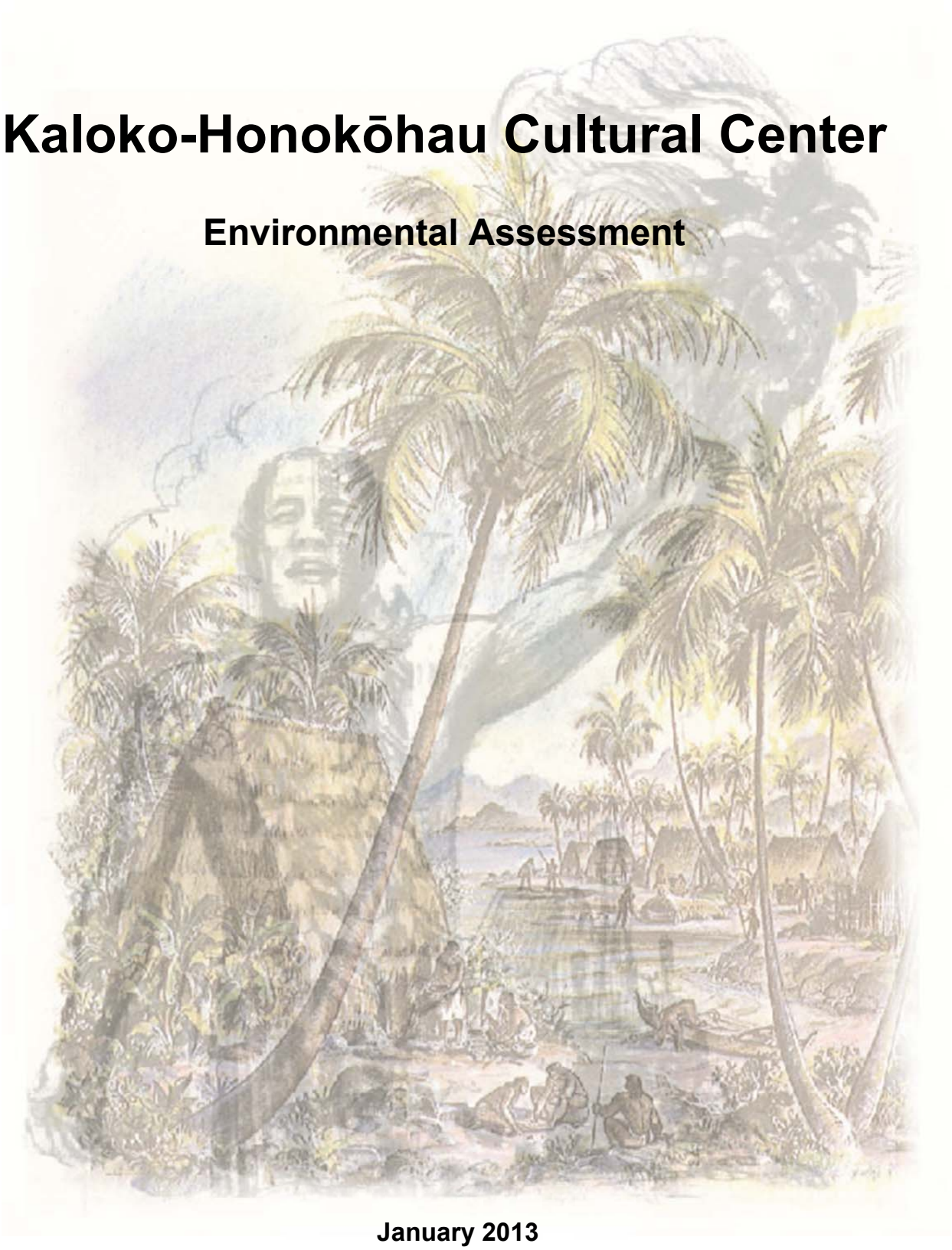
National Park Service
U.S. Department of the Interior
Kaloko-Honokōhau National Historical Park
Kailua-Kona, Hawaii

Kaloko-Honokōhau Cultural Center

Environmental Assessment



January 2013

U.S. Department of the Interior
National Park Service
Kaloko-Honokōhau National Historical Park
Hawai‘i
Kaloko-Honokōhau Cultural Center
Environmental Assessment
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Executive Summary

This document tiers to the 1994 General Management Plan/Final Environmental Impact Statement (GMP) for Kaloko-Honokōhau National Historical Park (NPS 1994), which approved the creation of a Cultural Center (Center) at the Park. The 1974 *Spirit of Kaloko-Honokōhau* Report to Congress and the 1994 Final General Management Plan/Environmental Impact Statement for the Park call for the development of "*a place in the Park where a limited number of people, Hawaiians and others, can come to … immerse themselves in the Hawaiian culture*." (NPS 1994:xxii) The purpose for the Center is the perpetuation of Hawaiian activities and culture through cultural education. The Proposed Action is necessary to meet the recommendations of the Spirit of Kaloko-Honokōhau Report and the 1994 General Management Plan.

This Environmental Assessment (EA) examines the location, construction, and operation for the Cultural Center. Three alternatives are evaluated in this EA: Alternative 1 (No Action), ongoing management and interpretive programs would continue with no construction of a Cultural Center; Alternative 2 (the NPS “Preferred Alternative”), construction and operation of the Cultural Center at a previously disturbed area south of Kaloko Fishpond; and Alternative 3, construction and operation of the Cultural Center at the Kaloko Fishpond Parking Area, the location originally proposed in the Park’s 1994 GMP/EIS. The “Proposed Action” describes the creation of the Cultural Center along with proposed activities and land use at the various sites. This document analyzes the potential environmental effects of the construction and operation of the Cultural Center at alternative locations.

This EA has been prepared with the NPS Director’s Order #12 (NPS 2011a) procedures for implementing the National Environmental Policy Act (NEPA) to provide the decision-making framework that: 1) analyzes a reasonable range of alternatives to meet objectives of the proposal, 2) evaluates potential issues and measures to avoid or lessen impacts to Kaloko-Honokōhau National Historical Park’s resources and values, and 3) identifies mitigation measures necessary to lessen the degree or extent of adverse impacts. Resource topics analyzed in this document include Soundscape, Air Quality, Water Resources and Wetlands, Special Status Species, Visitor Experience and Safety, Topography and Geology, Floodplains, Vegetation, Wildlife, Cultural Resources, Park Operations, and Climate Change. The Proposed Action is not anticipated to have any major impacts on Park resources or values.

Public scoping was conducted to facilitate the development of this document. Information responsive to scoping comments was included in the appropriate sections of the following environmental analysis. Public scoping responses agreed and supported the concept of the Cultural Center, supported the preferred alternative, reiterated the

responses received during the General Management Plan process and agreed with resource topics chosen for analysis. Several other resource topics were considered but dismissed from further analysis because none of the alternatives has the potential to have measurable impacts to those resources.

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Note to Reviewers and Respondents:

If you wish to comment on this EA, you may post comments online at http://Parkplanning.nps.gov/ or mail comments to Superintendent Kaloko-Honokōhau National Historical Park at the address above. This EA will be on public review for 30 days. 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. Although you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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Abbreviations and Acronyms

ACOE	Army Corps of Engineers
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
DHHL	Department of Hawaiian Homelands
DO	NPS Director's Order
EA	Environmental Assessment
ESA	Endangered Species Act
GHG	Greenhouse Gas
HDP	High-Density Polyurethane
KAHO	Kaloko-Honokōhau National Historical Park
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHOP	National Register of Historic Places
HEC	Hawai'i Environmental Council
UNESCO	United Nations Educational, Scientific and Cultural Organization
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UTV	Utility Vehicle

Notes on Terms and Analysis

The words "effect" and "impact" are synonymous in the Council on Environmental Quality (CEQ) regulations (40 CFR 1508.8(b)), which implement the National Environmental Policy Act (42 U.S.C. 4321 et seq.). In accordance with the CEQ regulations and NPS Director's Order #12, Conservation Planning, Environmental Impact Analysis, and Decision-making (DO-12), NEPA documents must consider "beneficial" effects and impacts as well as "adverse" effects and impacts (see 40 CFR 1508.8(b) and 40 CFR 1508.27(b)(1)). Therefore, use of the words "effect" and "impact" under NEPA can refer to both adverse and beneficial environmental changes. Conversely, the term "effect" has different meaning in the context of other environmental laws, such as the Endangered Species Act (ESA) and the National Historic Preservation Act (NHPA). Specific language relevant to the implementing regulations for these laws will be called out with quotation marks when applicable.

EAs are public documents written for use by a general audience, agency officials, and technical experts. As stated in the CEQ regulations and the NPS DO-12, EAs are intended to provide a concise and clear overview of environmental analysis relevant to the Proposed Action. Therefore, discussions of significant issues generally summarize larger bodies of data used in the environmental analysis. The *References Section* of this document provides a list of public-domain data sources for those who wish to conduct a more detailed study of topics discussed here.

See Appendix A for a list of terms used in Section 106 of the National Historic Preservation Act.

Chapter 1: Introduction

The National Park Service (NPS) is initiating the construction and operation of a Cultural Center at Kaloko-Honokōhau National Historical Park (Figure 1) and is proposing to site the Center in a different location than identified in 1994 General Management Plan/Final EIS Statement and in a Record of Decision dated December 12, 1994 (Figure 2). The Center is the vision of Hawaiian community members who sought to create the National Park in 1974, and within it, to develop a facility for Hawaiian cultural activities and cultural education classes.

