed of processing incoming vehicles at the entrance station with additional widening of the roadway, adding a third booth that would be stacked with booth one was also considered. This was dismissed due to concerns with park managers' ability to staff the additional booth. A designated location for a potential future stacked booth and conduit running to that location was retained in the proposed action.
- To manage the administrative bypass lane without increasing demand on entrance staff, a swing arm gate was considered that would either be operated by a keypad by the driver, a card swiped by driver, or the fee staff pushing a button to open. This was dismissed due to operation and maintenance costs. The National Park Service determined that this could be dismissed for now but could evaluate it at a later date if it is still needed following implementation of the proposed action.
- To manage for visitors during peak visitation, installation of an automated fee machine (AFM) was considered. This was dismissed due to timing issues with updating the park's system to incorporate an AFM or similar automated entrance facility. A designated location for a potential future AFM or similar facility and conduit running to that location was retained in the proposed action.
- To increase vehicle queuing capacity, relocating the entrance station further west was considered. This was dismissed due to the challenges of relocating both the Crater Rim Drive intersection and the entrance station building. Impacts to the forested area south of Crater Rim Drive and the Kilauea Administration and Employee Housing Historic District would be increased. Relocating the utilities for the station would also increase impacts.
- To avoid the adverse effect of introducing a roundabout to the historic district, relocating the intersection but maintaining it as a "T" intersection was considered. This was dismissed due to the limited benefits it would have for traffic safety, traffic management during peak visitation,

and wayfinding improvements. The connection to the visitor center would need to be one-way to reduce potential conflicts at the intersection, which would reduce the flexibility of circulation at the visitor center. The "T" intersection would also still include left-turn conflicts.

- Maintaining the fee staff parking in its current location was considered. This was dismissed due to traffic safety concerns for staff arriving to the parking area from within the park, which would require them to do a U-turn on the east side of the entrance station.
- Locating the leg of the roundabout connecting to the visitor center due north on the roundabout was considered. This was changed to a location further west on the roundabout and in alignment with the existing access road to reduce impacts to forested area north of the intersection.

## 2.4 PROPOSED ACTION DESIGN CHANGES

Throughout the design process, the proposed action was further refined to reduce impacts in the following ways.

- The proposed natural surface trail at Uēkahuna bluff was realigned to connect to the overlook at the northeast corner and connect to Crater Rim Trail northwest of the triangulation marker. The purpose of the change is to further decrease visitor impacts to the natural area and improve visitor safety by reducing incentives to cut across areas between access routes.
- The proposed color of the new water tank has been revised to a custom color to improve its ability to blend in with the surrounding landscape.
- The main entrance of the visitor center building was revised to be oriented south instead of east to improve the compatibility of the building with the orientation of the historic buildings.
- The size of the interpretive lānai has been reduced from an initial 12,200 square feet to 6,130 square feet and the interior space was reduced from 8,300 to 6,870 GSF to decrease the development footprint and provide more landscape area around the building, as identified in scoping comments.
- The size of the visitor parking expansion has been decreased from 249 to just over 200 total parking spots (an increase of 60 parking spaces) to further reduce impacts to the forested area, as identified in scoping comments.
- The location of the field station building was revised to decrease the development impact on the historic ball field and avoid geologic hazards located behind the ball field.
- The east and west legs of the roundabout were revised to reduce the overall proposed footprint and changes to the existing road to further reduce traffic conflicts and reduce the visual impact of pavement by maintaining more of the mature vegetation along the roadsides. The west leg alignment was adjusted to follow the existing road more closely, and the west leg was reduced from two lanes to one. Having vehicles merge to one lane just after the fee booth reduces potential vehicle conflicts due to the slow speeds and metered exiting from the fee booth.
- The width of the truck apron on the roundabout was decreased to reduce the amount of pavement and the associated impact on the entrance road character. The narrower truck apron would allow for a larger central island with native plants that soften and frame the roadway.
- Streetlights around the roundabout were removed from the design to reduce dark sky impacts and minimize height of proposed structures.
- The size of the formal pull-off area on the exit lane was decreased to further reduce impacts to the existing entrance road corridor and forested area.

### 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the current and expected future conditions of resources related to the topics listed in Table 1 that are analyzed in detail in the EA. This chapter also analyzes the environmental consequences (impacts or effects) that would occur from implementing the alternatives. The analysis considers short and long-term effects and adverse and beneficial effects. "Short-term" is used for impacts lasting only for the project duration or during the construction period for an action. "Long-term" impacts occur beyond the date the project is considered fully implemented and are not readily mitigatable. "Beneficial" is a positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition. "Adverse" is a change that declines, degrades, and/or moves the resource away from a desired condition or detracts from its appearance or condition. A direct impact is caused by the action and occurs at the same time and place. Indirect impacts are caused by the action and are later in time or farther removed in distance, but still reasonably foreseeable.

The cultural resources analysis found in Section 3.5, Cultural Landscapes and Historic Structures, complies with the requirements of NEPA and Section 106 of the National Historic Preservation Act and the methodology for this analysis varies from the above description. Section 3.5.3, Proposed Action, describes this methodology.

#### 3.1 CUMULATIVE IMPACT SCENARIO

The Council on Environmental Quality regulations that implement NEPA require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "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" (40 Code of Federal Regulations [CFR] 1508.1(g)(3)).

Cumulative impacts are considered for the no-action and the proposed action. Cumulative impacts were determined by combining the impacts of the actions included in the alternatives with other past, present, and reasonably foreseeable future actions. Therefore, it is necessary to identify other past, present, or reasonably foreseeable future actions in the park that could result in cumulative impacts.

Past and present actions within the analysis areas (defined in each section below) include ongoing National Park Service management actions intended to maintain or improve facilities and meet established goals and objectives outlined in the park's various planning documents, including:

- Hawai'i Department of Transportation repairs to Highway 11 from seismic damage in 2018.
- National Park Service repairs to various park roads and trails and a water line that suffered seismic damage in 2018.
- Renovation of the 'Ōhi'a Wing (the prior 1932 Administration Building). This building will be used for a cultural museum.
- Replacement of wayfinding signs on park roads.
- Rehabilitation to address accessibility deficiencies at the Devastation parking lot and Puhimau Overlook.
- Replacement of theater seats, carpet, and lights inside the current visitor center.
- Replacement and realignment of power poles and lines along Highway 11 from Ka'ū boundary to Pi'i Mauna Drive.

Reasonably foreseeable actions include:

- Waterline replacement from Rainshed to the existing KVC/HQ and VEOC building. This proposed project would occur at the same time as the actions identified for the disaster recovery project.
- Fiber optic line replacement from Rainshed/cell tower to the Resources Management Complex. This proposed project would occur at the same time as the actions identified for the disaster recovery project.
- An air tour management plan. The Federal Aviation Administration and National Park Service are currently developing this plan. A final decision and implementation of the plan is likely to overlap with the disaster recovery project.

## 3.2 NĒNĒ

### 3.2.1 Affected Environment

The analysis area for nēnē is the area between the Kīlauea crater rim and Highway 11 from the entrance station to the Uēkahuna bluff area because nēnē use this area for traveling, foraging, or roosting. Nesting and roosting habitat also occurs on the north side of Highway 11, including by the Mauna Loa Quarry area. The temporal scale is the 2-year deconstruction and construction period when there would be increased noise and human activity.

The nēnē is a visible resident species of the park that uses varied habitats on a seasonal basis, including grasslands, scrub forests, and sparsely vegetated volcanic slopes, which are primarily located in the Ka'ū Desert, which includes KMC and the Uēkahuna bluff. The western part of the analysis area (from KMC to Uēkahuna bluff) is suitable nēnē habitat and the eastern part of the analysis area (from the entrance station to KMC) is not. Though nēnē may still use the eastern part of the analysis area for flying over or landing, the habitat is mostly forested and where forested, it is not suitable for nesting or foraging. Nēnē are frequently observed flying over the road between existing KVC/HQ and the Jaggar Museum (Misajon 2005c). The western part of the analysis area is part of the Ka'ū Desert and is used for nesting, brooding, molting, and foraging. This area is sparse 'ōhi'a/pūkiawe (*Leptecophylla tameiameia*)/'a'ali'i (*Dodonaea viscosa*) woodland and sparse 'a'ali'i/pūkiawe shrubland. Nēnē frequently forage on the KMC front lawn and historic ball field. Occasionally, pairs bring goslings to the KMC grounds to forage. Nēnē fly over this area frequently, often two times a day. Nests and broods have been documented in this area in the last several years. Pairs have raised goslings here and molt on both sides of Crater Rim Drive and Highway 11. The area may be used for foraging throughout the year.

Nēnē feed on a wide variety of plant parts including leaves, berries, seeds, and flowers of native and nonnative species (Black et al. 1994). Within the project area nēnē depend on native shrubs, such as pūkiawe and 'ōhelo, and nonnative maintained grasslands such as the historic ball field for food. Poor foraging conditions can lead to poor reproductive success through low nesting attempts or gosling survival (Banko 1992). Preservation and improvement of forage resources is important to the survival of nēnē. Over the last 100 years drought frequency, intensity, and severity have increased at Hawai'i Volcanoes National Park. Drought events have the potential to adversely impact nēnē directly through lack of water resources or indirectly through impacts to food resources, particularly grasses. Native dominated ecosystems in the park can be impacted during drought events in several ways including increased incidences of wildfire, loss of bird habitat, decreased availability of forage, increased growth of nonnative shrubs and grasses, increased activity of invasive rodents and insects, and damage to perimeter fences by cattle and other invasive mammals.



Nēnē are particularly sensitive to stress during nesting, brooding, and molting from September through April. During the molting phase (March–June) they are flightless for 4 to 6 weeks. While flightless they exhibit highly secretive behavior and are particularly difficult to locate, even if an area is surveyed by an experienced bird biologist.

The foraging, roosting, and traveling habitat described above is crossed by several trails and by Crater Rim Drive, which receive regular daily foot and vehicle traffic, respectively. Increased sound and human activity occur daily around the road and trails primarily during daylight hours, but also at night when there is an active eruption. In addition, helicopter tours of the summit area occur daily and increase baseline sound levels.

Nēnē were originally listed as endangered under the Endangered Species Act in 1967 and there were only 30 nēnē in the wild, and 13 in captivity at that time. In 2019 it was downlisted to threatened as the U.S. Fish and Wildlife Service determined that the data were indicating that the threats to this species have been reduced to the point that it no longer meets the definition of endangered under the act, but that it is likely to become an endangered species within the foreseeable future. At the time of downlisting, there were 3,252 nēnē in Hawai'i. The increase in the nēnē population is due to efforts by state and federal agencies, national parks, nonprofits, and private landowners. In addition, there was a captive breeding program that started in 1949 and ended in 2011, that introduced approximately 2,800 captive-bred nēnē to the Hawaiian Islands. This reintroduction succeeded because a diverse network of conservation organizations and individuals also took steps to manage the nēnē's habitat and keep predators at bay, providing the conditions the newly introduced birds needed to survive.

### **3.2.2 No-Action Alternative**

Under the no-action alternative, no additional impacts to nēnē would occur. The trends discussed above would continue.

### **3.2.3 Proposed Action**

Nēnē that could potentially use the habitats described above could be subject to noise and visual disturbance during deconstruction and construction, as these activities would occur during the breeding season. However, the measures listed in Section 2.2.9.1, Wildlife and Species of Concern, would restrict activity within 150 feet of breeding or nesting nēnē, ensuring that they are not disturbed. The project could also indirectly disturb or displace nēnē individuals foraging or flying to or from nests due to localized noise, lights, and human or vehicle activity associated with deconstruction and construction activities. This activity would be intermittent but result in short-term adverse impacts by increasing the existing baseline levels of human activity and traffic in the analysis area.

The National Park Service consulted with U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act, and determined the project may affect, but is not likely to adversely affect, nēnē. The U.S. Fish and Wildlife Service provided concurrence with this finding on June 1, 2022.

### **3.2.4 Cumulative Impacts**

As discussed in Section 3.2.1, Affected Environment, the analysis area for nēnē encompasses areas from the entrance station to Uēkahuna bluff and the temporal scale is the 2-year deconstruction and construction period. The past, present, and reasonably foreseeable actions have and will continue to increase the noise and visual disturbance to nēnē in the analysis area. Under the no-action alternative, no additional impacts to nēnē would occur.

Construction activities for the waterline replacement project would not impact nēnē because they do not forage or nest in the area of the project. The air tour management plan would include conditions designed to protect resources, including nēnē, and could be a beneficial impact by directing and/or limiting flights that could reduce the amount of noise disturbance.

### **3.3 NATIVE FOREST REMOVAL**

#### **3.3.1 Affected Environment**

The analysis area for native forest removal is the project ground disturbance footprints. The area around the existing KVC/HQ is wet montane forest composed of mostly 'ōhi'a, koa, and hapu'u in the overstory, with a mix of smaller native trees and shrubs in the understory. The area around the ball field area is open 'ōhi'a woodland with a mix of native shrubs and nonnative grasses. 'Ōhi'a is a keystone species in Hawaiian forests. A number of native forest birds rely on 'ōhi'a trees for food and shelter. The temporal scale is approximately 30 years (2 years for construction and revegetation plus 30 years for second growth forest to develop). It would take longer for native forests to mature to their pre-construction condition.

The seasonally dry forest on Uēkahuna bluff contains scattered 'ōhi'a, grasses, and other vegetation that is primarily located in low points or depressions in the landscape formed by undulating and cracking lava flows. There is limited vegetation in the area, therefore this area will not be discussed further.

Because 'ōhi'a are a keystone species, effects to them can have broader implications for the ecosystem as a whole. Current trends impacting 'ōhi'a include ROD, which is a fungal disease that is killing 'ōhi'a on Hawai'i Island, including in the park and in the vicinity of project ground disturbance (National Park Service 2022a). 'Ōhi'a is the most abundant native tree in the state of Hawai'i, and hundreds of thousands of 'ōhi'a trees have died on the island as a result of ROD (University of Hawai'i at Mānoa 2022). Healthy trees appear to die within a few days to a few weeks, which is how the disease came to be called "Rapid 'Ōhi'a Death." This disease has killed trees in all districts of Hawai'i Island and has the potential to kill 'ōhi'a trees statewide.

Over the last 100 years drought frequency, intensity, and severity have increased at Hawai'i Volcanoes National Park. Drought events have the potential to adversely impact native forests directly through lack of water resources. Native forests can be impacted during drought events though increased incidences of wildfire.

Vegetation and forested areas are an important source of spirituality and self-identification for many residents of Hawai'i. Analysis of this issue can be found under Section 3.6, Ethnographic Resources.

#### **3.3.2 No-Action Alternative**

Under the no-action alternative, there would be no native forest removal as a result of the project. The current trends discussed above would continue.

#### **3.3.3 Proposed Action**

Deconstruction and construction would result in the direct removal of 108 trees greater than 6 inch in diameter at breast height, with 75 of these trees being 'ōhi'a trees. Most of these trees are native and their removal would result in the loss of forest habitat. Smaller trees would also be removed but were not included in the survey. In addition, trees that occur on the edge of the proposed disturbance could be indirectly damaged due to construction equipment and compaction. Appropriate buffers would be placed around the construction limits and monitoring would occur to ensure there is no indirect damage to the trees outside of the direct footprint.

Additionally, construction equipment could act as vectors for transmission of the pathogens that cause ROD. Rapid 'Ōhi'a Death occurs in the areas of proposed ground disturbance. Shoes of construction workers, tools, gear, vehicles, and construction equipment would be cleaned following the latest protocols from the National Park Service, which include but are more restrictive than the DLNR and U.S. Department of Agriculture protocols to reduce the likelihood of ROD spread.

In anticipation of potential project approval, the National Park Service has begun air layering on potentially affected trees to clone the trees that may be removed, to preserve their lineage. These clones, which would be genetically identical to removed trees and adapted to local conditions, would be used in the revegetation efforts. In addition, seed collection is occurring in each area so native plant restoration can use plant material that is adapted to local conditions.

Though second growth 'ōhi'a forests can reestablish in less than 30 years in areas where nonnative species have not already colonized (Hughes et al. 2022), it would take substantially longer for mature old growth 'ōhi'a forests to develop (such as some of the areas that would be affected in the park).

### 3.3.4 Cumulative Impacts

As discussed in Section 3.3.1, Affected Environment, the analysis area for native forest removal encompasses areas from the entrance station to Uēkahuna bluff and the temporal scale is the 2-year deconstruction and construction period. The past, present, and reasonably foreseeable actions have and will continue to remove native forests, including 'ōhi'a trees.

Construction activities for the waterline replacement project may result in removal of wet montane 'ōhi'a forest. However, the measures listed in Section 2.2.9.2, Vegetation, would also apply to the waterline replacement project to reduce potential impacts to wet montane forest, including avoidance of removing additional 'ōhi'a trees if possible. The air tour management plan would not impact native forests due to the height at which air tours would be required to fly. Overall, the past, present, and reasonably foreseeable projects have had and would have long-term adverse impacts to the native forest.

Because hundreds of thousands of 'ōhi'a trees have died on the island as a result of ROD, additional removal of this species compounds those effects. The additive adverse effects of the project in combination with past, present, and reasonably foreseeable actions (including ROD) would remove individuals of this keystone species over the long term.

## 3.4 VIEWSHEDS

A visual inventory and impact assessment report was prepared for this project (Appendix D). As part of this report, seven key observation points (KOPS) were identified to assess the effects of the project. To support the analysis and depict the proposed changes within the view from each KOP, visual simulations were developed from the KOP locations and are also included in Appendix D.

### 3.4.1 Affected Environment

The analysis area for viewsheds is the area within 3 miles of project components, which corresponds to the boundary between the middle ground (0.5–3 miles) and background (more than 3 miles) visual distance zones.

The entirety of the park is in the Hawaiian High Island Ecoregion (Nature Conservancy 2018) which is composed of many micro-climate zones based on elevation and orientation to typical wind directions. The proposed project component areas are at an elevation of approximately 4,000 feet above mean sea level and include both Kīlauea crater, with its expanding caldera, and the dense forest surrounding the existing KVC/HQ. The rain shadow produced by Mauna Loa and the effect of long-term volcanic

activity on Kīlauea crater creates two distinctive vegetative zones in the study area even though project component areas are located less than 2 miles apart.

The wet montane 'ōhi'a forest is composed of mostly 'ōhi'a, koa, and hapu'u adjacent to the existing KVC/HQ and Resources Management Complex forms a dense canopy where buildings are "cut out" of the forest, forming mostly enclosed landscape settings. Within this KVC/HQ area, there are multiple historic structures including the Volcano Art Center, Volcano House, and 'Ōhi'a Wing. Terrain is generally flat to rolling except closer to the edge of Kīlauea crater, where multiple benches have been formed by volcanic activity with steep drop-offs between each bench.

The seasonally dry forest on Uēkahuna bluff contains scattered 'ōhi'a, grasses, and other vegetation that is primarily located in low points or depressions in the landscape formed by undulating and cracking lava flows. These cracking, settling lava flows form the edge of the crater rim with a steep drop into Kīlauea crater and then into Halema'uma'u crater. Due to the limited vegetation in the area and rolling terrain, views are generally unobstructed across the caldera. Uēkahuna bluff is a sacred site for many Native Hawaiians and continues to be the site for Native Hawaiian cultural practices.

KMC is located at the edge of the seasonally dry 'ōhi'a woodland area along Crater Rim Drive and includes areas of turfgrass and ornamental landscaping. Similar to the KVC/HQ area, the terrain is flat to rolling except near the edge of Kīlauea crater. Views toward the boundary of KMC are mostly enclosed by adjacent dense vegetation. The KMC complex is not open to the general public; access is allowed only for authorized patrons. The area has a developed recreation character (cabins, open spaces, and sports facilities) that is unique in the park compared to the more common natural-lands recreation focus throughout the park.

The proposed project elements associated with the KVC/HQ area, entrance area, and Uēkahuna bluff would be located within the Visitor Services Zone identified in the General Management Plan (GMP) as managed primarily for a high level of visitor use, access, and interpretation with a wide range of media and facilities to support diverse visitor needs. The proposed USGS field station and modifications to the Resources Management Complex would be located within the Park Support Zone (note: KMC and the Resources Management Complex are not open to the general public), which is managed primarily to support park operations and maintenance, including the operational needs of park partners. Access for visitors is primarily for limited visitor services (such as backcountry permitting), orientation, and organized meetings or events.

Table 1 in Appendix D summarizes the KOP inventory information focusing on the existing landscape, viewer groups and their sensitivity to changes in their view, and National Park Service interest associated with the viewpoint's importance, uniqueness, and management commitment to enhance the viewer's experience.

### **3.4.2 No-Action Alternative**

#### **3.4.2.1 Uēkahuna Bluff**

Under the no-action alternative visual impacts on Uēkahuna bluff from the presence of existing structures inconsistent with the natural-appearing setting would continue to have adverse impact on the sacred landscape as currently viewed from Crater Rim Trail and other overlooks around Kīlauea Crater. Additionally, since the existing buildings on Uēkahuna bluff are no longer able to be used by the increasing number of park visitors, there would be decreasing recreation opportunities in this area as no replacement would be provided in the park.

### 3.4.2.2 USGS Field Station

Under the no-action alternative, the existing structures at Uēkahuna bluff would remain and the proposed USGS field station near KMC would not be constructed. Similar existing impacts as described for Uēkahuna bluff would remain as the Okamura building and the adjacent Annex building would not be removed. The setting adjacent to KMC and historic ball field would not be modified by the project, resulting in no change to the existing landscape as viewed from Crater Rim Drive or KMC.

### 3.4.2.3 Replacement Visitor Center

Under the no-action alternative, the replacement visitor center and other improvements would not be constructed adjacent to the existing KVC/HQ. The balanced existing recreation/natural setting would be maintained as no additional structures would be introduced into the setting. However, there would be no additional interpretive opportunities constructed in the kauhale (integrated campus) with increasing park visitation, and in consideration of the Jaggar Museum no longer being usable, there is a potential for decreasing viewer and recreation experiences as a result of the no-action alternative.

### 3.4.2.4 Park Entrance

Under the no-action alternative, no additional improvements or modifications to the park entrance area would occur. The existing natural setting viewed after passing the park fee station would remain in its current condition. There would continue to be longer wait times to enter to park, which may reduce the viewer and recreation experiences in this area.

### 3.4.2.5 Resources Management Complex

Under the no-action alternative, no additional modifications to the Resources Management Complex would occur. Since this area would continue to not be open to the general public, there would be no impacts to viewers or recreation experiences.

### 3.4.3 Proposed Action

As mentioned above, seven KOP locations were identified for project analysis; Table 3 identifies which project element each KOP is associated with. The following sections, organized by project element, describe impacts on the existing landscape, viewer experience, and National Park Service management as well as the overall impact to park visual resources.

TABLE 3. PROJECT ELEMENTS VIEWED FROM EACH KEY OBSERVATION POINT LOCATION

KOP Number and Name	Project Element			
	Uēkahuna Bluff	USGS Field Station	Replacement Visitor Center	Park Entrance
KOP 1: Park Entrance Road				X
KOP 2: Kīlauea Visitor Center Entrance			X	
KOP 3: Crater Rim Trail	X			
KOP 4: Volcano House Overlook	X			
KOP 5: Crater Rim Drive west of Kīlauea Visitor Center			X	

KOP Number and Name	Project Element			
	Uēkahuna Bluff	USGS Field Station	Replacement Visitor Center	Park Entrance
KOP 6: Crater Rim Drive toward Kilauea Military Camp and Historic Ball Field		X		
KOP 7: Kilauea Military Camp		X		

Note: Since the Resources Management Complex is not open to the general public and the dense forest canopy screens adjacent views, no KOPs were identified for this project element.

### 3.4.3.1 Uēkahuna Bluff

Two KOPs would have views of the proposed modifications on Uēkahuna bluff with KOP 3 located on Crater Rim Trail northeast of the existing Jaggar Museum and KOP 4 located approximately 2 miles away at the Volcano House Overlook with views across the caldera toward Uēkahuna bluff (see visual simulations in Appendix D).