This EA examines potential environmental impacts associated with continuing current programs and activities (Alternative 1 – No Action) or the construction and operation of the Cultural Center at two locations (Figure 3): a disturbed area south of Kaloko Fishpond (Alternative 2- NPS preferred); or the public parking area adjacent to the south shore of Kaloko Fishpond (Alternative 3). The NPS is proposing that the Center be co-managed by the NPS and *Makani Hou o Kaloko-Honokōhau* through an operations agreement. *Makani Hou o Kaloko-Honokōhau* is the primary friend's group and partner organization for the Park. This EA has been prepared in accordance with the National Environmental Policy Act of 1969, the Council on Environmental Quality regulations (40 CFR 1500 et seq), and NPS Director's Order #12, *Conservation Planning, Environmental Impact Analysis, and Decision-making* (DO-12; NPS 2011a).

Purpose and Need for Action

Congress established Kaloko-Honokōhau National Historical Park ("Park" or "National Park") in 1978 "*to provide a center for the preservation, interpretation, and perpetuation of traditional native Hawaiian activities and culture, and to demonstrate historic land use patterns as well as provide needed resources for the education, enjoyment, and appreciation of such traditional native Hawaiian activities and culture by local residents and visitors.*" 16 U.S.C. Section 396d(a) Congress's creation of the Park was based primarily on the Hono-kō-hau Study Advisory Commission (1974) Report entitled *Spirit of Ka-loko Hono-kō-hau* ("Spirit Report"), which was developed by an advisory commission of Native Hawaiians and the NPS. Recognizing the importance of the Spirit Report, in the Park's enabling legislation, Congress stated that "[t]he Secretary shall administer the [P]ark . . . generally in accordance with the guidelines provided in the [Spirit Report]." 16 U.S.C. Section 396d(c).

The Spirit Report called for the creation of the Cultural Education Complex ("Cultural Center") as a means to perpetuate Hawaiian culture. In particular, the Spirit Report stated (Hono-kō-hau Study Advisory Commission 1974:40-41):

> *An educational program would be established within the Park to teach the values and traditions of the Hawaiian culture. An important segment of this educational program would involve a facility designed primarily for native Hawaiians and removed from any major public use area, where the dignity and integrity of the culture would be maintained. It would be an intimate personal experience extending over a period of one day or more, rather than being part of an exhibit open to the regular visitor.*

Classes would be conducted outdoors or in a halau (open shed). The halau would be necessary to provide workspace for canoe building, hula instruction, and other activities that require workspace under a protective shelter.

Instruction would be provided in basket weaving, lau hala plaiting, woodcarving, feather work, musical instruments, nut crafts, and the making of fishing materials such as nets, hooks, ropes, lines, and sinkers.

Another part of this educational program would involve native Hawaiians actually learning to "live off the land" as their ancestors once did. They would learn to adapt to nature by learning how to utilize the natural resources of the land and sea.

In 1994, the NPS adopted a General Management Plan/Environmental Impact Statement (GMP) that set out the general programmatic direction for managing Kaloko-Honokōhau National Historical Park. The GMP called for the creation of the Cultural Center and identified a location within the Park where the Center could be built. The GMP set out the purpose and need for the Cultural Center as follows (NPS 1994:32-34):

The Spirit of Ka-loko Hono-kō-hau calls for providing a place for those who wish to actively participate in in-depth cultural pursuits. Accordingly, the proposal in this plan calls for a live-in cultural education complex to be developed. The complex is to be composed of clusters of interrelated and interconnected parts (kauhale and hālau), including working areas, meeting areas, educational areas, living areas, and ceremonial areas. It is described in the Spirit of Ka-loko Hono-kō-hau as a facility designed primarily for native Hawaiians, removed from any major public use area, and providing the opportunity for an intimate experience extending over a period of one day or more.

The complex is to be the setting for the practice and perpetuation of Hawaiian traditions; where the Hawaiian customs and traditions - music, art, language, dance, religion, and crafts can take place, be studied, and be entwined with the more tangible aspects of the culture; together forming a vignette of the total fabric of ancient Hawaiian life. It is to be a place where Hawaiians of today can come to teach others and learn more themselves about their customs and traditions. The complex would allow participants, Hawaiians and others, to learn about and recreate aspects of the life of those who lived at Kaloko-Honokōhau centuries ago. It is also to be a place where ceremonial gatherings or meetings can take place on special occasions.

The complex is to be sited away from any major public use area –the cultural activities going on here are not to be put on view, unless the participants themselves so desire. Classes would be conducted outdoors or in a hālau, with enough working space and shelters for activities such as Hawaiian canoe building and other traditional Hawaiian practices to take place nearby. These activities would be ongoing and continual - all part of what might have gone on in a coastal Hawaiian settlement. They would emphasize the Hawaiian's use of the land and the sea; revival of

traditional uses of native plants, especially those needed for food, medicinal and ceremonial purposes. In addition, a site will be provided and developed for short-term, live-in accommodations. Any structures built here are to be as authentically Hawaiian in design and construction as possible.

This live-in cultural education complex needs to be located at a site which the Hawaiians might have chosen to create an atmosphere of the past. It needs to be near the sea and have easy access to a fishpond so that participants can engage in traditional subsistence fishing activities. Moreover, the complex should be close enough to the existing rock wall enclosures so that participants can also engage in subsistence horticultural activities. …

The development of this particular facility is to be guided by asking what the Hawaiians might have built here. Developments in the complex are to be separated to retain the open nature of the site and to allow different activities to go on there at the same time.

The GMP established the goals for the Cultural Center, set parameters for the construction and operation of the Center, and identified a specific location for where the Center should be. The GMP noted that "[t]he facility's design and the activities that take place here will need to be carefully planned, designed, and constructed by knowledgeable persons" (NPS 1994:34). Since the adoption of the GMP in 1994, public use of the area selected for the Center in the GMP has increased significantly. The location identified in the GMP, the Kaloko Parking Area (Figure 2), is now heavily visited by fisherpeople, picnickers, surfers, and other National Park visitors. This location was also chosen prior to the 2000 establishment of the Ala Kahakai National Historic Trail (Public Law 106-509), a corridor that passes directly through this area. Because the Spirit Report and the GMP call for the Cultural Center to be located in an area "*removed from any major public use area, where the dignity and integrity of the culture would be maintained*" (Hono-kō-hau Study Advisory Commission 1974:40; NPS1994:32) and where "*cultural activities going on here are not to be put on view, unless the participants themselves so desire*" (NPS1994:33), this location no longer meets the goals (the Purpose and Need) for the project. Therefore, in addition to evaluating the potential impacts from construction and operation of the Center, this EA also examines alternative locations for the Center.

Under the Proposed Action, the creation and management of the Cultural Center will be undertaken through a formal partnership between the National Park Service and *Makani Hou o Kaloko-Honokōhau*. This partnership will specifically support the National Park Service in creating and managing the Cultural Center.

Figure 1. Kaloko-Honokōhau National Historical Park and Area of Potential Effect (APE) under the National Historic Preservation Act.