The redesign of the facilities on Uēkahuna bluff would be compatible with the existing landscape character as viewed from Crater Rim Trail (KOP 3). Because of the deconstruction of the HVO buildings and Jaggar Museum as well as retaining some of the existing berm, to screen views toward the replacement water tank, the project would improve scenic quality, ethnographic resources, and the ethnographic landscape. If visible, the water tank would attract attention with the utilitarian-appearing feature being incompatible with the natural setting. To reduce impacts where the replacement water tank could be visible from other locations, the tank would be painted a darker color to match the setting, allowing it to blend with the natural landscape. Through the deconstruction of existing structures and retaining some of the existing berm to screen views of the project, the experience for most viewer types would be improved by returning the area to a more natural-appearing character, allowing visitors to focus on the landscape, including its cultural significance. The experience of hiking the trail from the Kilauea Overlook to Uēkahuna bluff would be improved, without buildings obscuring the view, allowing the panoramic views from the high point to appear more suddenly, resulting in a more profound recreation experience. For many repeat local observers, especially Native Hawaiians and those with a generational connection to the land, the presence and visibility of any structures on Uēkahuna bluff is seen as an impact on this culturally important landscape. The deconstruction of infrastructure on Uēkahuna bluff was identified in the 2016 GMP as an option to relocate these facilities to a less impactful location. By creating a more natural, intact setting on the bluff, park interpretive themes would be more clearly communicated to reflect the sacredness of the area. This area is a focal point for views throughout this portion of the park, including views from KOP 4. The project would result in moderate beneficial impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management. The planting of additional native plants on the redesigned berm would further screen views of the project and allow project components to blend with the natural setting, resulting in additional beneficial impacts.

The deconstruction of most structures on Uēkahuna bluff, as viewed from KOP 4, would reduce the extent of incompatible landscape features in the viewshed. The proposed overlook would use natural materials (lava rock and wood), be low profile in design, and would be constructed to blend with the setting's existing form, line, color, and texture to minimize their impact from this viewpoint approximately 2 miles away. The experience for all viewer types would be improved as a result of the project, with casual eye observers having views with fewer human-made modifications, critical observers viewing a less modified setting similar to those prior to the construction of modern facilities on Uēkahuna bluff, and repeat local observers, especially those with a generational connection to the land, having views of a more intact culturally important landscape. Through the partial deconstruction

of structures on Uēkahuna bluff, the National Park Service is further committing to the importance of the setting adjacent to Kīlauea Crater, including views from this and the other overlooks toward the bluff. Due to the potential increased visitation and landscape improvements within the viewshed, the interpretive signage could be updated to provide additional information regarding Hawaiian culture to support the overall park purpose to educate visitors on traditional Hawaiian culture in addition to protecting, studying, and providing access to Kīlauea. These would facilitate enhanced understanding of the landscape and viewshed interpretation for visitors. The project would result in long term beneficial impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management.

In summary, the project would increase visitor interpretive opportunities on Uēkahuna bluff as well as provide an experience more in tune with the area's natural, cultural, and historic character. By removing most of the structures on Uēkahuna bluff, not only are views from that area more natural appearing but views from around the Kīlauea crater toward the bluff would appear more visually intact. In addition, the project would implement the GMP's option to remove infrastructure on the bluff.

### 3.4.3.2 USGS Field Station

Two KOPs would have potential views of the proposed USGS field station with KOP 6 located along Crater Rim Drive west of KMC and KOP 7 located in the KMC entrance area, adjacent to the front office and first row of cabins (see visual simulations in Appendix D).

From KOP 6, views of the proposed USGS field station would be screened from view in the large openings in the forest along Crater Rim Drive and if visible in small gaps in the forest, the project would not attract attention from roadway as the dark colors proposed for the building would blend into the forest setting. Two simulation overlays were completed, confirming the project would not be visible in the larger openings along the roadway. Since views would be screened, there would be limited impacts on viewers and their experience driving Crater Rim Drive. Other than a small existing telecommunications line, the highly visited natural appearing landscape from Uēkahuna bluff to KMC would continue to support park interpretive themes, including those associated with perpetuating endemic Hawaiian ecosystems. Preservation of the native vegetation along Crater Rim Drive and adjacent to the proposed USGS field station, especially the koa and 'ōhi'a trees on the southwest corner of the proposed building, are essential to maintain this intact corridor and indirectly support interpretive themes for this unique drive along the north side of an active volcano.

As viewed from KOP 7, the proposed USGS field station would be partially compatible with the existing landscape character, as there are existing structures from different eras, including the historic KMC cabins as well as a maintenance facility with a large warehouse. The project would interrupt the continuity of the landscape and introduce a more modern building into a view dominated by historic structures. Specifically, the split-gable roof and height of the building would attract attention and would be prominent as viewed from KMC. Existing vegetation would partially screen views of the proposed building. Casual observers would likely view the proposed USGS field station as being outside of the portion of KMC with an orderly design and if they were visiting later in the day, such as for parking for lava viewing, the building would have limited impacts on their experience. History and military history focused visitors, as well as repeat local observers, may view the project as an incongruent landscape feature, which could begin to reduce the intactness of the historic setting, but since the proposed USGS field station would not be readily visible from many locations in KMC, there would be limited impacts on the experience of walking the grounds. Because there are limited existing interpretive opportunities at KMC, the project would have no impacts on those park values and themes. During volcanic events, when the area is used as an overflow parking area, the presence of the USGS field station may increase the ability for USGS staff to interact with the public, resulting in potential long-term beneficial impacts. This strengthens the mission for the Park Support Zone

identified in the GMP to work with National Park Service partners to provide a range of experiences for visitors. This additional attention also affords the National Park Service an opportunity to increase interpretive themes in KMC, at the proposed USGS field station, and adjacent to the historic ball field, to educate the public on this evolving historic landscape. Based on these potential opportunities to increase interpretive opportunities and through minor modifications to the proposed USGS field station design to better blend with the existing setting, including planting of additional native vegetation to further screen views, the project would not result in long-term adverse effects when considering its overall effects on landscape character, viewer experience, and National Park Service management.

### 3.4.3.3 Replacement Visitor Center

Two KOPs would have views of the replacement visitor center with KOP 2 located at the current entrance to the existing KVC/HQ parking lot and KOP 5 located where motorists and hikers would have their first view of the existing KVC/HQ as they return from the Steam Vents area (see visual simulations in Appendix D).

As viewed from KOP 2, the replacement visitor center would result in long-term adverse impacts as the project would be co-dominant with the existing KVC/HQ and expand the area viewed as modified, leading to a more recreation-focused landscape compared to the existing recreation/natural setting. For most viewer types, this would be counterbalanced with the additional interpretive opportunities afforded by the replacement visitor center with enhanced 24/7 interpretive and trip planning information. Additionally, the design of the replacement visitor center mimics the elements found in the existing KVC/HQ. Through maintaining vegetation along Crater Rim Drive and behind the new building, as well as the planting of native plants within the replacement visitor center parking lot, medians, and entrance, the physical presence of the building, including the proposed solar panels, would be reduced, bringing it more in scale with the existing KVC/HQ and the surrounding forest. From a National Park Service management perspective, the replacement visitor center would further the purpose of the Visitor Services Zone to support a high level of visitor use, access, and interpretation. Through thoughtful design of the replacement visitor center (e.g., choosing appropriate building materials to match the existing buildings, including roof color, and planting additional vegetation to screen views) and additional interpretive opportunities, increasing the importance of this location to further park interpretive themes and the stories communicated to visitors, the project would not result in long-term adverse impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management.

Since the replacement visitor center would be partially screened from view and the design would mimic the existing KVC/HQ, the project would attract attention but would not be prominent in the setting as viewed from KOP 5. Some viewer types would likely not notice the addition of the project, especially first-time visitors or casual eye observers who may anticipate a more developed character adjacent to a visitor center in a national park. For critical eye observers and repeat local observers, the addition of the replacement visitor center would begin to shift this landscape toward a more recreation development-focused character, instead of the existing balanced recreation/natural composition, which is more directly visible from KOP 2. The historic setting of the area would be minimally impacted as the project would not dominate the historic character of this area and would visually blend with the existing KVC. As described for KOP 2, maintaining native vegetation between Crater Rim Drive and the buildings (mostly 'ōhi'a and koa), would maintain the visual continuity of this setting for the high number of visitors who travel this corridor. The intactness of vegetation along this corridor is especially important for critical observers and repeat local observers. From a National Park Service management perspective, the replacement visitor center would facilitate increased visitor interpretive opportunities. Based on the thoughtful design of the replacement visitor center, including using existing and proposed vegetation to screen views; choosing appropriate building materials to match the existing buildings, including roof color; increasing opportunities for site interpretive



experiences; and furthering the purpose of the Visitor Services Zone to support high level of visitor use, the project would result in long-term beneficial impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management.

In summary, the addition of the replacement visitor center would expand the area viewed as modified within the Visitor Services Zone, leading to a more recreation-focused landscape within the kauhale (integrated campus).

#### **3.4.3.4 Park Entrance**

As viewed from KOP 1, the proposed transportation improvements near the park entrance station would result in long-term adverse impacts on landscape character, as the project would be incompatible with the existing setting through the introduction of more transportation features into a mostly natural setting. Vegetation clearing proposed to accommodate the traffic circle and new entrance to existing KVC/HQ would interrupt the existing continuity of the forest and introduce a new focal point after passing the park entrance station. The first impression of driving Crater Rim Drive and approaching the existing KVC/HQ, compared to the existing setting, would be modified as the densely vegetated road corridor would be more open. The additional signage would improve wayfinding upon entering the park, construction of the traffic circle would facilitate safer traffic flow, and the additional entrance lane would reduce wait times to enter the park during times of high visitation. Based on these potential opportunities to increase interpretive opportunities sooner in the park through entrance signage as well as mitigation to preserve vegetation to the extent possible and plant native vegetation within the center of the traffic circle, the project would result in some long-term adverse impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management. However, to further reduce these impacts, the planting of low-growing native vegetation within medians and along the roadside would visually break up expanses of pavement to blend with the natural setting and minimize the visual width of entry into the park.

#### **3.4.3.5 Resources Management Complex**

The deconstruction of non-historic National Park Service structures in the Resources Management Complex would decrease the extent of human made modifications in that area, trending toward a more natural landscape character. The dense forest surrounding the Resources Management Complex and the distance from visitor use areas means that it is unlikely that visitors would see any changes to this area. Since this area would continue to not be open to the general public, there would be no adverse impacts to viewers or recreation experiences except for those who would work in the National Park Service relocated office space within the former PIERC-KFS buildings.

#### **3.4.4 Cumulative Impacts**

The past, present, and reasonably foreseeable actions have modified the natural character of the landscapes that comprise area of visual effect, including the areas along Crater Rim Drive, adjacent to KMC, on Uēkahuna bluff, in the Resources Management Complex, and in the kauhale (integrated campus). Some of the past and present projects focused on increasing recreation and interpretive opportunities (e.g., 'Ōhi'a Wing renovation and replacement of wayfinding signs), which have improved visitor experiences without generating additional visual impacts.

Under the no-action alternative, the addition of the waterline and fiber optic replacement projects would generate short-term adverse visual and recreation experience impacts until vegetation has successfully regrown in the areas disturbed during construction. The air tour management plan would include conditions designed to protect resources, including viewsheds, which would reduce impacts on visual and recreation opportunities within the park. Overall, the past, present, and reasonably foreseeable projects have had long-term adverse impacts to natural-appearing viewsheds.

The proposed action would, in general, increase visitor interpretive opportunities both at the existing KVC/HQ and on Uēkahuna bluff as well as provide an experience more in tune with the area's natural, cultural, and historic character. The construction of the replacement visitor center, park entrance improvements, and the proposed USGS field station would further modify the natural landscape character adjacent to the kauhale, the area adjacent to KMC, and the park entrance area as described in Sections 3.4.3.2, 3.4.3.3, and 3.4.3.4. The construction of the waterline and fiber optic replacement projects would create short-term visual and recreation experience impacts, which if done at the same time as the construction of the project, would generate temporary additive impacts, including those to views along Crater Rim Drive. All alternatives under the air tour management plan, except the no-action alternative, may have the potential to reduce impacts on visual and recreation opportunities within the park due to less visual distraction generated by helicopter overflights, which in combination with proposed building deconstruction on Uēkahuna bluff, would further reduce impacts on the setting adjacent to Kīlauea Crater. However, the air tour management plan is not complete yet. Overall, the past, present, and reasonably foreseeable projects, in combination with the proposed action, would have long-term adverse impacts to viewsheds adjacent to the kauhale, KMC, and park entrance area with the potential to increase interpretive and recreation opportunities at these locations. On Uēkahuna bluff, the past, present, and reasonably foreseeable projects, in combination with the proposed action, would trend toward decreasing impacts in this visually sensitive and sacred landscape.

### **3.5 CULTURAL LANDSCAPES AND HISTORIC STRUCTURES**

#### **3.5.1 Affected Environment**

Cultural landscapes consist of "a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein) associated with a historic event, activity, or person or that exhibit other cultural or aesthetic values" (Page et al. 1998). There are three cultural landscapes and an NRHP-nominated site that are relevant to the project that intersect the approximately 24.04-acre project area of potential effect (APE) (Figure 1). The cultural landscapes are 1) Crater Rim Historic District, 2) Kīlauea Administration and Employee Housing Historic District, and 3) KMC Historic District; the NRHP-nominated site is the Kīlauea crater. A CLI has been completed for three of these landscapes: Crater Rim Historic District, Kīlauea Administration and Employee Housing Historic District (National Park Service 2006a, 2006b), and KMC Historic District (National Park Service 2012).

These districts contain numerous historic structures, viewsheds, and associated landscape features. A brief summary of each cultural landscape is provided below.

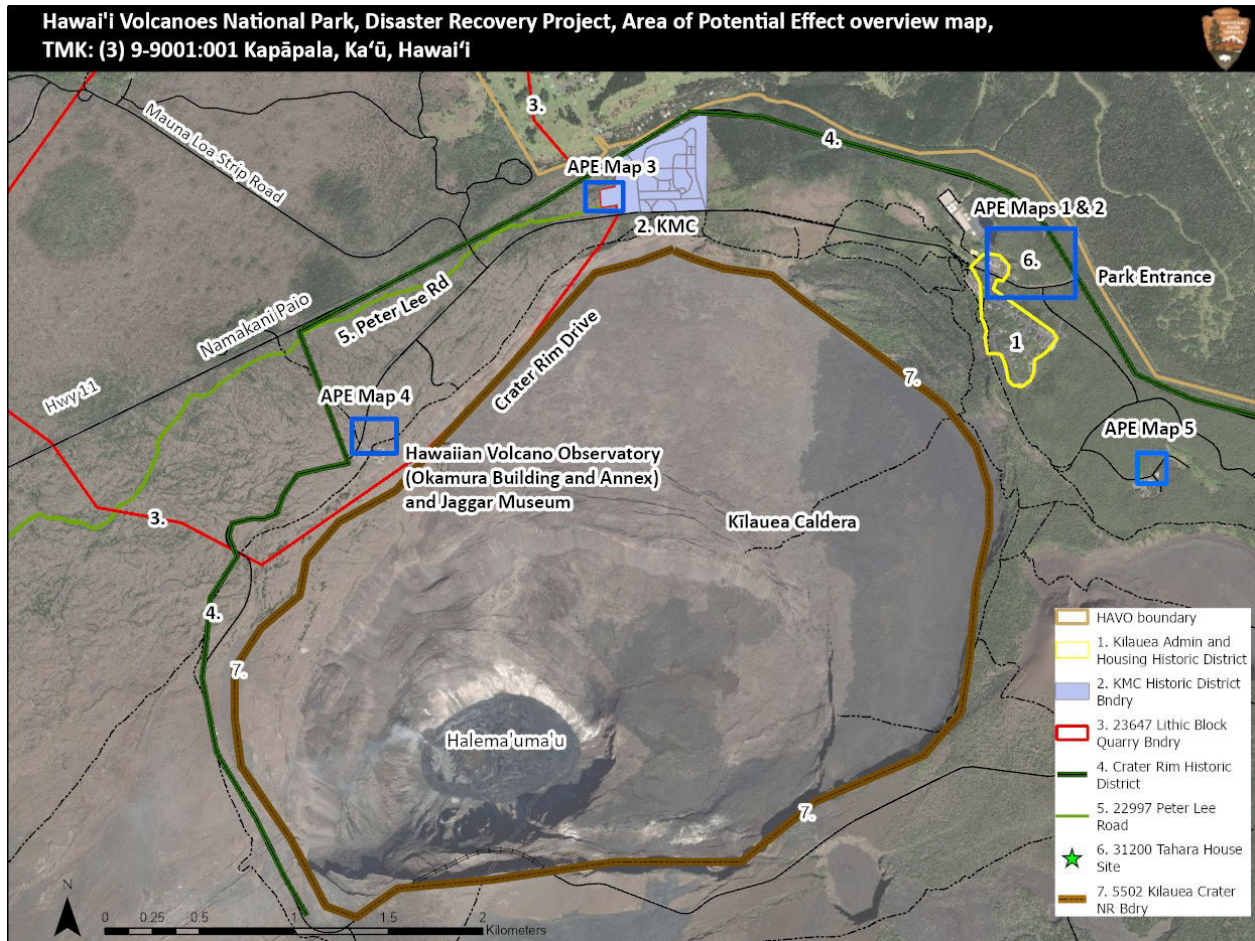


Figure 1. Area of potential effect overview map.

### 3.5.1.1 Crater Rim Historic District

Crater Rim Historic District is an approximately 5,000-acre historic district that extends in and around Kilauea crater in Hawaii Volcanoes National Park. The boundary of the Crater Rim Historic District encompasses Crater Rim Drive, a 10.6-mile scenic loop road that takes visitors around the crater rim and onto the crater floor, which is listed on the Hawaii State Register of Historic Places. The district also includes the road's associated features, parking lots, and overlooks; and the buildings and developed areas on the crater rim. The historic district is eligible for listing in the NRHP under Criteria A for its association with early park planning at Hawaii Volcanoes National Park and its association with the Civilian Conservation Corps (CCC) program, and under Criteria C for its distinctive design style, which exemplifies the "Park Service Rustic" style and naturalistic landscape architecture perpetuated by the National Park Service in the period between the World Wars I and II. The period of significance for the historic district spans the years 1916 to 1942, covering the period of primary park development and CCC involvement.<sup>1</sup>

<sup>1</sup> The NRHP nomination identifies the period of significance as 1907 to 1983 while the CLI identifies the period of significance as 1916 to 1942. For the purposes of this analysis, the 1916 date is used as it corresponds with the formal creation of the park and the CLI, which is more holistic and therefore includes more resources, is assumed to take precedence over the nomination form. The nomination form included as eligible resources ones that were built or changed up to 1983.

Per the CLI (National Park Service 2006a), the Crater Rim Historic District retains sufficient overall integrity to convey its historical significance. "The district's location around the edge of Kīlauea Caldera, its setting as a relatively developed section of the park, its feeling as a coherent group of similar resources, and its associations with the park's development history are intact." The historic district's character is further enhanced by the natural setting and views. Additionally, the district's overall design, materials, and workmanship have not been compromised by previous park additions and façade changes.

As mentioned above, although the Crater Rim Drive is a contributing structure to the overall Crater Rim Historic District, it is also independently listed on the Hawai'i State Register of Historic Places. The road is significant under Criterion A for its association with the history of the National Park Service road design and construction principles as well as the National Park Rustic style. It is also significant in the history of volcanology and the story of tourism and the Hawaiian Islands. The period of significance for the road spans 1916 to 1942 with additional significant volcanic eruptions and earthquakes that influenced the development of the road in 1959, 1971, 1974, 1980, and 1982 (National Park Service 2007). A portion of this road fell into the crater in 2018 and the National Park Service does not currently have plans to rebuild that section of the road.

#### *3.5.1.1.1 Historic Structures/Features*

The Crater Rim Historic District contains two historic structures that are present within the APE and could be impacted by project activities: Jaggar Museum and Crater Rim Drive.

The following is a description of the Jaggar Museum, excerpted from the park's CLI (National Park Service 2006a).

The Jaggar Museum, named for renowned volcanologist Thomas Jaggar, was built in 1927 and donated to the Department of Interior, of which the National Park Service is a part. Located on the rim of Kīlauea on Uwekahuna [Uēkahuna] bluff, the Rustic style museum provides views of Kīlauea crater, Ka'ū Desert, Mauna Loa and Mauna Kea in addition to housing interpretive exhibits.

This one-story lava stone and wood clapboard building on the rim of the caldera is rectangular in plan with a modern metal-clad, hipped roof. The front elevation features a projecting entry canopy with lava stone piers and a pair of glazed wood doors. To the north of the entry are six louvered vent panels above a lava stone base. The south side elevation is composed of three bays separated by lava stone piers with rows of fixed wood sash windows, while the east elevation facing the caldera is stone-clad with three windows. A rather long asphalt walkway leads from the parking area to the main entry and to large asphalt viewing areas on the building's south and east sides. These platforms have lava stone retaining walls. The building includes a large addition constructed by the USGS in the 1980s.

In 1986, the USGS attached a large, new facility to the Jaggar Museum. Despite the large addition, the Jaggar Museum retains the architectural details, spatial layout, use, and relationship to the rest of the district's resources, and contributes to the district's integrity.

Crater Rim Drive is the primary park road located within Hawai'i Volcanoes National Park on the island of Hawai'i. It is accessed by the short entrance road to the park, which extends from Highway 11, a highway that circles the entire island. The 10.6-mile, two lane, paved loop Crater Rim Drive circles the rim of Kīlauea caldera, providing scenic views, as well as parking lots and pull offs for trails and scenic overlooks. The road's design was originally established in the 1930s General Development park plans. Crater Rim Drive and its associated structures were constructed by 1942, but have since undergone periodic reconstruction and rerouting in response to natural disasters like volcanic eruptions and

earthquakes, notably from 1959 to 1962, 1975 to 1976, and 1982 to 1983. A portion of this road fell into the crater in 2018 and the National Park Service does not currently have plans to rebuild that section of the road.

The road design follows the National Park Service general principle of minimally invasive park road construction via use of design features such as 1) aligning park roads to highlight scenic elements, 2) following the topography of the land, 3) creating scenic vistas through vegetation management, 4) introducing traffic calming measures such as narrow roadways, and 4) using native materials in construction. As noted in the National Park Service (2007) nomination for eligibility for the NRHP, Crater Rim Drive retains a high degree of integrity:

These characteristics of park road construction can be seen at Crater Rim Drive with its siting along the edge of and in the Kīlauea caldera. This gives visitors the opportunity to see such landscape features as the grasslands along the Steam Vents, the barren volcanic landscape and lava flows within the crater, and the lush vegetation in the vicinity of the Nāhuku, Thurston Lava Tube. The sinuous layout follows the topography of the land, with cuts and fills naturalized so that the engineering involved in constructing the road is concealed. The physical road and structures along it are integrated as a seamless whole. The engineered structures associated with the road, such as lava-rock lined ditches, culverts with lava rock headwalls, and lava rock guardwalls, reflect the National Park Service Rustic style, as do structures associated with visitor use, such as the Thurston Lava Tube comfort station. The structures blend in with their surrounding environment through the use of native materials and form, a hallmark of early NPS [National Park Service] design philosophy.

The Crater Rim Historic District includes contributing viewsheds and vistas. Two contributing viewsheds that are applicable to this undertaking are the Volcano House view and the Waldron's Ledge view, from which the Uēkahuna bluff is visible across the caldera.

### **3.5.1.2 Kīlauea Military Camp Historic District**

The KMC Historic District encompasses 52.7 acres at the northern edge of Kīlauea crater and has been evaluated and determined to be eligible at the state level under NRHP Criterion A for its association with historic events involving the early establishment and development of the U.S. Army on Hawai'i Island, and its role during World War II as the U.S. Army Hawaii District headquarters, as a detention center for Japanese-American civilians rounded up in the aftermath of the December 7, 1941, attack on Pearl Harbor, and as a prisoner-of-war camp in the late years of the war. It has also been determined eligible under NRHP Criterion C as an intact example of a lengthy period of military construction in Hawai'i beginning in 1916 and extending to just after World War II. It represents some of the earliest military construction in the Hawaiian Islands, and its initial development was the earliest important event in U.S. military history on the island of Hawai'i. The camp has also been determined eligible under NRHP Criterion C for being architecturally significant in its Hawai'i-focused architectural styles (Plantation and Vernacular), use of local materials, particularly lava rock, and the adaptation of the camp buildings to the mountain environment.

The period of significance is 1916, when the first three buildings (Buildings 34, 35, and 40) were constructed, to 1947 following the last period of major development in the camp (National Park Service 2021a). KMC is on National Park Service land and authorized to be operated by the U.S. Army as a Morale, Welfare, and Recreation site used by active and retired military members. Although some of the contributing features have been slightly altered, and non-contributing structures added, the district retains sufficient overall integrity to convey its historical significance (National Park Service 2006a).

#### *3.5.1.2.1 Historic Structures*

No historic structures were identified within the APE, however, the proposed new USGS facility is directly adjacent to the historic ball field.