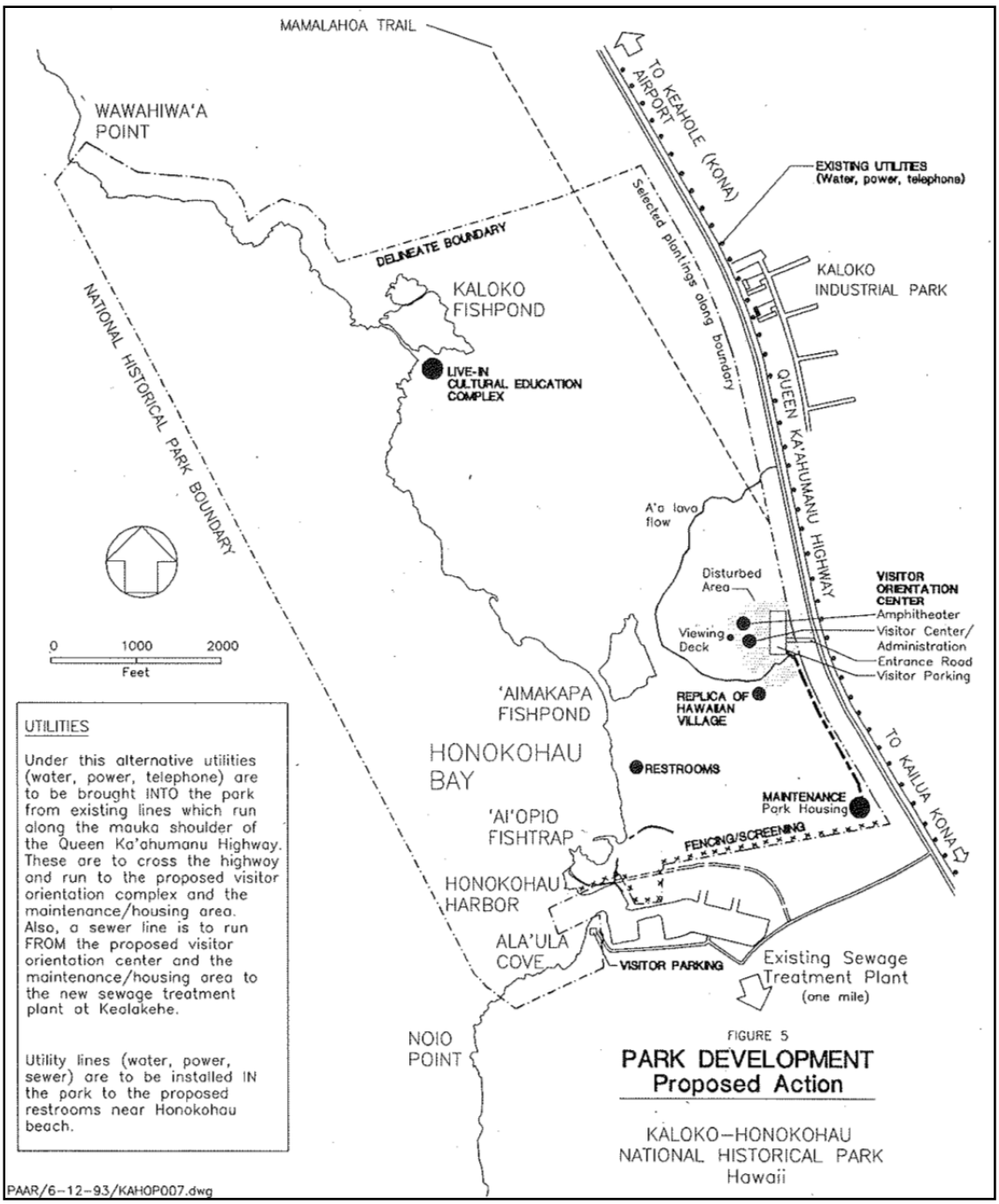

Figure 2. Cultural Center location as proposed in the Kaloko-Honokōhau General Management Plan/EIS (From NPS 1994:29).

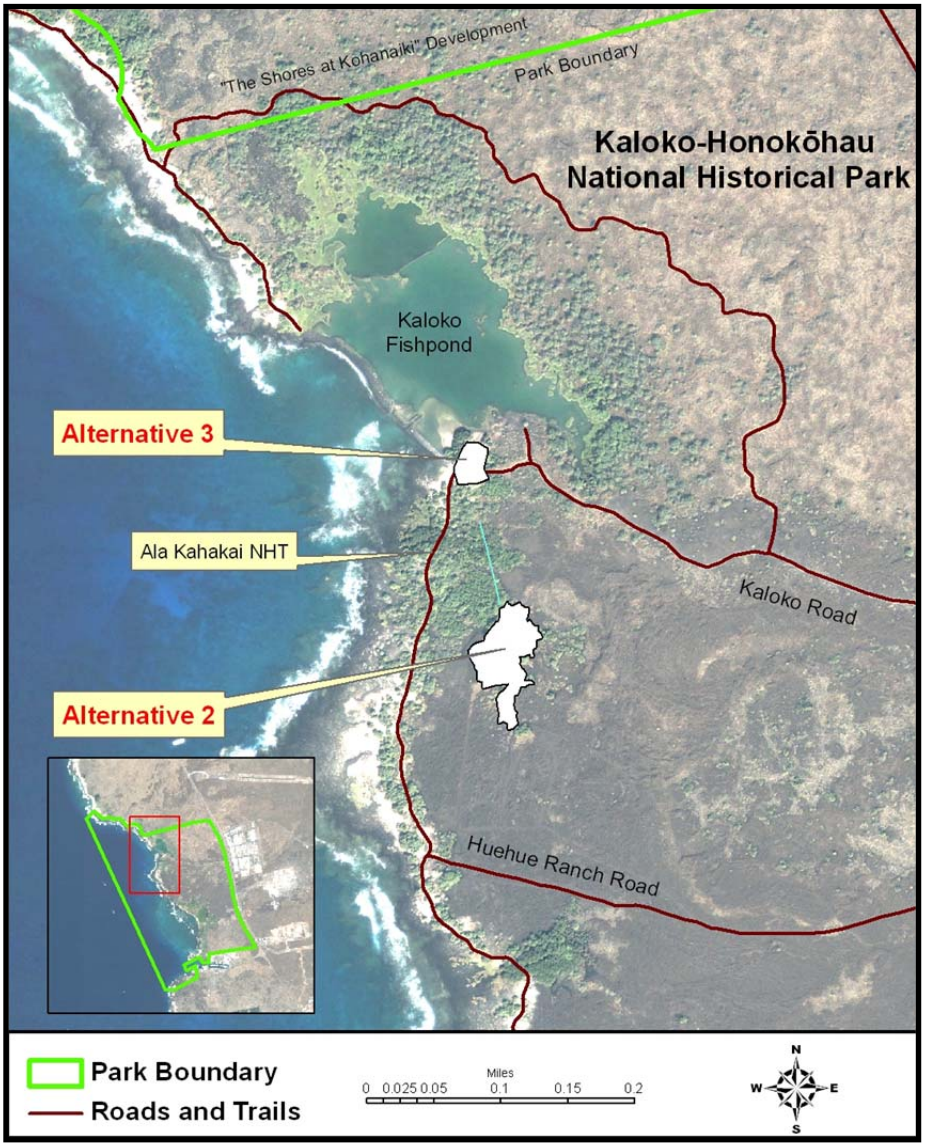

Figure 3. Locations of Action Alternative 2 (NPS Preferred) and Alternative 3 for the Cultural Center.

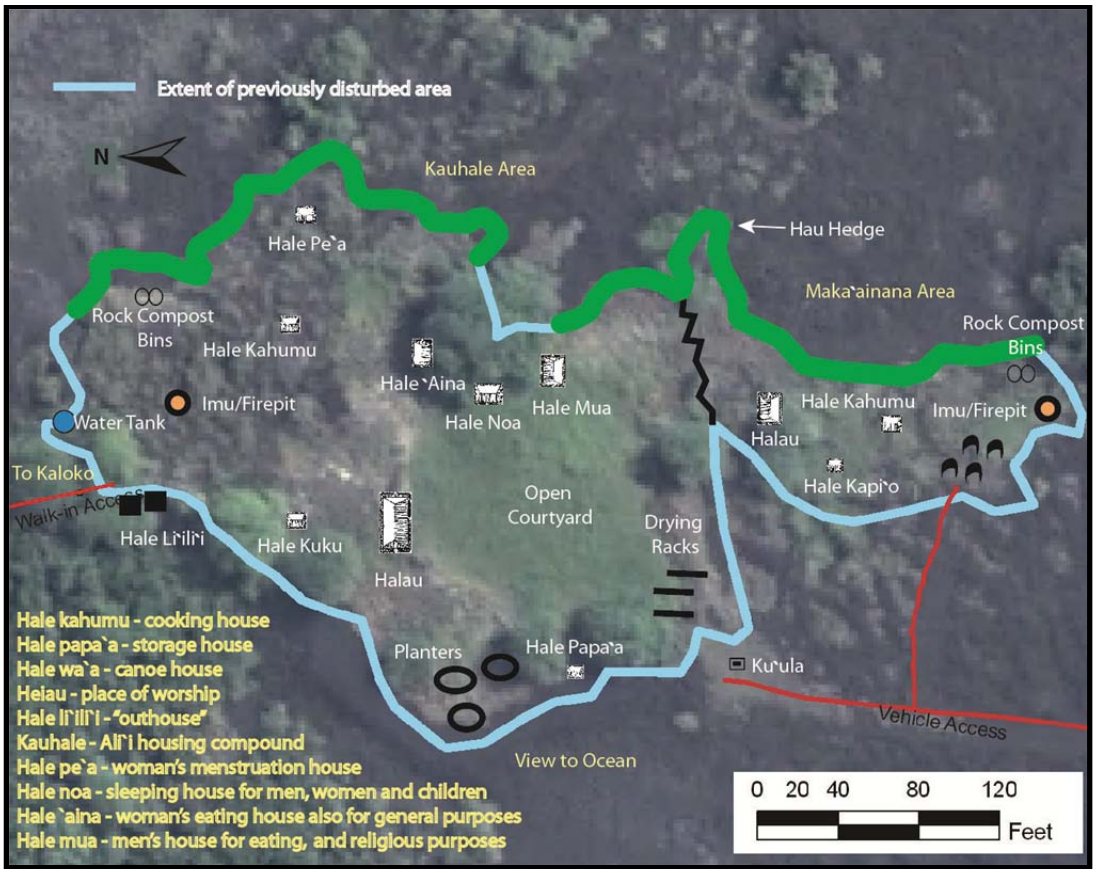

Figure 4. Conceptual drawing of potential Cultural Center layout at Alternative 2 location (NPS Preferred).

Project Objectives

Based on the direction in the Spirit Report, the GMP established the following goals for the project (NPS 1994:32-34):

- Removed from any major public use area to maintain the privacy of participants' cultural activities.
- Clusters of interrelated and interconnected parts (*kauhale* and *hālau*), including work areas, meeting areas, educational areas, living areas, and ceremonial areas. A site will be provided and developed for short-term live-in accommodations.
- A place where Hawaiians can come to teach others and learn more themselves about their customs and traditions and where ceremonial gatherings or meetings can take place on special occasions.
- Near the sea and have easy access to a fishpond so that participants can engage in traditional subsistence fishing activities.
- Close enough to the existing rock wall enclosures so that participants can also engage in subsistence horticultural activities.
- Accomplished without compromising the National Park Service values of conservation, historic and cultural preservation, and environmental responsibility.