### **3.5.1.3 Kīlauea Administration and Employee Housing Historic District**

The Kīlauea Administration and Employee Housing Historic District covers 43 acres along Crater Rim Drive. The housing and administrative district was determined eligible for the NRHP under Criterion A for its association with early park planning at Hawai'i Volcanoes National Park and with the CCC program. It is also significant at the state level under Criterion C, distinctive architectural design, because its contributing features exemplify the "Park Service Rustic" style. The period of significance spans 1927 to 1942, covering the years of initial master planning efforts, development, and CCC involvement.

Today, the historic district contains the main administrative and residential area for Hawai'i Volcanoes National Park, and existing landscape characteristics continue to contribute to the historic district's integrity. Despite alterations to individual contributing buildings, such as small additions, new roofs, and the replacement of a small number of windows, the district's overall design, materials, and workmanship have not been compromised (National Park Service 2006b). The district is divided by zones: the Administrative Zone, Housing Zone, and Maintenance Zone. The project is within the Administrative Zone of the historic district.

#### *3.5.1.3.1 Historic Structures*

No historic structures were identified that are directly located within the APE, however, the proposed replacement visitor center is adjacent to the existing KVC/HQ, which is a historic building and a contributing structure to the Kīlauea Administration and Employee Housing Historic District.

### **3.5.1.4 Kīlauea Crater**

The Kīlauea crater was nominated for the NRHP in 1974 for both its religious and scientific significance. The site is one of the world's most active volcanoes, which, as discussed in the NRHP nomination form (National Park Service 1974), "has affected human life, cultures, religions and undertakings and in historic times has attracted local and worldwide governmental, tourist and scientific interests. Kīlauea crater has been, and is, both worshipped and studied." The site boundary is defined by the crater edge.

#### *3.5.1.4.1 Historic Structures*

No historic structures were identified within the property boundary although the buildings and observation platform at Uēkahuna are sited directly adjacent to the crater's edge, which is the boundary for the NRHP site.

## **3.5.2 No-Action Alternative**

Under the no-action alternative, no repair, replacement, deconstruction, or relocation of the facilities and functions that were damaged at Uēkahuna bluff by the 2018 eruption would be made within Hawai'i Volcanoes National Park. Leaving the buildings would most likely result in an adverse effect to the Kīlauea crater because the damaged buildings would remain on the landscape directly adjacent to the crater's edge. The buildings would likely continue to degrade, increasing their adverse effect. However, by not replacing the damaged buildings, the no-action alternative would reduce educational and scientific research land uses that have historically been provided at the park. Since critical radio

and telemetry infrastructure would remain intact and continue to function near the site of the Okamura building, and the existing KVC/HQ would still be operational, these changes would not be an adverse effect.

### 3.5.3 Proposed Action

In this environmental assessment, cultural resources impact analysis complies with the requirements of NEPA and Section 106 of the National Historic Preservation Act. Under 36 CFR 800, the implementing regulations for Section 106, a determination of either adverse effect or no adverse effect must be made for affected NRHP listed or eligible cultural resources. For the purposes of this EA, any project action that results in a change that would alter, directly or indirectly, any of the characteristics of a site, structure, or landscape pattern or feature that would qualify a historic property for inclusion in the NRHP would be considered adverse. Direct impacts are those changes that result in noticeable physical impacts to the historic property's historic character, such as major earthmoving or construction of new buildings and structures. Indirect impacts result in impacts to the historic property that do not directly alter its physical character, but are noticeable, such as changes to the viewshed during construction.

Deconstruction of National Park Service office spaces in the Resources Management Complex (see Section 2.2.7, Resources Management Complex) is not discussed below, as the structures are less than 50 years old, are temporary structures, and do not display any craftsmanship or unique architectural elements. The Resources Management Complex would be evaluated under a revised and updated Crater Rim Historic District NRHP nomination form (as discussed under Section 2.2.9.4, Cultural Resources).

As part of the Section 106 of the National Historic Preservation Act process, an evaluation of effects for the overall undertaking has been prepared for the project and will be submitted to the Hawai'i State Historic Preservation Office for review and concurrence.

#### 3.5.3.1 Crater Rim Historic District

The proposed action would implement several actions with potential to impact the landscape characteristics of the Crater Rim Historic District and historic structures that contribute to its historical significance:

- Deconstruction of all the buildings and structures at the Uēkahuna bluff, excluding the 1986 comfort station and a radio transmission tower.
- Revegetation and repair or improvements to remaining utilities and visitor amenities at Uēkahuna bluff.
- Construction of a two-story-high modern research USGS facility adjacent to KMC.
- Road realignment and installation of a roundabout at the park entrance along the Crater Rim Drive. (Note: this is not within the district but adjacent to the district, so there are potential indirect impacts.)
- Construction of the replacement visitor center and parking lot in the Administrative Zone of the Kīlauea Administration and Employee Housing Historic District.

##### *3.5.3.1.1 Uēkahuna Bluff*

The Uēkahuna bluff is located at the summit of Kīlauea and is considered a sacred site to many Native Hawaiians and other groups. It is also where the Okamura and Annex buildings, which make up the HVO buildings complex, and the Jaggar Museum were constructed. The Okamura building and Annex

are not historic and are non-contributing features to the historic district therefore the deconstruction of these two buildings would have no adverse effect to the Crater Rim Historic District. As described in the 2006 CLI, the Jaggar Museum is a historic building, retains historic integrity although it has undergone some alterations, and contributes to the character of the historic district (National Park Service 2006a). Deconstruction of the Jaggar Museum is an adverse effect, both for the structure itself and overall to the historic district. However, since Uēkahuna bluff is considered a sacred site for many and is used as an area for cultural practices that honor Pelehonuamea, removing the structures is a long-term beneficial effect to the ethnographic resource. The proposed action would make repairs and additions to remaining features at Uēkahuna bluff, including incorporating the Jaggar Museum building footprint into the existing viewing area and repairing historic perimeter stone walls. The two parking lots, including the one closest to Crater Rim Drive identified as a contributing feature to the Historic District, would remain unchanged. The National Park Service would maintain the historic character of features by following the Secretary of the Interior's Standards for the treatment of historic properties and will also reuse salvaged material where feasible. Revegetation of demolished building footprints with native plants and improved access to views could enhance these landscape characteristics. While deconstruction of much of the vertical construction at Uēkahuna bluff is considered beneficial to the ethnographic landscape, the removal of Jaggar Museum is an adverse effect to the Crater Rim Historic District.

The Crater Rim Historic District includes contributing viewsheds and vistas. Two contributing viewsheds that are applicable to this undertaking are the Volcano House view and the Waldron's Ledge view, from which the Uēkahuna bluff is visible across the caldera. Removing the buildings at the Uēkahuna bluff will be an improvement to the spectacular views that characterize these contributing features therefore there will be no adverse effects to the viewsheds and vistas from this action.

#### *3.5.3.1.2 USGS Field Station*

The new USGS field station adjacent to KMC would be located approximately 282 feet from Crater Rim Drive, with parking and other ancillary structures set behind the building. No new driveway is proposed leading from Crater Rim Drive. With the siting of the building within existing vegetation, the colors chosen to purposefully help the building blend in with the natural surroundings, and the proposed location of the building at the edge of the historic district and not visible from the main locations within the historic district, the building will have no adverse effect on the historic district. Building construction would have no adverse effect on the Crater Rim Historic District because it will not be visible from Crater Rim Drive. USGS intends to use a portion of the historic ball field for staging materials and vehicles during construction. This use would be temporary and would not permanently alter its feeling or setting. Therefore, there would be no adverse effect.

#### *3.5.3.1.3 Park Entrance*

The section of road along which the roundabout is proposed to be constructed lies within a non-contributing segment of Crater Rim Drive. The roundabout would reestablish a portion of the original road alignment that was previously abandoned because of seismic events that occurred in the 1960s. The installation of the roundabout will have an adverse effect on the integrity of the Crater Rim Historic District because it introduces a road intersection configuration and width of road that is not compatible with the intersection configuration and entrance road width used during the historic district's period of significance. The National Park Service would design and construct the road and roundabout to maximize the amount of forest retained and to be consistent with the Secretary of the Interior's Standards for the treatment of historic properties.

### **3.5.3.2 Kilauea Military Camp Historic District**

Construction of the new USGS field station and associated parking lot immediately west of KMC would be sited adjacent the historic ball field on the western side of the camp, precluding any direct



adverse effects. The National Park Service would maintain vegetation to the maximum extent possible between the new facility and historic ball field to minimize changes to the historic district's natural setting. The new facility would be located on the very perimeter of the camp, directly adjacent to the non-contributing motor pool service area that contains modern buildings. From many places of the camp the proposed building will not be visible. In addition, the building will have its own unique characteristics, delineating it from the historic buildings that make up the historic district. While the building will be clearly a modern addition to the landscape, it references the materials and stylistic language of the park, which further reduces impacts. It will be painted to blend in with the natural forest surroundings it will be constructed within. In addition, this road serves primarily as a service road and is not within the primary path of visitors to the site. The new field station would require aboveground power lines along KMC Road R-9 to provide electricity to the facility. Introduction of these powerlines would not alter views from KMC because the entire district has above ground power lines. Based on the siting of the building being tucked away within the existing vegetation, the colors chosen to purposefully blend it in with the natural surroundings, and its proposed location on the very perimeter of the camp, not visible from many locations throughout the camp, it is assessed to have no adverse effects to the historic district and cultural landscape.

### **3.5.3.3 Kīlauea Administration and Employee Housing Historic District**

Construction of the replacement visitor center would introduce a new 13,000-square-foot structure that would be built on a portion of the existing visitor parking and forested area. The existing KVC/HQ, visitor parking lot, and surrounding forested setting all currently contribute to the character of the historic district (National Park Service 2006b). Therefore, although the replacement visitor center would be designed to comply with Secretary of the Interior's Standards for Rehabilitation, in particular Standard 9 (36 CFR 67.7) as it would be consistent with existing architecture and compatible with the massing, size, scale of the existing KVC/HQ, the proposed action would represent a direct adverse effect on the historic district by introducing a new building and parking lot into the Administrative Zone. The National Park Service would leave a strip of natural landscape between the existing KVC/HQ and the replacement visitor center to minimize adverse effects to the historic district.

### **3.5.3.4 Kīlauea Crater**

Based on the current definition and boundary established for the Kīlauea Crater, most actions associated with the proposed action would occur outside the crater and would have no effect on the NRHP-listed property. Proposed deconstruction of buildings at Uēkahuna bluff would occur directly adjacent to the property. However, as noted in Section 3.6. Ethnographic Resources, Uēkahuna Bluff, the caldera is considered sacred by many Native Hawaiians and others, and deconstruction of structures and the restoration of a more natural environment would be considered beneficial to the sanctity of the property. Therefore, there would be no adverse effect.

### **3.5.4 Cumulative Impacts**

Past and present actions in the park include existing facility, trail, and road repairs or renovations; replacement of wayfinding signs; and utility upgrades. These actions, as described under Section 3.5.1, Affected Environment, have not resulted in changes to the overall integrity of the three historic districts and Kīlauea Crater. Reasonably foreseeable actions of waterline and fiber optic replacement or changes to air tour management could result in temporary or intermittent changes to the integrity of setting and feeling due to construction activities, vegetation removal, or potential changes in views and sounds of planes or helicopters. Evaluation of cultural resource impacts and mitigation (as needed) would occur prior to adoption of any air tour management changes. If the air tour management plan is determined to have adverse effect, then appropriate mitigation/documentation will be completed. Other future projects would be localized and limited in duration. Therefore, no adverse effects are

anticipated, but the air tour management plan is too early in the planning process to know what effect it will have.

Under the no-action alternative, there would be no additional cumulative impact than those disclosed in Section 3.5.2, No-Action Alternative, because no project construction or renovation activities would occur that would impact the integrity of the NRHP site.

The proposed action would deconstruct the Jaggar Museum, which contributes to the Crater Rim Historic District, as well as introduce modern elements into road design and remove vegetation that supports the current natural setting. However, the National Park Service would implement mitigation measures and design features to minimize project impacts. Likewise, the deconstruction of buildings on Uēkahuna bluff would be beneficial to preserve the sacredness of the caldera. However, the effects from the air tour management plan are currently unknown and even with mitigations for the reasonably foreseeable actions there could be potential adverse effect to resources. Therefore, there could be additional cumulative adverse effects when project impacts are added to past, present, and reasonably foreseeable impacts.