Relationship to Other Laws, Plans and Policies

Alternatives developed and actions analyzed in this document are subject to an array of legal, policy, and administrative considerations. These constraints help to shape the basis for alternatives and provide a framework for analysis of the impacts within this document. Listed below are some of the laws, policies, and plans that serve to shape the alternatives and analysis:

LAWS

National Park Service Organic Act (1916) (16 USC 1)

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

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

National Parks and Recreation Act (1978) (Public Law 95-628 Sec 505(a)) (16 USC 396d):

This act includes the establishment of Kaloko-Honokōhau National Historical Park:

> *In order to provide a center for the preservation, interpretation, and perpetuation of traditional native Hawaiian activities and culture, and to demonstrate historic land use patterns as well as to provide a needed resource for the education, enjoyment, and appreciation of such traditional native Hawaiian activities and culture by local residents and visitors, there is established the Kaloko-Honokōhau National Historical Park in Hawaii…*

1970 National Park Service General Authorities Act (as amended) (Public Laws 91-368, 94-458, and 95-250 – the Redwood Act) (16 USC 1a et seq.)

This act prohibits the NPS from allowing any activities that would cause derogation of the values and purposes for which the parks have been established (except as directly and specifically provided by Congress in the enabling legislation for the parks). Therefore, all units are to be managed as national parks, based on their enabling legislation and without regard for their individual titles. Parks also adhere to other applicable federal laws and regulations, such as the Endangered Species Act and the National Historic Preservation Act as described below.

National Environmental Policy Act (1969, as amended) (Public Law 91-190) (42 USC 4341 et seq.)

The National Environmental Policy Act requires agencies to identify, document and publicly disclose the environmental consequences of federal actions. NEPA contains a procedural requirement for the preparation of environmental assessments. Impacts of the proposed action and the alternatives to the proposed action are clearly presented to enable a clear basis for choice from among the options by the decision maker and the

public. NEPA is implemented through regulations of the Council on Environmental Quality (40 CFR 1500–1508). The NPS has in turn adopted procedures to comply with NEPA and the CEQ regulations, as found in Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision-making and its accompanying handbook (NPS 2011a). This EA document is prepared under the provisions of NEPA and applicable NPS implementing policies and guidelines.

National Historic Preservation Act (1966, as amended) (Public Laws 89-665 and 96-515) (16 USC 470)
The purpose of the National Historic Preservation Act (NHPA) is to preserve, conserve, and encourage the continuation of the diverse traditional prehistoric, historic, ethnic and folk cultural traditions that underlie and are a living expression of our American heritage. It directs federal agencies to inventory historic properties (Section 110) and to take into account the effect of any undertaking (a federally funded or assisted project) on historic properties (Section 106). "Historic property" is any district, building, structure, site (both historic and prehistoric), or object that are included in or is eligible for listing in the National Register of Historic Places because the property is significant at the national, state, or local level in American history, architecture, archeology, engineering, or culture. The National Register contains a wide range of historic property types, including historic buildings and structures, archeological sites, groups of buildings or sites forming historic districts, cultural landscapes, ethnographic resources, and individual objects. For National Historic Landmarks, the Advisory Council on Historic Preservation (ACHP) as well as the Secretary of the Department of the Interior are invited to participate in consultations to resolve adverse effects that may occur because of an agency's actions. This EA is developed to serve as compliance with the provisions of the NHPA and the regulations of the ACHP.

Clean Air Act (1970, as amended) (Public Law 88-206) (42 USC 7401 et seq.)
The Clean Air Act (CAA) was established to promote public health and welfare by protecting and enhancing the nation's air quality. Section 118 of the CAA requires that the Park meet federal, state, and local air pollution standards.

Clean Water Act (1977) Public Laws 92-500 and 95-217) (33 USC 1241 et seq.)
The purpose of the Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The CWA is the primary authority under which the U.S. Environmental Protection Agency (USEPA), State of Hawai'i Department of Health Clean Water Branch, and the Army Corps of Engineers (ACOE) regulate impacts to surface water in Hawai'i. Section 401 of the CWA as well as NPS policy requires analysis of impacts on water quality. Under Section 404, the Army Corps of Engineers issues either general or nationwide permits for the discharge or dredge or fill material into the waters of the United States, depending on the nature of proposed work. *NPS Management Policies* (2006) also provide direction for the preservation, use, and quality of water in national parks.

Endangered Species Act (1973, as amended) (Public Law 93-205) (16 USC 1531 et seq.)
The Endangered Species Act requires federal agencies, in consultation with the Secretary of the Interior, to use their authorities in the furtherance of the purposes of the act and to carry out programs for the conservation of listed endangered and threatened species (16 USC 1535 Section 7(a)(1)). The ESA also directs federal agencies, in consultation with the Secretary of the Interior, to ensure that any action authorized,

funded, or carried out by a federal agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat (16 USC 1535 Section 7(a)(2)). Consultation with the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) is required if there is likely to be an effect on a listed species.

Archeological Resources Protection Act (1979) (Public Law 96-95, as amended) (16 USC 470aa-470mm)
The Archeological Resources Protection Act (ARPA) provides a means for additional protection of archeological resources and for prosecuting the collecting of resources on federal lands. Its purpose is to secure for the present and future benefit of the American people, the protection of archeological resources and sites that are on public lands and Indian lands (NPS 2006: 5.3.5.3).

Native American Graves Protection and Repatriation Act (1990) (Public Law 101-601) (25 USC 3001)
The Native American Graves Protection and Repatriation Act (NAGPRA) provides a process for museums and Federal agencies to return certain Native American cultural items – human remains, funerary objects, sacred objects, or objects of cultural patrimony – to lineal descendants, and culturally affiliated Native Hawaiian organizations. NAGPRA includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on Federal lands, and penalties for noncompliance and illegal trafficking.

Migratory Bird Treaty Act (1918, as amended) (Public Law 90-578) (16 USC 703-712)
The Migratory Bird Treaty Act (MBTA) makes it unlawful for people to "take" migratory birds, their eggs, feathers, or nests. “Take” is defined to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof. The MBTA also serves to protect environmental conditions for migratory birds from pollution or other ecosystem degradations. Under the Act, “migratory bird” applies to birds of a species that belongs to a family or group of species present in the U.S. as well as Canada, Japan, Mexico, or Russia. Most native bird species (birds naturally occurring in the United States) belong to a protected family and are therefore protected by the Act. The MBTA does not protect nonnative species introduced into the U.S. or its territories by means of intentional or unintentional human assistance.

Coastal Zone Management Act (1972, as amended) (Public Law 92-583) (16 USC 1451–1464)
This act states a national policy to “preserve, protect, develop, and where possible, to restore or enhance the resources of the nation’s coastal zones” and to encourage and assist the states in implementing management programs to achieve wise use of land and water resources of coastal zones.

STATE of HAWAIʻI LAW

West Hawaiʻi Fisheries Management Areas (2005 Hawaiʻi Administrative Rules HAR Title 13 Chapter 60.3)
Kaloko-Honokōhau NHP marine waters are one of several West Hawaiʻi Fisheries Management Areas designated by the State of Hawaiʻi (HAR 13-60.3-16). Hawaiʻi has

established two fishing rules specific to the Park marine waters that prohibit aquarium fishing (HAR 13-60.3) and require that any gill-nets used within the Park must be locally constructed, handmade net of natural fibers (HAR 13-60.3-5(h)(1)). All marine fishing activities in the National Park must be in accordance with Hawai‘i state laws and regulations.

EXECUTIVE ORDERS

Executive Order 11988 Floodplain Management (24 May 1977) (42 FR 26951)
This Executive Order requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists.

Executive Order 11990 Protection of Wetlands (24 May 1977) (42 FR 26961)
This Executive Order requires the NPS and other federal agencies to evaluate the likely impacts of actions in wetlands. The NPS follows the USFWS classification standards (Cowardin et al. 1979) for wetlands and deepwater habitats. The ACOE uses the 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) to identify “jurisdictional wetlands” for Clean Water Act Section 404 permitting.

Executive Order 12088 Federal Compliance with Pollution Control Standards (13 October 1978 as amended) (43 FR 47707)
This order establishes procedures and responsibilities for all federal agencies to ensure that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to Federal facilities and activities under the control of the agency.

Executive Order 12898 General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (16 February 1994, 59 FR 7629)
This order requires each Federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions.

Executive Order 13112 Invasive Species (2 February 1999 as amended) (64 FR 6183*)* This Executive Order defines invasive species, requires federal agencies to address invasive species concerns and to not authorize or carry out new actions that would cause or promote the introduction of invasive species, and established the Invasive Species Council.

Executive Order 13352 Facilitation of Cooperative Conservation (30 August 2004) (69 FR 52989)
The purpose of this order is to ensure that the Departments of the Interior, Agriculture, Commerce, and Defense and the Environmental Protection Agency implement laws relating to the environment and natural resources in a manner that promotes cooperative conservation, with an emphasis on appropriate inclusion of local participation in Federal decision-making, in accordance with their respective agency missions, policies, and regulations. As used in this order, the term "cooperative conservation" means actions that relate to use, enhancement, and enjoyment of natural resources, protection of the environment, or both, and that involve collaborative activity among Federal, State, local, and tribal governments, private for-profit and nonprofit institutions, other nongovernmental entities and individuals.

POLICIES

Secretarial Order 3175, U.S. Department of the Interior, Departmental Responsibilities for Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes.

NPS Management Policies 2006 (NPS 2006)

The NPS-wide policy document, adherence to this policy is mandatory unless specifically waived or modified by the NPS director or certain departmental officials, including the U.S. Secretary of the Interior. Actions under this EA are in part guided by these management policies.