### 3.6 ETHNOGRAPHIC RESOURCES

#### 3.6.1 Affected Environment

As defined in *Cultural Resource Management Guidelines*, ethnography is “concerned with the peoples associated with parks, with their cultural systems or ways of life, and with the related technology, sites, structures, other material features, and natural resources.” Ethnographic resources can include subsistence and ceremonial locales and sites, structures, objects, and rural and urban landscapes assigned cultural significance by traditional users (National Park Service 1998).

The volcanic landscape found throughout the park is considered an ethnographic landscape that is very important to the Native Hawaiians. Based on a 2003 ethnographic study conducted by Charles M. Langlas, *Native Hawaiian Use of Hawai'i Volcanoes National Park: A Historical and Ethnographic Overview*, Native Hawaiians view the entire Kīlauea crater as sacred and as the “origin of new land.” Many Native Hawaiian cultural practitioners come to Kīlauea for ceremonies, ho'okupu, and paying tribute to the deity Pelehonuamea who resides at Halema'uma'u. Chants and recorded oral accounts say that Pele and her family traveled to Hawai'i from Kahiki, searched the island chain and settled at Kīlauea. Pele is an aumakua (ancestral god) for some Hawaiians and an akua (unrelated god) for others. Those that are descended from Pele have a special relationship with her; they may pray for help and have the right to be united with her after death. For some, Pele is important as the goddess who controls and is embodied in volcanic phenomena. She must be respected and given offerings by those seeking protection from her forces. Pele is manifested in molten lava, steam, earthquakes, and thunder and lightning connected with volcanism. She is present at Halema'uma'u crater, within Kīlauea caldera, but also at other pit craters around Kīlauea, and in east and southwest rift zone eruptions and the other volcanoes on Hawai'i Island. Traditionally, Hawaiians have left offering to her, especially when there is an eruption, and the whole area around Kīlauea caldera is sacred (Langlas 2003). As summarized in the 1974 NRHP nomination form for the Kīlauea crater:

To prehistoric Hawaiians, many historic Hawaiians, and to many contemporary residents of the Hawaiian islands of various ethnic backgrounds, Kīlauea Crater was, and is, the permanent home of the Polynesian volcano goddess Pele. The goddess is believed to leave it for temporary residence at eruption sites outside the crater, but to always return to her home under Kīlauea Crater, where she may rest, perhaps sleep, for the periods between eruptions of Kīlauea, Mauna Loa, Hualalai and Haleakala volcanoes on the islands of Hawaii and Maui... Many individuals still believe in and make offerings to propitiate the goddess believed to have the capacity to kill people, and to destroy farms, homes, and land. Reward and punishment by

Pele through her lava flows is a frequent motif in old and updated stories and lore. (National Park Service 1974)

The ethnographic study (Langlas 2003) also found that religious rituals and collection of plants for religious or medicinal purposes, in particular 'a'ali'i (*Dodonaea viscosa*) and liko lehua (the leaf buds of the 'ōhi'a tree), occur throughout the park. Collection is also done of plants to wear as lei in performing hula. Uēkahuna bluff is one of three traditional ritual sites reported in the study for giving offerings (ho'okupu). Due to visitor activity, cultural practitioners often go early in the morning or evening to increase the likelihood of privacy.

### 3.6.1.1 Vegetation

Vegetation and forested areas within the Crater Rim Historic District are a major character-defining feature and an important source of spirituality and self-identification for many residents of Hawai'i. One study examining resident connection with nature found that cultural heritage is strongly linked to forest for many residents of Hawai'i, particularly for Native Hawaiians (Gould et al. 2014). Similarly, a study prepared for the park (Keali'ikanakoleohailani 2009) found that ceremony and ritual take place most commonly in the kīpuka, the forested areas, at Kīlauea and other craters, at the coast where new lava is being formed, and at places where private family ceremonies are conducted, including the visiting of grave sites. Medicine collection requires lightly and densely forested regions. In addition, forested area are the places where traditional plant picking occurs for cultural use.

A study completed by Kumu Pono Associates LLC (2004) states the following:

We find in native traditions and beliefs, that Hawaiians shared spiritual and familial relationships with the natural resources around them. Each aspect of nature from the stars in the heavens, to the winds, clouds, rains, growth of the forests and life therein, and everything on the land and in the ocean, was believed to be alive. Indeed, every form of nature was a body-form of some god or lesser deity. In the Hawaiian mind, care for each aspect of nature, the kino lau (myriad body-forms) of the elder life forms, was a way of life. This concept is still expressed by Hawaiian kūpuna (elders) through the present day, and passed on in many native families. Also, in this cultural context, anything which damages the native nature of the land, forests, ocean, and kino lau therein, damages the integrity of the whole. Thus caring for, and protecting the land and ocean resources, is important. In the traditional context above referenced, we find that the land, the native plants and life-forms, and the intangible components therein, are a part of a sacred Hawaiian landscape. Thus, the landscape itself is a highly valued cultural property. It's [sic] protection, and the continued exercise of traditional and customary practices, in a traditional and customary manner, are mandated by native custom, and State and Federal Laws.

### 3.6.2 No-Action Alternative

Under the no-action alternative, no repair, replacement, deconstruction, or relocation of the facilities and functions that were damaged at Uēkahuna bluff by the 2018 eruption would be made within Hawai'i Volcanoes National Park. Leaving the buildings would most likely result in an adverse effect to the ethnographic resources because the damaged buildings would remain on the landscape. The buildings would likely continue to degrade, increasing their adverse effect.

### 3.6.3 Proposed Action

Project construction and deconstruction activities at Uēkahuna bluff would occur over a 2-year period. During that timeframe, the National Park Service would implement a project requirement that no loud (defined as 60 decibels at 50 feet) outdoor deconstruction or construction work could occur

60 minutes after sunrise and 60 minutes before sunset, the time period when many come to the area for cultural practices. These actions would minimize, but not avoid, adverse impacts to traditional practices in the area. However, effects would cease when the construction period ends. Long term, deconstruction of Uēkahuna bluff buildings would be beneficial since structures are considered inappropriate to Uēkahuna bluff as an ethnographic resource and detract from the sacred landscape.

As part of mitigation measures implemented for the project, the National Park Service would conduct a traditional cultural property study to document the ethnographic significance of the park, including the Kīlauea summit and caldera, focusing on Pelehonuamea and her physical representations within the park. This would expand National Park Service knowledge and potential future protection of ethnographic resources that extend beyond the caldera edge. This study would be completed during implementation of the proposed action.

The proposed action would also remove up to 75 'ōhi'a trees (that range from 6 to 20 inches in diameter at breast height) during construction of the park entrance, replacement visitor center, and USGS field station. Vegetation clearing would eliminate ethnographic resources (e.g., 'ōhi'a trees) as it would remove a section of a forested area and some individuals' sense of spiritual or heritage connection could be adversely affected by clearing and grading activities. As described in Section 2.2.9.2, Vegetation, the National Park Service would minimize tree removal and replant 'ōhi'a trees from locally sourced genetic materials. These actions would minimize, but not avoid, adverse ethnographic impacts; impacts would persist long term until revegetation efforts are successful.

### **3.6.4 Cumulative Impacts**

Past and present actions in the park include existing facility, trail, and road repairs or renovations; replacement of wayfinding signs; and utility upgrades. These actions have generally maintained access to and use of ethnographic resources. Reasonably foreseeable actions of waterline and fiber optic replacement or changes to air tour management could result in temporary or intermittent changes in access to or use of ethnographic resources due to construction activities, vegetation removal, or potential changes in views and sounds of planes or helicopters. Evaluation of ethnographic resource impacts and mitigation (as needed) would occur during development of an air tour management plan. It is too early in the planning process to know if there will be an adverse effect from the air tour management plan. Other future projects would be localized and limited in duration.

Under the no-action alternative, there would continue to be an adverse impact from the buildings on the Uēkahuna bluff. No other cumulative impacts would occur that would impact ethnographic resources because there would be no project construction or renovation activities.

The proposed action would not limit access to the Uēkahuna bluff for cultural practices other than the area that would be fenced off for construction. The National Park Service would implement mitigation measures and design features to minimize project impacts, including restricting outdoor work activities to one hour after sunrise until one hour prior to sunset. Likewise, the deconstruction of buildings on Uēkahuna bluff would be beneficial to preserve the sacredness of the caldera. However, the effects from the air tour management plan are currently unknown and even with mitigations for the reasonably foreseeable actions there could be potential adverse effect to resources. Therefore, there could be additional cumulative adverse effects when project impacts are added to past, present, and reasonably foreseeable impacts.

## **3.7 HEALTH AND HUMAN SAFETY**

### **3.7.1 Affected Environment**

The analysis area for health and human safety is the footprint of the project and Crater Rim Drive because this is the area where deconstruction and construction activities are proposed. The temporal

scale is the 2-year deconstruction and construction period when there would be increased safety issues and when the existing safety issues would be resolved.

Due to the eruption in 2018, the Jaggar Museum and Okamura building are not safe to occupy and ground movement in the area continues to impact these buildings. The Jaggar Museum and HVO complex is surrounded by cracks and active faults, and the area continues to subside on the crater side due to the caldera collapse, undermining slope stability and the building foundations. Currently these buildings are fenced off and no visitors are allowed in the area. The observation deck is also damaged and has sink holes and damaged walls.

During high visitor use times, there is traffic congestion at the entrance to the park that poses collision hazards for motorists and pedestrians. The location of the entrance station in relation to the left turn to access Crater Rim Drive creates confusion and collision hazards.

The existing KVC/HQ was not designed for the visitation it gets, as it was originally designed to be USGS lab spaces. This further contributes to the overcrowding of the space and causes safety concerns when the space is overcrowded, as it routinely is.

### **3.7.2 No-Action Alternative**

Under the no-action alternative, the existing safety issues listed in the affected environment would continue to occur resulting in long-term adverse impacts.

### **3.7.3 Proposed Action**

During deconstruction and construction the project would increase sound levels, traffic, and presence of heavy machinery in the park, which could adversely affect health and safety. Signs, barriers, and barricades would be used to clearly delineate work areas and prevent visitor travel near deconstruction or construction areas. Thus, the health and safety of visitors would not be adversely affected by the project. Under the proposed action, the Jaggar Museum, Okamura, and Annex buildings would be deconstructed and replaced with an expanded overlook area with the installation of new post and cable barriers around visitor use areas. Because the buildings that would be removed are unsafe, as is the current damage to the viewing area, the project would improve safety for visitors and staff resulting in long-term beneficial impacts.

The addition of a new entrance lane and the conversion of the Crater Rim Drive intersection to a roundabout are intended to address the safety issues that are currently occurring. The new entrance lane would allow administrative traffic to bypass the visitor traffic more quickly and would allow for two full lanes for visitor queuing capacity during peak visiting times. This would result in less frequent backups onto Highway 11. Visitor confusion on where to proceed at the intersection would be removed. The roundabout would create more free-flowing activity and would allow for safer connectivity and turns towards the visitor center, Crater Rim Drive West, Crater Rim Drive East, or the exit lane. According to studies completed by the Transportation Research Board, the installation of roundabouts can result in more than 90% reduction in fatalities, a 76% reduction in injuries, and a 35% reduction in all crashes. In addition, the slower speeds that are required for a roundabout are safer for pedestrians (Transportation Research Board 2001). The addition of the new entrance lane and the roundabout would provide long-term beneficial impacts to health and human safety.

The replacement visitor center is designed to address the overcrowding of the space and therefore would have a long-term beneficial effect on health and human safety.

### 3.7.4 Cumulative Impacts

Past and present actions in the park include existing facility, trail, and road repairs or renovations; replacement of wayfinding signs; and utility upgrades. These actions, as described in Section 3.1, Cumulative Impact Scenario, have generally improved the health and human safety aspects of the park. Reasonably foreseeable actions of waterline and fiber optic replacement or changes to air tour management are not likely to have an impact on health and human safety.

Under the no-action alternative, there would continue to be the safety issues described in Section 3.7.1, Affected Environment. The park would continue to address safety issues on a case by case basis, which may include items related to the 2018 disaster (e.g., deconstruction of the damaged buildings at the bluff, addressing congestion issues) but activities would be funding dependent and compliance would be completed as appropriate.

Under the proposed action there could be short-term adverse impacts from increased sound levels, traffic, and the presence of heavy machinery. The waterline and fiber optic replacement would intentionally occur at the same time as the proposed action and therefore would not increase the potential adverse impact. The proposed action would deconstruct unsafe buildings, create a safe viewing experience, and address traffic congestion and safety issues. The waterline and fiber optic replacement would provide increased reliability. When combined with the past, present, and reasonably foreseeable impacts, there is a long-term beneficial cumulative effect.