NPS Management Policies 2006, Section 1.4: The Prohibition on Impairment of Park Resources and Values

The most important statutory directive for the National Park Service is provided by the interrelated provisions of the NPS Organic Act of 1916 and the NPS General Authorities Act of 1970 as amended in 1978 (Redwood National Park Expansion Act of 1978). Section 1.4 of *NPS Management Policies* represents the agency's interpretation of these key statutory provisions.

NPS Management Policies 2006, Section 1.12

The NPS Management Policies state, "The Service will maintain open, collaborative relationships with Native peoples for whom these islands are their ancestral homes. The Service will also meet any responsibilities that may have been defined in the enabling legislation of these island Parks."

NPS Management Policies 2006, Section 4.1.3

The NPS Management Policies state that:

> *The Service will pursue opportunities to improve natural resource management within parks and across administrative boundaries by pursuing cooperative conservation with… traditionally associated peoples in accordance with Executive Order 13352… the Service will develop agreements with… organizations to coordinate plant, animal, water and other natural resource management activities in ways that maintain and protect park resources and values. Such cooperation may include park restoration activities… and the management of species harvested in parks. Cooperation also may involve coordinating management activities in two or more separate areas… integrating management practices to reduce conflicts, [and] sharing data and expertise*.

Director's Order #28: Cultural Resources

Establishes NPS policies and procedures for cultural resource management (CRM) activities including research, planning, and stewardship. Authority for cultural resource management activities derives from laws and policies including the 1916 Organic Act, Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, National Historic Preservation Act and NPS *Management Policies*. DO 28

elaborates on these policies and standards and offers guidance in applying them to establish, maintain, and refine park cultural resource programs. This guideline is intended to aid managers, planners, staff, and cultural resource specialists in management of archeological and ethnographic resources, cultural landscapes, historic and prehistoric structures, and museum objects.

Director's Order #20: Agreements
Establishes NPS policies and procedures for (1) administering agreements; (2) identifies and describes the types of agreements that the NPS enters into with Federal and non-Federal entities; (3) identifies and describes the responsibilities and functions of NPS officials in administering agreements; and (4) affirms the NPS's commitment to comply with the regulations, policies and procedures imposed by the Office of Management and Budget (OMB) Circulars, the Code of Federal Regulations (CFR), the Federal Acquisition Regulation (FAR), Executive Orders (E.O.), the Department of the Interior (DOI) regulations and other applicable governmental laws and regulations. The alternatives considered in this document would require compliance with this NPS standard.

Director's Order #53: Special Park Uses
Establishes NPS procedures for activities that take place on parkland or waters, provides a benefit to an individual, group, or organization, rather than the public at large, and requires written authorization and some degree of NPS management to protect park resources and the public interest. A special park use does not include any activity managed under the Concessions Management Improvement Act of 1998 (16 U.S.C. 5951), or any leasing activity managed under the National Historic Preservation Act (16 U.S.C. 470h-3) or Section 802 of the National Parks Omnibus Management Act of 1998 (16 U.S.C. 1a-2(k)). The Superintendent of each park unit is responsible for decisions to approve or deny requests to engage in special park uses at that particular park. The alternatives considered in this document require compliance with this NPS standard.

Director’s Order #77: Natural Resources Management
Director’s Order #77 provides direction for the protection and management, resource uses, planning, and program administration and management of natural resources within park units.

Director’s Order #77-1 Wetland Protection
This order applies to both the USFWS and ACOE wetlands descriptions and explains the NPS policies, standards, and requirements for protecting wetlands in units of the National Park System.

Director’s Order #77-2: Floodplain Management
This order requires that the NPS strive to preserve floodplain values and minimize hazardous floodplain conditions. When it is not practicable to locate or relocate development to a site outside a floodplain, the park superintendent is required to prepare a Statement of Findings (Appendix B) for approval by the NPS describing why less flood-prone alternative sites were rejected. In the case where alternative sites are also flood-prone, an analysis of the comparative risk between sites is included. The NPS must use non-structural measures as much as practicable to reduce hazards to human life and property, while minimizing the impact to the natural resources of floodplains. The NPS must ensure that structures and facilities are designed to be consistent with the intent of the standards and criteria of the National Flood Insurance Program (44 CFR Part 60).

The Secretary of the Interior's Standards for the Treatment of Historic Properties
The Secretary's Standards are used to guide management decisions in preserving historic properties. The standards are used to plan for the protection and treatment of historic structures and cultural landscapes to maintain their integrity.

PARK PLANNING DOCUMENTS

The Kaloko-Honokōhau National Historical Park General Management Plan/Environmental Impact Statement (NPS 1994)
The Park's *General Management Plan/Environmental Impact Statement* (GMP; NPS 1994) provides long-term direction, goals, and guidance for Park resource preservation, and visitor use and experience. The GMP also analyzes the impacts of various proposed actions in developing and managing the Park. The GMP (NPS 1994:32-36) provides direction on the purpose, the proposed location (Alternative 3 in this EA), the desired conditions for the location, the activities to take place, the operation and maintenance by participants, and the construction of the Cultural Center: *"The construction of any modern amenities are to be kept at the minimal level and carried out only to the extent that their provision serves to prevent damage to Park resources such as fishponds and the offshore waters"* (NPS 1994:34).

Hono-kō-hau Study Advisory Commission Report: The Spirit of Ka-loko Hono-kō-hau (1974)
The Spirit of Ka-loko Hono-kō-hau (Spirit Report) calls for a live-in cultural education complex "removed from any major public use area, where the dignity and integrity of the culture would be maintained. It would be an intimate personal experience extending over a period of one day or more, rather than being part of an exhibit open to the regular visitor" (Hono-kō-hau Study Advisory Commission 1974:40).

Vegetation Management Plan (1998)
This plan includes background information on the history and site characteristics of the Park, general strategies of alien plant control and native plant management/restoration, proposed vegetation management strategies at priority sites including recommendations for alien plant control and Native/Polynesian plant restoration, and discussion on monitoring and research needs.

Public Participation

Public involvement is a key component of the NEPA process. In this part of the process, called "scoping," the general public, federal, state, local agencies and organizations are provided an opportunity to identify concerns and issues regarding the potential effects of the proposed action and to explore possible alternative ways of achieving the objectives of the proposed action while minimizing adverse impacts. Kaloko-Honokōhau National Park conducted both internal scoping with appropriate NPS staff and external scoping with the public, and interested and affected groups and agencies.

Internal scoping was conducted with an interdisciplinary team from Kaloko-Honokōhau National Park beginning in January 2007. Project information needed to begin internal scoping was entered into the NPS "Planning, Environment and Public Scoping" (PEPC) online system in May 2006. Prior to the January 2007 interdisciplinary team meeting, data needed to identify potential impacts to resources had been obtained during site

visits to the proposed project area by interdisciplinary team members and other technical experts. Additional internal scoping meetings were held in 2009 to discuss the purpose and need for the project; various alternatives; potential environmental impacts; past, present, and reasonably foreseeable projects that may have cumulative effects; and to develop mitigation measures. The team developed five alternatives, three of which are analyzed in this environmental assessment. Seven additional alternatives were considered but dismissed. The team also reviewed impact topics to be analyzed and determined which topics needed no further consideration.

As part of the external scoping process, information regarding the Cultural Center planning process was collected from *Na Hoapili o Kaloko-Honokōhau Advisory Council* meeting minutes (1997-2006), the Spirit Report (Hono-kō-hau Study Advisory Commission 1974) and the 1994 GMP (NPS 1994). Additional community meetings were held with interested parties beginning in March 2008, culminating in the formation of the group *Makani Hou o Kaloko-Honokōhau* whose mission is to partner with the NPS for the creation and management of the Cultural Center.

External scoping was initiated with the distribution of a scoping letter to inform the public of the proposed Cultural Center, and to generate input relevant to the preparation of this EA. The scoping letter, dated January 7, 2010, was mailed to 103 interested parties including local, state, and federal agencies; special interest groups; academic institutions; businesses; and individuals (62). In addition, the scoping letter was mailed to the Park's descendants. Scoping information was also posted on the Park's website.

Two external scoping meetings were held, in open-house format: January 20, 2010, at Puʻuhonua o Honaunau National Historical Park and January 23, 2010 at Kaloko-Honokōhau. In addition to the January 7, 2010, scoping letters, the scoping sessions were publicized via flyers posted at both Parks, announcements in *North Hawaiʻi News*, *Hawaiʻi Tribune Herald, West Hawaiʻi Today*, and *Big Island Weekly*, submission of a community announcement to the radio station KAPA and by word-of-mouth.

During the meetings, informational displays were presented including history of the Cultural Center concept, an overview of *Makani Hou o Kaloko-Honokōhau*, and detailed descriptions/depictions of the Alternatives. Sixteen members of the public attended the two sessions. Comments were submitted via "sticky notes" directly adhered to displays, note cards, personal communication with Park staff and on "*manaʻo* forms" (a questionnaire created to collect comments regarding the Center and alternative preferences). Twenty-five comments were received during the meetings. Of those, five were specific to the alternatives; all of which supported Alternative 2 (the Park preferred alternative). The remainder of the comments were: 1) general comments, 2) questions concerning how the Center will operate including parking issues, and 3) suggestions for the Center's curriculum. No comments were received that were unsupportive of the project, and no additional alternatives were suggested.

During the 30-day scoping period, two responses were received by mail: one declining any further comment and one in favor of the project and requesting more information.

Impact Topics Retained for Further Analysis

Impact topics analyzed for all alternatives (including the No Action Alternative) have been identified based on federal laws and regulations, NPS Director's Orders, NPS Management Policies (NPS 2006), and NPS knowledge of resources at Kaloko-Honokōhau National Historical Park. A brief overview of impact topics retained for further analysis in this EA is listed below along with the reasons why the impact topic was retained. Detailed analysis of each of these topics, including the regulatory context and the existing baseline conditions (affected environment) for each of these topics is provided in the *Environmental Consequences* section of this document.

- Soundscape
- Air Quality
- Topography and Geology
- Water Resources and Wetlands
- Special Status Species
- Wildlife
- Vegetation
- Visitor Experience and Safety
- Floodplains
- Cultural Resources
- Park Operations
- Climate Change

During external scoping, several members of the public were especially interested in the issues of parking and access to the live-in center site. These concerns are addressed as part of the *Park Operations* Impact Topic.

Impact Topics Dismissed from Further Analysis

Soils

The Proposed Action is expected to have no, to negligible impacts on soils. Common to the Kona Coast, true "soils" are not present at either of the two alternative locations for the Center. At the Alternative 2 site, the surface substrate is composed of dredge spoils from Kaloko Fishpond that were deposited into the area in the 1970's prior to establishment of the Park. At this location, some areas were not disturbed and these fall into the Natural Resources Conservation Service (NRCS) rLV (*ʻaʻā* lava flow) map unit (USDA/NRCS 2009). The Alternative 3 location at Kaloko Fishpond Parking Area is classified by the NRCS as rLW, *pahoehoe* lava flow (the northern half) and BH, beach (the southern half) (USDA/NRCS 2009.) and no soils are present. The surface substrate of this area consists of approximately 10 centimeters (cm) (4 inches (in)) of imported coral-sand and sifted sand from Kaloko Fishpond overlaying and protecting the native sand. Because both Action Alternative locations consist of native "soil" material covered by imported material, and because the further addition of imported materials for construction will have no, to negligible impact on the native soils, the topic of soils has been dismissed from further analysis.

Indian Trust Resources

Because there are no Indian trust resources at Kaloko-Honokōhau National Historical Park, this topic has been dismissed from further analysis.

Environmental Justice

The proposed project area is located in Kailua-Kona, Hawaiʻi County. The U.S. Census Bureau 2010 statistics (the most recent available) show that the population of the North Kona census county division is 37,875, of which 18,506 individuals are considered members of a minority ethnic group or race. Poverty levels are not available in the current census data for this area. However, in Hawaiʻi County as a whole, 14.5% of the population falls below the federal poverty level as of 2009 (U.S. Census Bureau 2010). Because the nature and location of the Proposed Action would not have the potential to have disproportionate health or environmental effects on minorities or low-income populations or communities as defined the USEPA (1998) and CEQ (1997) environmental justice guidance, this topic was dismissed from further analysis.

Socioeconomics

The NPS DO-12 (NPS 2011a) requires that NPS units consider potential direct and indirect impacts to the local economy, including employment, occupation, income changes, tax base and infrastructure, or neighboring businesses in the general project vicinity. Besides potential for the Cultural Center to create beneficial impacts such as employment opportunities and some increased business for surrounding business from Cultural Center participants, the Proposed Action would not appreciably impact any of the above socioeconomic components or other agencies. Because the Proposed Action does not have the potential to affect the socioeconomic environment of the area, this topic has been dismissed from further analysis.

Prime and Unique Farmlands

According to the NRCS Web Soil Survey (USDA/NRCS 2009), no areas within the project area classify as prime farmland, therefore this topic has been dismissed from further analysis.

Lightscape Management

In accordance with NPS Management Policies 2006, the NPS strives to preserve natural ambient landscapes, which are natural resources and the values that exist in the absence of human caused light. The NPS also strives to limit the use of artificial outdoor lighting to that necessary for basic safety requirements. There are no lights used at night at the Park, as the only facility with power is the Visitor Contact Station, which is closed after 4:00 pm, except for occasional evening programs. Hawaiʻi County has lighting regulations, the Outdoor Lighting Code, to prevent light interference for the astronomy facilities on Mauna Kea. The only light that will be allowed at the Center will be from fires in designated fire pits, *kukui* (native tree nut-oil) lamps, camping lanterns, and low-power flashlights. For safety purposes, a generator may be used in the event of an emergency. No power or lights will be added as part of the Proposed Action. Therefore, impacts from lighting will be negligible, and this topic has been dismissed from further analysis.

Wilderness Values

According to NPS policy (NPS 2006), lands are considered eligible for "wilderness" designation if they are at least 5,000 acres or are of sufficient size to make practicable their preservation and use in an unimpaired condition, and the lands meet the specific characteristic criteria of the Wilderness Act Kaloko-Honokōhau National Historical Park does not meet these criteria; therefore, the topic of wilderness values has been dismissed from further analysis.

Museum Collections

According to NPS Director's Order #24, *Museum Collections* (DO-24), the NPS must consider the potential for impacts on museum collections (historic artifacts, natural specimens, and archival and manuscript material). The DO-24 provides further policy guidance, standards, and requirements for preserving, protecting, documenting, and providing access to, and use of, NPS museum collections. Because the project area is not located near any museum collection facilities, this topic has been dismissed from further analysis.

Cave Resources

The Federal Cave Protection Act of 1988 (16 U.S.C. Sec. 4301) and NPS Management Policies (2006) require federal agencies to protect cave resources. Networks of lava tube caves underlie many areas of the Park. Lava tubes originate when cooling crust forms over underlying molten lava streams. The crust insulates the moving lava, but eventually the sources of the flow cease and the tubes empty of molten material creating a cave. Caves contain a number of unique geological formations, as well as cultural, paleontological, and biological resources. Several caves have been identified within the Park, but none of the caves are located within the footprints of either of the two alternative locations. Therefore, this topic has been dismissed from further analysis.

Chapter 2: Alternatives

This chapter describes the alternatives evaluated in this EA for the construction and operation of a Cultural Center at Kaloko-Honokōhau National Historical Park. Three alternatives are analyzed in this EA. Alternative 1, the No-Action Alternative, continues current management direction for cultural demonstration programs with no Cultural Center constructed or operated. The two action alternatives are Alternative 2, Operation of a Cultural Center at a previously disturbed area south of Kaloko Fishpond, which is the NPS Preferred Alternative; and Alternative 3, Operation of a Cultural Center at the Kaloko Fishpond Parking Area. A description of activities and operations for each alternative is included and elements common to Action Alternatives 2 and 3 are identified.

Also included in this chapter are a brief description of other alternatives and alternative elements that were initially considered during the planning process but were subsequently dismissed from further analysis, including the rational for dismissal; and a description of the environmentally preferred alternative as defined by the Council on Environmental Quality implementing regulations for the National Environmental Policy Act.

Alternative 1 (No Action): Continue Existing Management and Programs

Under the No-Action Alternative, current management, operations, and conditions would continue. This Alternative is essentially the management structure that has been in place since the GMP was approved in 1994. Federal regulations require the NPS to analyze the No-Action Alternative and compare the associated environmental consequences to other alternatives considered in environmental documents. If the NPS selects the No-Action Alternative, the NPS would respond to future needs and conditions associated with the programs without major actions or changes in the present course. The NPS would make decisions for cultural demonstrations and programs on a case-by-case basis, and would consult existing plans-of-record and the GMP for guidance. There would be no construction and operation of a Cultural Center.

Under the No-Action Alternative, ongoing cultural demonstrations and interpretive programs would continue to be presented at areas throughout the Park. Ongoing programs offered to the public include cultural demonstrations at the Visitor Contact Station, the Kaloko Fishpond Picnic Area, the Kaloko Demonstration *Halau* and the ‘Ai’ōpio Fish Trap area. Programs and workshops offered by park rangers and cultural practitioners include, but are not limited to, *hula,* ukulele, *ipu* crafts, lashing, geology tours, trail hikes, and tours of the Kaloko Fishpond wall. Program duration varies from less than an hour to six hours. There would be no multi-day programs.

Under the No-Action Alternative, visitors would continue to access the Park on foot or by vehicle on a self-guided basis, during ranger-guided activities, through permitted activities with commercial operators and/or through special use permits. Vehicle access to the Park would continue to be limited to Kaloko Fishpond area, Visitor Contact Station, and Honokōhau Small-Boat Harbor area. Access to marine waters via vessel would continue to be from Honokōhau Harbor. The NPS would continue to maintain the Kaloko dirt road and the Visitor Contact Station access road under the current management strategies including marking roads and ensuring that they remain passable. Restrooms would be maintained at ‘Ai’ōpio, the Visitor Contact Station/beach trail junction, the Visitor Contact Station, and the Kaloko Parking Area. Removal of alien and invasive plant and animal species in the Park would continue as a management practice.

In addition, introduction of the Park’s themes and history to elementary- through college-aged students would continue to be provided through established relationships between schools and Park staff, volunteers, and non-profits. Educational programs for elementary schools are offered every November at the Children’s Cultural Festival, a two-day event, and as individual programs throughout the year. Additionally, the NPS would continue to produce materials for the Park website and Visitor Contact Station to orient visitors about the cultural themes, and the care needed to protect and maintain the Park’s resources by staying on trails and respecting cultural sites.