## 3.8 VISITOR USE AND EXPERIENCE

### 3.8.1 Affected Environment

As stated in the need for this project, even when the Jaggar Museum was operational, the existing KVC/HQ building was inadequate for current visitation due to its small size and configuration. The historic building contains both National Park Service administration offices and visitor use spaces. The visitor use spaces were not designed to accommodate the current level of visitation. The exhibits are in disrepair and detract from the visitor experience. The closure of the Jaggar Museum has exacerbated the overcrowding of the facility by concentrating visitor contact in one location instead of the previous two facilities. The overcrowding has impacted the visitor circulation space to the point where visitors cannot easily approach the reception desk, negotiate between exhibits, or navigate through the lānai and nonprofit partner's park store.

In 2017, the park saw its highest visitor count, with a total of 2,016,702 visitors. Numbers have declined since the eruption in 2018 due to the eruption and then the pandemic; however, 2019 still saw a total of 1,368,376 total visitors (National Park Service 2022c).

Increases in visitation over the past decade and changes to road circulation due to past eruptions have led to traffic congestion problems that create long waits for visitors, starting at the turn onto the park entrance roadway from Highway 11 and continuing through the entrance station to the main visitor center area. The entrance station is located on Crater Rim Drive, approximately 500 feet from the intersection with Highway 11.

The proposed project elements associated with the KVC/HQ area, entrance area, and Uēkahuna bluff would be located within the Visitor Services Zone identified in the GMP as managed primarily for a high level of visitor use, access, and interpretation with a wide range of media and facilities to support diverse visitor needs. The existing KVC/HQ building is used for orienting visitors, special events, a store, and education. The proposed USGS field station would be located within the Park Support Zone, which is managed primarily to support park operations and maintenance, including the operational needs of park partners (note: KMC is on National Park Service land and authorized to be operated by the U.S. Army as a Morale, Welfare, and Recreation site used by active and retired military members).

It is not open to general public). Access for visitors is primarily for limited visitor services (such as backcountry permitting), orientation, and organized meetings or events. The Resources Management Complex is not in an area that is used by visitors and will not be discussed further in this section.

### **3.8.2 No-Action Alternative**

Under the no-action alternative, visitor use and experience would continue to be degraded due to the inadequate space available at the existing KVC/HQ and loss of operations at Uēkahuna bluff that is resulting in overcrowding. The entrance station would continue to function in its current capacity and visitors to the park during peak times would continue to experience long waits. Visitor counts are expected to continue to increase, which would further degrade the visitor experience.

### **3.8.3 Proposed Action**

Under the proposed action, construction would result in short-term adverse impacts to visitor use during the 2-year deconstruction and construction period. Visitors would not be allowed in construction areas and construction would cause additional noise, impacting visitor experience. However, the park would inform visitors in advance of construction activities via multiple methods, including the park's website, social media, signage, and at the existing KVC/HQ. Due to limited parking at key visitor parking lots in this area, parking reservations, restrictions or other methods could be employed to reduce congestion and enhance visitor experience. Park staff would be available to address visitor questions during construction and provide regular updates to the public about project progress and associated restrictions or closures. Long-term impacts are beneficial due to increased ability to serve visitors, including sufficient parking for the facility.

#### **3.8.3.1 Uēkahuna Bluff**

As discussed in Section 3.4, Viewsheds, due to the deconstruction of existing structures and retaining some of the existing berm to screen views of the project, the experience for most visitors would be improved by returning the area to a more natural-appearing character, allowing visitors to focus on the landscape, including its cultural significance. The experience of hiking the trail from the Kīlauea Overlook to Uēkahuna bluff would be improved, without buildings obscuring the view, allowing the panoramic views from the high point to appear more suddenly, resulting in a more profound recreation experience. For many repeat local observers, especially those with a generational connection to the land, the presence and visibility of structures on Uēkahuna bluff is seen as an impact on this culturally important landscape (see Section 3.6, Ethnographic Resources). By creating a more natural, intact setting on the bluff, park interpretive themes would be more clearly communicated to reflect the sacredness of the area and the fact that it is a focal point for views throughout this portion of the park. There would be an increase in visitor interpretive opportunities, and additional trail and expanded vistas for viewing, resulting in a long-term beneficial impact.

#### **3.8.3.2 USGS Field Station**

As noted in the Section 3.8.1, Affected Environment, the proposed USGS field station would be located within the Park Support Zone that is not open to the general public. As discussed in Section 3.4, Viewsheds, views of the proposed USGS field station would be screened in the large openings in the forest along Crater Rim Drive and if visible in small gaps in the forest, the building would not attract attention from roadway as the dark colors proposed for the building would blend into the forest setting. Since views would be screened and the field station is located in an area that is not open to the general public, there would be no adverse impacts on visitors and their experience driving Crater Rim Drive and from KMC.

### **3.8.3.3 Replacement Visitor Center**

The replacement visitor center would further the purpose of the Visitor Services Zone to support a high level of visitor use, access, and interpretation. The existing KVC/HQ and its auditorium would still be used for administrative offices, public presentations, and K-12 educational programs in the future. The replacement visitor center would solve the issue of overcrowding with additional park operational services (restrooms, parking) and allow for greater interpretive opportunities indoors and outdoors with increased exhibit space and lānai areas, increasing the importance of this location to further park interpretive themes and the stories communicated to visitors. The proposed action would result in a long-term beneficial impact for visitor use and experience.

### **3.8.3.4 Park Entrance**

The addition of a new entrance lane and the conversion of the Crater Rim Drive intersection to a roundabout are intended to address the visitor use and experience issues that are currently occurring. The new entrance lane would allow administrative traffic to bypass the visitor traffic more quickly and would allow for two full lanes for visitor queuing capacity during peak visiting times, reducing wait time. This would result in less frequent backups onto Highway 11. The roundabout would create more free-flowing activity and would allow for better connectivity and turns towards the replacement visitor center and expanded parking, a safer option for visitors to access Crater Rim Drive East and Crater Rim Drive West, or the exit lane, all improving the visitor experience when entering and exiting the park.

## **3.8.4 Cumulative Impacts**

Past and present actions in the park include existing facility, trail, and road repairs or renovations; replacement of wayfinding signs; and utility upgrades. These actions have generally improved the visitor use and experience. Reasonably foreseeable actions of implementation of an air tour management plan could improve the visitor experience because except for the no-action alternative, that plan would potentially have less visual distraction generated by helicopter overflights, especially adjacent to Kīlauea crater. The waterline and fiber optic replacement would be completed at the same time as the proposed action and are not likely to have additional adverse impacts on visitors.

Under the no-action alternative, there would continue to be the visitor issues described in Section 3.8.1, Affected Environment.

The proposed action would improve the visitor experience at Uēkahuna bluff, the visitor center, and the park entrance. When combined with the past, present, and reasonably foreseeable impacts, there is a long-term beneficial cumulative effect.

## **3.9 PARK AND U.S. GEOLOGICAL SURVEY OPERATIONS**

### **3.9.1 Affected Environment**

#### **3.9.1.1 National Park Service Operations**

Hawai'i Volcanoes National Park is divided into two management units: Kīlauea and Kahuku. The park is administered by a superintendent and the park headquarters is in the Kīlauea Unit near the summit of Kīlauea volcano. Management of the park is organized into the following divisions: Administration, Cultural Resources, Interpretation, Maintenance and Facilities Management, Natural Resources, Visitor and Resource Protection, Kahuku Unit staff, Planning and Compliance, and Fire Management.

The Jaggar Museum contained the largest exhibit and bookstore spaces in the park and was the single most popular park destination in the decade leading up to the 2018 eruption. Once the Jaggar Museum closed, the existing KVC/HQ building and parking lot became further inadequate for current



visitation due to its small size and configuration. The historic building contains both National Park Service administration offices and visitor use spaces. The closure of the Jaggar Museum has intensified the already existing overcrowding of the existing KVC/HQ facility and adversely impacted the visitor experience by concentrating all visitor contact in one small location instead of the previous two facilities. The overcrowding has affected the visitor circulation space to the point where visitors cannot easily approach the reception desk, negotiate between exhibits, or navigate through the lānai and non-profit partner's park store. This overcrowding and poor experience at the KVC facility has significantly reduced the ability for visitors to plan their visit on their own using the exhibits and displays designed for this purpose. As a consequence, park staff have canceled most formal interpretive programs, guided hikes, and educational opportunities throughout the park in order to provide nearly constant orientation talks at the existing KVC lānai, diminishing park staff morale and adding additional strain on the already understaffed team. The overcrowding of KVC has therefore drastically reduced the opportunities for visitors to learn and understand the park's rules and the impacts visitors may have on park resources, resulting in potential increases in administrative time addressing these impacts. Overcrowding has also increased the use of the KVC restrooms, which now must be cleaned multiple times per day. In addition, with more traffic in the existing parking lot, park staff routinely have to divert from their normal duties to provide traffic and parking control.

### **3.9.1.2 USGS Operations**

The loss of the HVO-occupied Okamura building at Uēkahuna bluff in 2018 forced HVO to relocate staff outside of the park, which has created considerable inefficiencies in workflow and resulted in delays in response time when volcanic activity resumed at the summit region. The summit location is central to accessing the East and Southwest Rift Zones of Kīlauea as well as much of Mauna Loa. The lack of an operating base means that all equipment and personnel are continually shuttled between Hilo and the park. During volcanic events the roads are usually impassable due to the number of people trying to see the event or access the park.

With the loss of the building, HVO has lost the ability to conduct on-site instrument repairs, storage of monitoring gear, and space for eruption planning/conferencing with park personnel. This has hampered HVO's ability to produce timely and accurate hazard assessments for the park and the community.

Critical radio and telemetry infrastructure remain intact and will continue to function near the site of the Okamura building. For more than 100 years, these volcanoes have been a laboratory for fundamental research by USGS and many other scientists into how volcanoes work.

### **3.9.2 No-Action Alternative**

#### **3.9.2.1 National Park Service Operations**

Under the no-action alternative, park operations would continue to experience adverse long-term impacts as described under the affected environment.

#### **3.9.2.2 USGS Operations**

Under the no-action alternative, HVO operations would continue to have considerable inefficiencies in workflow and response delays.

### **3.9.3 Proposed Action**

#### **3.9.3.1 National Park Service Operations**

During deconstruction and construction activities, there could be additional issues with staffing due to having to direct visitors and traffic around active project areas. Under the proposed action, there would be long-term beneficial impacts to park operations through the addition of a replacement visitor center that is large enough to accommodate visitors. With only one visitor center, instead of the existing KVC/HQ and Jaggar Museum, it could be better staffed and still allow flexibility for park staff to provide interpretive programs, guided hikes, and educational opportunities throughout the park again. It would also provide park staff with the ability to maintain facilities in an efficient manner without having to travel to other parts of the park. The improved parking lot, roundabout, and traffic signs would reduce the amount of time park staff currently have to spend directing traffic in the parking lot.

#### **3.9.3.2 USGS Operations**

Under the proposed action there could be short-term adverse impacts from construction vehicles potentially conflicting with USGS access. Having a facility within the park with the ability to have a separate emergency entrance would ensure that HVO staff can continue to maintain necessary monitoring equipment and respond rapidly to volcanic and earthquake events, and this would be a long-term beneficial impact.

### **3.9.4 Cumulative Impacts**

#### **3.9.4.1 National Park Service Operations**

Past and present actions in the park include existing facility, trail, and road repairs or renovations; replacement of wayfinding signs; and utility upgrades. These actions, as described in Section 3.1, Cumulative Impact Scenario, have generally improved park operations. Reasonably foreseeable actions of waterline and fiber optic replacement are intended to improve operations. Changes to air tour management may have an impact on park operations depending on the selected alternative.

Under the no-action alternative, there would continue to be the issues described in Section 3.9.1.1, National Park Service Operations. The park would continue to address operations concerns on a case by case basis, which may include items related to the 2018 disaster (e.g., deconstruction of the damaged buildings at the bluff, addressing staffing and congestion issues) but activities would be funding dependent and compliance would be completed as appropriate.