Under the No-Action Alternative, the NPS would continue to follow the guidance of the GMP for visitor use and interpretation with the exception that no area would be developed specifically as a Cultural Center. Recreation use would continue to take place primarily along the shoreline and offshore for picnicking, bird watching, boating, sunbathing, hiking, fishing, snorkeling, diving, and surfing. The Kaloko picnic area would remain open for public use. Cultural demonstrations would continue to be designed for

the appreciation and education of the island residents and visitors where visitors have the opportunity to participate as well as to observe. Traditional Native Hawaiian cultural practices and various aspects of the Hawaiian way of life would be interpreted for residents and island visitors. Interpretation would also continue to focus on the natural values of the Park including native species, the importance of water, anchialine ponds, fishponds, and marine resources.

The NPS would continue a partnership with *Makani Hou o Kaloko-Honokōhau* through a Partnership agreement for fundraising and support of ongoing programs within the Park.

Elements Common to Action Alternatives 2 and 3

The following activities are common to the locations for Action Alternative 2 and 3 (Figure 3). A Cultural Center situated within Kaloko-Honokōhau National Historical Park would be constructed, co-managed, and operated by the National Park Service and *Makani Hou o Kaloko-Honokōhau* through partnership agreements. Activities that would occur at the Center include building traditional Hawaiian structures for shelter and other activities including *imu* (oven) for demonstration cooking, planters, and drying racks. Other activities would include building and use of traditional canoes, traditional weaving, *hula* instruction, making cordage, construction of fishing materials (hooks, lures, traps, nets, lines, sinkers), wood carving, feather work, *kapa* making and dying, a variety of *ipu* (gourd) crafts, traditional cooking methods, and other traditional activities and demonstrations.

Construction

The Cultural Center would include a maximum of 12 traditional Hawaiian structures (*hale*) common to housing complexes such as: *hālau* (long house); *hale mua* (men's house for eating, and religious purposes); *hale kiaʻI* (guard house); *hale kuku* (craft house), *hale noa* (sleeping house for men, women and children), *hale kapiʻo* (lean-to shelter), *hale ʻaina* (women's eating/general purpose building) and *hale kahumu* (cooking house); *hale papaʻa* (storage house); and *hale waʻa* (canoe house). Other non-traditional structures designed to camouflage operational requirements would be constructed and could include as many as 10 small structures such as *hale lua* (structure traditional in exterior appearance for composting toilets) and *hale* UTV (structure traditional in exterior appearance for storage of small off-road four-wheel drive utility vehicle (UTV) on-site).

Construction of the Center would include conducting classes in traditional building techniques to the extent practicable and will emphasize safety and Occupational Safety and Health Administration requirements. Modern techniques for construction may be used including scaffolding, chainsaws, small off-road four-wheel drive utility vehicle or other vehicle equipment to haul rock and supplies, electrical hand tools, small, quiet generators and heavy equipment to support and place logs. Dust-generation from on-site heavy equipment use will be suppressed with water during construction. Although traditional skills are to be relied upon where possible, Modern safety practices will be employed to fully meet safety requirements and initial site preparation requirements.

Building materials would include rocks, concrete pier blocks, wood, thatching, concrete, lashing, and other associated materials needed for *hale* construction. Concrete pier blocks may be used for the foundation of the traditional structures. Wood materials for

the structures include native woods, obtained from sources outside of the Park, non-native woods obtained from outside the Park that have no potential for spread in the Park, and wood obtained from within the Park generated through plant management programs. Wood obtained from sources outside of the Park will be de-barked and cleaned prior to use in the Park. Wood may be treated by saltwater submersion to deter pests. Approved treatments for pest control for the building materials will meet all applicable NPS Integrated Pest Management standards. Rock and coral for footings, platforms, *hale* floors, walls and for traditional masonry may be obtained from previously disturbed areas of the Park (e.g., visitor contact station area or previously bulldozed sites), or from NPS-approved sources outside the Park (from road construction or similar projects) through appropriate agreements. All rock, coral and other masonry materials from outside the Park will be rinsed prior to use in the Park. Crushed-coral sand or sand from acceptable external sources may be used as flooring material for the *hale*. Thatching and lashing materials may include grasses, vines, and palm fronds. All materials for building and other activities gathered from outside the Park would be carefully cleaned and inspected to ensure that alien invasive species (e.g., coqui frogs, *Eleutherodactylus coqui*; little red fire ant, *Wasmannia auropunctata*, and alien plant seeds) are not inadvertently introduced to the Park.

Programs

Activities and multi-day programs would be managed using “leave no trace” principles. Participants would be capped at 50 people per workshop (less than 8 hours) and at 25 people per overnight event. Participants would stay for up to seven days at the site. Activities that would occur at the Center include building traditional Hawaiian structures and minor constructed units including imu for demonstration cooking, planters, and drying racks. Other activities would include building and use of traditional canoes, traditional weaving, hula instruction, making cordage, construction of fishing materials (hooks, lures, traps, nets, lines, sinkers), wood carving, feather work, *kapa* making and dying, a variety of *ipu* (gourd) crafts, traditional cooking methods, and other traditional activities and demonstrations. Multi-day programs on the site would include traditional native Hawaiian activities including sleeping in a hale or on the ground, cooking with traditional methods, and participating in traditional cultural learning, sharing and recreational classes.

Electrical Power and Lighting

No electrical power would be provided to the site. Nighttime lighting would be limited to flashlights, battery operated lanterns, camping candle lanterns, *kukui* oil lamps, and fires contained within fire pans. A small generator may be used for lighting in an emergency.

Food Preparation and Fire

Prepared food would be subject to inspection for compliance with all applicable health and sanitation requirements of local and state agencies. Fires for cooking would be contained in the *imu* or on a fire pan above ground. Fires will be at minimum 25 ft away from structures and kept in an area cleared of vegetation surrounded by a rock wall of at least 3 ft in height. With the exception of stone bowls fixed in the center of traditional structures to contain *kukui* oil lamps, open flame would not be permitted inside any *hale.* All *hale* will be fitted with a minimum of two battery powered smoke detectors. Fires would be restricted during extreme fire danger, and winds greater than 10 miles/hour. Multiple fire extinguishers would be located onsite, e.g., in each *hale,* next to cooking

areas, etc. Small camp stoves may be used outside of structures in designated areas. Multi-day events involving fire pits or *imu* may occur.

Water Use and Wash Wastewater

Bathing in anchialine pools and fishponds is prohibited within the Park (NPS 2012a). Showering and bathing would not take place at the Cultural Center site; therefore, no water runoff would occur. Participants may bathe in the ocean or rinse onshore without the use of soaps and shampoos. Wastewater from food preparation and dish and utensil cleaning would be collected, contained, removed from the site, and disposed of in appropriate wastewater systems. Any wastewater that can be recycled to meet state and county code may be used to irrigate plants within the site. Participants would provide their own water for drinking.

Solid Waste

Trash, leftover food, and litter would be held in animal-proof containers and at the conclusion of events would be placed in Park trashcans at the Kaloko Parking Area or removed from the Park by the participants. Fire ashes would be contained and used to amend soil in constructed planters when possible or disposed of in approved containers.

Soundscape

Sounds would be generated by participants talking during classes, singing, chanting, *hula*, beating *tapa*, and/or playing traditional instruments. Noise would be reflective of traditional Hawaiian village sounds. At night, natural sounds would prevail. Rules for the Center will specify that noise levels be kept at a low-level that is culturally appropriate to traditional Native Hawaiian ambience. Participants would not be allowed to use electronic devices with speakers, and/or other loud devices.

Sound generated by the short-term construction of the Cultural Center may include temporary sounds from machinery (chainsaws, generators, line cutters, heavy machinery) moving rock and other similar sounds. Construction noise would be limited to between 6 A.M. and 5 P.M.

Fisheries Resources

Fishing activities would continue to be in accordance with Hawai‘i state law and the Superintendent’s Compendium (NPS 2012a). Indigenous fisheries resource management practices for Center activities would be developed by the NPS in cooperation with *Makani Hou o Kaloko Honokōhau* and employed by Center participants to ensure protection and perpetuation of fisheries (e.g., see Friedlander et al. 2002). For all Center-related fisheries demonstration activities, a *kapu* (prohibition) would be placed on all modern fishing gear including but not limited to: rod, reel, monofilament nets and throw nets, wire traps, and SCUBA spearfishing. Anchialine pools would remain closed to all activities including bathing, gathering, and modification (NPS 2012a).

Vegetation Management

Landscaping and agricultural plantings associated with Center activities would consist of plant species that are native to the Park, and are historically and culturally appropriate agricultural species. Any out-plantings for restoration purposes would comply with NPS Management Policies (NPS 2006) and Kaloko-Honokōhau NHP regulations to avoid introducing invasive species and pests and to maintain genetic integrity of plant

populations in the Park. Removal of alien and invasive plant and animal species in the Park would continue as a management practice. Within the Center boundaries at either Alternative location, eventually all alien invasive species plants would be removed. The native seed bank will be encouraged, and native endemic and appropriate Polynesian-introduction species may be out-planted following the Park vegetation management plan and NPS Management Policies (NPS 2006).