Under the proposed action there could be short-term adverse impacts from potential issues with staffing due to having to direct visitors and traffic around active project areas. The waterline and fiber optic replacement would intentionally occur at the same time as the proposed action and therefore would not increase the potential adverse impact but would have additional beneficial impacts to operations. The proposed action would provide adequate buildings, create a safe viewing experience, and address traffic congestion and safety issues. The waterline and fiber optic replacement would provide increased reliability for park operations. When combined with the past, present, and reasonably foreseeable impacts, there is a long-term beneficial cumulative effect.

#### **3.9.4.2 USGS Operations**

Past and present actions in the park include existing facility, trail, and road repairs or renovations; replacement of wayfinding signs; and utility upgrades. These actions, as described in Section 3.1, Cumulative Impact Scenario, have generally improved USGS operations by improving utilities and improving access. Reasonably foreseeable actions of waterline and fiber optic replacement are

intended to improve operations, but the fiber optic replacement would not impact USGS operations because the majority of PIERC-KFS staff and functions would move to a new facility in Hilo and the remainder would relocate to the new USGS field station in the park, which would not be serviced by the fiber optic line. Changes to air tour management would not have an impact on USGS operations.

Under the no-action alternative, there would continue to be the issues described in Section 3.9.1.2, USGS Operations.

Under the proposed action there could be short-term adverse impacts from construction vehicles potentially conflicting with USGS access. The waterline and fiber optic replacement would intentionally occur at the same time as the proposed action and therefore would not increase the potential adverse impact but could have additional beneficial impacts to operations. The proposed action would provide adequate building space and access for USGS operations within the park. When combined with the past, present, and reasonably foreseeable impacts, there is a long-term beneficial cumulative effect.

## 4 CONSULTATION AND COORDINATION

### 4.1 NATIONAL HISTORIC PRESERVATION ACT

In accordance with the National Historic Preservation Act of 1966, as amended, and the Advisory Council on Historic Preservation regulations, the National Park Service initiated Section 106 consultation [36 CFR Part 800.3(c) (3)] with the State Historic Preservation Division (SHPD) on May 12, 2020. As described in Section 3.5.3, there would be adverse effects on historic properties. An evaluation of effects for the overall undertaking has been prepared for the project and will be submitted to the Hawai'i State Historic Preservation Office for review and concurrence. In addition, due to the adverse effects on historic properties, a Programmatic Agreement between the National Park Service, U.S. Geological Survey; Hawai'i State Historic Preservation Officer; and the Advisory Council For On Historic Preservation has been developed and will be finalized in conjunction with this EA (see Appendix E).

### 4.2 ENDANGERED SPECIES ACT

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, the National Park Service initiated informal Section 7 consultation with the USFWS on May 13, 2022, for the Hawaiian hoary bat (*Lasiurus cinereus semotus*), Hawaiian goose (*Branta sandvicensis*), Hawaiian petrel (*Pterodroma sandwichensis*), Newell's Townsend's shearwater (*Puffinus auricularis newelli*), the band-rumped storm-petrel (*Oceanodroma castro*), and Hawaiian catchfly (*Silene hawaiiensis*). In a letter dated June 1, 2022, the U.S. Fish and Wildlife Service concurred with the park's recommendations to avoid/minimize impacts to the above species and the park's determination that the proposed action is not likely to adversely affect these species.

### 4.3 CIVIC ENGAGEMENT SUMMARY

In May 2020, Hawai'i Volcanoes National Park initiated the civic engagement process to solicit public feedback on four site concepts that would best meet the needs of the park and the public. To slow the spread of COVID-19, scoping was conducted using numerous methods to solicit public comment without in-person meetings. The park sent outreach letters on May 12, 2020, and accepted comments on the project from May 15 to June 15, 2020. Park managers and USGS evaluated feedback on the plan elements and four site design concepts. The proposed action was selected using comments received as part of civic engagement and a Value Based Decision-Making workshop in July 2020. Appendix B (Civic Engagement Summary and Comment Analysis Report) provides details on the civic engagement process.

#### 4.3.1 Agency Outreach

On May 12, 2020, the National Park Service distributed letters to various agencies to invite agency participation in the civic engagement process. Agencies were encouraged to submit written suggestions, comments, and concerns regarding the project either online at the National Park Service Planning, Environment and Public Comment (PEPC) website or by U.S. mail to the Office of the Superintendent.

#### 4.3.2 Kūpuna Outreach

On May 12, 2020, the National Park Service distributed civic engagement letters via email or hard copy materials to the Kūpuna consultation group which consists of Native Hawaiian Organizations, Native Hawaiian individuals, and select individuals with institutional knowledge of Hawai'i Volcanoes National

Park. In addition, phone calls were made to each member of this group to further engage this group during the start of the pandemic. Additional discussions regarding the proposed action were held with the consultation group as described under Section 4.4.2, Kūpuna Outreach, below.

#### **4.4 SCOPING SUMMARY**

To slow the spread of COVID-19, scoping was conducted using numerous methods to allow public comment without in-person meetings. Comments on the project were accepted starting February 9, 2022, and the comment period ended March 11, 2022. The National Park Service also implemented a dedicated phone line specifically to receive comments, request hard copies of the materials, or request a call back. Sixty-two pieces of correspondence from nine states were received during the civic engagement comment period. Individuals living in Hawai'i submitted 50 (approximately 80%) of those correspondences. Appendix C (Scoping Summary and Comment Analysis Report) provides details on the scoping process.

The National Park Service and the USGS have incorporated the comments received during the scoping period into this EA.

##### **4.4.1 Agency Outreach**

On February 9, 2022, the National Park Service distributed letters to various agencies to invite agency participation in the civic engagement process. Agencies were encouraged to submit written suggestions, comments, and concerns regarding the project either online at the National Park Service's PEPC website or by U.S. mail to the Office of the Superintendent.

##### **4.4.2 Kūpuna Outreach**

On February 9, 2022, the National Park Service distributed scoping letters via email and hard copy materials to the Kūpuna consultation group. The National Park Service held a consultation group meeting on February 25, 2022, with a focus on the Disaster Recovery project. This project has also been discussed with the Kūpuna consultation group outside of the official scoping period during regularly scheduled consultation group meetings including meetings on the following dates:

- November 12, 2020; December 20, 2020; February 12, 2021; April 9, 2021; August 13, 2021; September 30, 2021; November 19, 2021; January 14, 2022; May 7, 2022; and May 13, 2022

##### **4.4.3 News Release and Planning, Environment and Public Comment Website**

On February 9, 2022, the National Park Service issued a news release to area-wide news organizations and posted project information including the public scoping letter and a story map explaining the project to the PEPC website. The news release and PEPC website provided a project overview and invited the public to participate in the civic engagement process. Members of the public were invited to submit comments on the project through the PEPC website, U.S. mail, email, or via the project phone line. The materials that were distributed to the public can be found in Appendix C.

In addition to these outreach efforts, the news release was posted on social media, and the National Park Service posted reminders about the comment period to encourage participation. The Hawai'i Volcanoes Public Affairs Specialist and USGS HVO Scientist-in-Charge were interviewed by several local news outlets about the scope of the project.

#### **4.5 ENVIRONMENTAL ASSESSMENT DISTRIBUTION: PERSONS, ORGANIZATIONS, AND AGENCIES CONTACTED**

The scoping information was sent to federal, state, and local agencies; non-governmental organizations; and federal, state, and local elected officials. The notice was also provided electronically via news release, social media, and emails, and made available on the PEPC website.

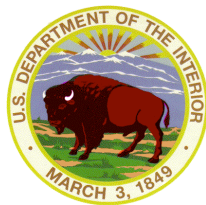
## REFERENCES CITED AND REVIEWED

- Black, Jeffrey. 1998 Foraging behaviour and energetics of the Hawaiian Goose *Branta sandvicensis*. *Wildfowl*. 45. 65-109
- Gould, R. K., N. M. Ardoin, U. Woodside, T. Satterfield, N. Hannahs, and G. C. Daily. 2014. The forest has a story: cultural ecosystem services in Kona, Hawai'i. *Ecology and Society* 19(3):55. <http://dx.doi.org/10.5751/ES-06893-190355>
- Hughes, R.F., D. Grossman, T. G. Sowards, J. D. Marshall, and D. Mueller-Dombois. 2022. Aboveground carbon accumulation by second-growth forests after deforestation in Hawai'i. *Ecological Applications* 32(4):e2539. <https://doi.org/10.1002/eap.2539>.
- Keali'ikanakoleohaililani, Kekuhi. 2009. *No Pele, No Ko'u Akua La: A Brief Articulation of the Sacred Ecology & Geography of Pelehonuamea*. Prepared for Hawai'i Volcanoes National Park.
- Langlas, Charles. 2003. *Native Hawaiian Use of Hawai'i Volcanoes National Park: A Historical and Ethnographic Overview*. Prepared for Hawai'i Volcanoes National Park. University of Hawai'i at Hilo.
- Maly.Kepa 2004. He Mo'olelo 'Āina: A Cultural Study of the Manukā Natural Area Reserve Lands of Manukā, District of Ka'ū, and Kaulanamauna, District of Kona, Island of Hawai'i.
- National Cooperative Highway Research Program. 2007. *Roundabouts in the United States*. NCHRP Report 572. Washington, D.C.: National Cooperative Highway Research Program, Transportation Research Board, National Academy of Sciences.
- National Park Service. 1974. National Register of Historic Places Inventory - Nomination Form: Kīlauea Crater. Honolulu, Hawai'i: National Park Service.
- National Park Service. 1998. Cultural Resource Management Guidelines. NPS-28. National Park Service. Available at: <http://obpa-nc.org/DOI-AdminRecord/0049518-0049814.pdf>. Accessed May 6, 2022.
- National Park Service. 2006a. *Cultural Landscape Inventory: Crater Rim Historic District*. Hawai'i: Hawai'i Volcanoes National Park.
- National Park Service. 2006b. *Cultural Landscape Inventory: Kīlauea Administration and Employee Housing Historic District*. Hawai'i: Hawai'i Volcanoes National Park.
- National Park Service. 2007. National Register of Historic Places Nomination Form: Crater Rim Drive Historic District. Washington D.C.: National Park Service.
- National Park Service. 2016. *Hawai'i Volcanoes National Park General Management Plan*. Seattle, Washington: National Park Service, Pacific West Region.
- National Park Service. 2018. HAVO Dark Sky / Night Lighting Avoidance and Minimization Policies. Hawai'i Volcanoes National Park.
- National Park Service. 2021. *Draft National Park Service Visual Impact Assessment Methodology and Guidelines*. Denver, Colorado: National Park Service, Air Resources Division.
- National Park Service. 2022a. Rapid 'Ōhi'a Death. Available at: <https://www.nps.gov/havo/learn/nature/rapid-ohia-death.htm>. Accessed May 13, 2022.

## REFERENCES CITED AND REVIEWED

- National Park Service. 2022b. Organic Act of 1916. Available at: <https://www.nps.gov/grba/learn/management/organic-act-of-1916.htm>. Accessed May 13, 2022.
- National Park Service. 2022c. Annual Park Recreation Visitation (1904 - Last Calendar Year). Available at: [https://irma.nps.gov/STATS/SSRSReports/Park%20Specific%20Reports/Annual%20Park%20Recreation%20Visitation%20\(1904%20-%20Last%20Calendar%20Year\)?Park=HAVO](https://irma.nps.gov/STATS/SSRSReports/Park%20Specific%20Reports/Annual%20Park%20Recreation%20Visitation%20(1904%20-%20Last%20Calendar%20Year)?Park=HAVO). Accessed May 1, 2022.
- Nature Conservancy. 2018. Hawaiian High Islands Ecoregion. Last revised September 5, 2018. Available at: <http://www.hawaiiecoregionplan.info/ecoregion.html>. Accessed May 13, 2022.
- Page, R.R., C.A. Gilbert, and S.A. Dolan. 1998. *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques*. Cultural Landscape Guidance Documents 0-16-042855-6. Washington, D.C.: U.S. Department of the Interior, National Park Service, Park Historic Structures and Cultural Landscapes Program. Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2198422>. Accessed May 5, 2022.
- Transportation Research Board. 2001. *Safety Effect of Roundabout Conversions in the United States: Empirical Bayes Observational Before-After Study*. Transportation Research Record 1751. Washington, D.C.: Transportation Research Board, National Academy of Sciences.
- University of Hawai'i at Mānoa. 2022. Rapid 'Ohi'a Death. College of Tropical Agriculture and Human Resources. Available at: <https://cms.ctahr.hawaii.edu/ROD>. Accessed June 8, 2022.





As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

NPS HAVO 124/180057 JULY 2022

Printed on recycled paper