Participant Orientation

Resource Protection

Participants at the Cultural Center would be required to attend an orientation to the Center including proper behaviors regarding cultural resources and archeological sites, and sensitive natural resources (sensitive species, water resources, native plants, marine resources). Participants would be required to stay out of archeological sites, native re-vegetation areas, and areas set aside for protected species. Participants would be required to observe NPS regulations regarding prohibition on collection and disturbance of plants, animals, and other materials. Center participants would be educated about the potential for adverse impacts to aquatic life from the introduction of sunscreen or personal hygiene products that may contain potentially harmful chemical ingredients (e.g., Danovaro et al. 2008, Than 2008). The use of sunscreens not containing these known chemicals would be encouraged.

Safety

During the required orientation, all participants will be instructed on safety precautions and procedures for the Center and the planned activities. Safety briefings will also include fire hazards associated with imu, fire pits, and *kukui* oil lamps and the Park Emergency Operations Plan. The Plan includes procedures for Park operations and evacuation in the event of a tsunami, high surf event, hurricane, wildfire, or significant earthquake. This plan includes specific procedures for evacuating all park staff, Cultural Center participants, and park visitors in the event of life-threatening emergencies. Center participants will be briefed on emergency procedures during the required orientation to the Cultural Center. In the event of a tsunami watch or warning, hurricane watch or warning, or high surf advisory, planned events at the Center may be cancelled and in some situations, the park superintendent may close the Park. During an emergency, participants at the Cultural Center will be cleared from the area by park or center staff following the prescribed plan. Designated Center staff/participants will be kept informed of evacuations or warnings by cell phone or park radio through the NPS radio dispatch. Tsunami warning sirens, activated by Hawaiʻi Civil Defense, are located at Honokōhau Harbor and farther north at the Natural Energy Laboratory Hawaiʻi Authority, and can be heard in the Park. During events at the Center, a small off-road four-wheel drive utility vehicle will be stored on-site for emergency use.

Alternative 2 (NPS Preferred): Cultural Center South of Kaloko Fishpond Area

Under Alternative 2, a Cultural Center would be constructed, managed and operated by the National Park Service and *Makani Hou o Kaloko-Honokōhau* through partnership agreements at a previously disturbed area approximately 650 ft south of Kaloko Fishpond and 500 ft from the ocean (Figures 3 and 5).

The Center would be constructed on less than one acre within the 1.65-ac disturbed area. The site comprises a basin constructed in the 1970s by the private landowner of Huehue Ranch who bulldozed a portion of *ʻaʻā* lava flow to deposit dredge spoils from Kaloko Fishpond. The substrate of this disturbed area is composed of the sand, silt, shell and other contents that were pumped out of Kaloko Fishpond and diverted via a pipeline to the area. The site is dominated by alien invasive vegetation (sour bush, *Pluchea carolinensis*; fountain grass, *Pennisetum setaceum*; sweet acacia or *klu*, *Acacia farnesiana*; and mesquite or *kiawe*, *Prosopis pallida*). Other native shrubs and trees are found in the area including *maiapilo* (Hawaiian native caper, *Capparis sandwichiana*) both at the site and along the foot trail leading to the site. The Center construction footprint would be confined to the disturbed area and no construction would be permitted beyond this area.

The National Park Service has identified Alternative 2 as its preferred alternative for the following reasons: 1) the location meets the objectives for participant privacy and proximity to ocean, fishponds and planters set forth in the Spirit Report (Hono-kō-hau Study Advisory Commission 1974) and the GMP (NPS 1994); 2) the location is a previously disturbed area in need of restoration; 3) creating the Center at this location would have no adverse effects on historic or archeological features; 4) the inland location would provide the Center some protection from storm surge and climate change related sea level rise; and 5) the size of the area would allow for the construction of many different *hale* in a concentrated area. This location is identified as the Environmentally Preferred Alternative (see Identification of the *Environmentally Preferred Alternative* Section).

Access and Parking

At the Alternative 2 location, access to the Center would be by foot along a trail from the Kaloko Parking Area. The trail would follow the former dredge pipeline footprint and would connect to this area from the coastal trail south of the parking lot. The trail would require occasional plant maintenance and the movement of some rocks from the footpath. A few sections of the trail may be lined with coral cobbles to improve night visibility. For participants unable to walk the trail, a UTV may be used to transport from the parking lot along the existing coastal trail to the southern end of the site through an area previously disturbed by bulldozer.

Participant parking would be at the public Kaloko Parking Area for small groups. No more than six cars would be allowed in the parking lot by participants per event and carpooling for classes would be required. Parking for larger groups is available at the visitor center parking lot with carpooling/shuttle to the Kaloko Parking Area. Occasionally, UTV's may be used to transport larger items and/or supplies to and from the site using the coastal trail.

Construction

In addition to elements of construction common to both action Alternatives, ground-disturbing activities may take place at the Alternative 2 location. Materials may be transported to the site via helicopter sling-load, UTV and trailer, and on foot. Concrete pier blocks may be used for the foundation of the traditional structures and may be placed on top or in the existing substrate of dredge material by digging into the dredge fill material. Rocks displaced by previous bulldozer activity and piled into a berm would

Figure 5a. Aerial view of Alternative 2 location (NPS Preferred).

Figure 5b. Alternative 2 location (NPS Preferred), facing southeast.

be used for rock-walls, platforms, and footings. Dredge material left on the site may also be used for leveling footings or to provide flooring material in *hale*. Ground-disturbing activities associated with the construction of the Cultural Center would be monitored by a qualified archeologist. If previously unidentified cultural resources should be discovered during construction, work would stop in the area of discovery and the Park's Section 106 Coordinator would be contacted to determine the appropriate course of action.

Water Use and Wastewater

In addition to elements of water use and wastewater control common to both action Alternatives, at Alternative 2, potable water for cooking and drinking would be hand carried to the site by the participants in small water containers and occasionally hauled to the site by UTV.

Toilet Facilities

At the Alternative 2 location, a maximum of four small-footprint compost toilet facilities with two stalls each would be constructed and maintained on the site. The toilet facilities would be designed to blend into the traditional village atmosphere and would be hidden within the disturbed area to the extent possible. The toilets would meet American National Standards Institute/National Sanitation Foundation (ANSI/NSF-41) Certification standards. To accommodate the mechanical aspects of the units, the toilet is located 3 ft above the bottom of the unit. To allow user access to the elevated toilets, there are several options: 1) three-foot deep holes could be excavated and the units could be placed in the holes; 2) ramps could be built from the ground surface to the toilets; 3) a combination of ramps and excavation could be used or; 4) the toilet could be located in a depression and a short walkway could be built from the elevated land near the unit to the toilet. Before holes for the toilets are excavated, the ground will be tested by an archeologist to ensure no archeological deposits are present that will be disturbed during installation of the facilities. If testing reveals further excavation would affect archeological resources, no further ground disturbance would occur and the units would be placed at grade. The compost from the facility will be disposed of in a landfill in accordance with State of Hawai‘i Department of Health and USEPA requirements.

Vegetation Management

Landscaping and agricultural plantings associated with Center activities would consist of plant species that are native to the Park and are historically appropriate. Under Alternative 2, limited, recurring use of natural soil fertilizers or other sterile soil amendments may be allowed only as needed to maintain the plantings, and only where such use does not unacceptably alter the physical, chemical, or biological characteristics of the soil, biological community, and groundwater (NPS 2006). Within the Center boundaries, all alien invasive species plants would be removed and native and appropriate Polynesian-introduction species would eventually be outplanted following the Park vegetation management plan and NPS Management Strategies.

Irrigation

Under Alternative 2, no more than two, 150- to 300-gallon plastic water-tanks would be placed in a disturbed area of the site to hold the non-potable water for plant irrigation purposes. A 525-ft long, aboveground high-density polyurethane (HDP) waterline would follow a previously disturbed (bulldozed) trail. The waterline will not physically disturb any archeological features, but will be visible along the trail to the site. An archeological monitor would be present during installation of the water line to ensure proper

placement. Non-potable water would be pumped from a water truck through the waterline to fill the tanks up to one time per week. Drip lines from the water tanks would be used to water plants as needed. Once the plants are established, the irrigation lines would be removed.

Alternative 3: Cultural Center at Kaloko Parking Area

Under Alternative 3 (Figures 3 and 6), a Cultural Center would be constructed and operated at the Kaloko Parking Area. The Kaloko Parking Area was identified as the location for the Cultural Center in the Park GMP (Figure 2; NPS 1994). The Center would be managed and operated by the National Park Service and *Makani Hou o Kaloko-Honokōhau* through partnership agreements. The Kaloko Parking Area is located adjacent to Kaloko Fishpond and Kaloko Beach and is approximately 0.2 ac in size.

The surface substrate of the site has been modified several times over the years: Park operations in the 1990s and early 2000s included additions of crushed white coral sand from Kawaihae Harbor to the Kaloko Parking Area following depletion of sand in some areas and addition of sand in others from storm wash. In 2006, and again in 2011, 2 to 4 in of sand accumulated during the Kaloko *kuapā* rehabilitation project was added to the surface of the parking area for additional protection of archeological deposits following storm surf damage and the March 2011 tsunami event. Several hurricanes (Iwa in 1982 and Iniki in 1992) have also caused major changes in the area, due to high wave runup. Vegetation surrounding the area consists of a mixture of Polynesian-introduced, and native and alien coastal-strand plants. This location is within the boundaries of an archeological site, an early to mid 20th century walled housing complex including a dry-stack wall enclosure. Four test excavations within the parking area revealed a cultural layer ~ 4.7 to 5.9 in below the surface in an area where sand has not been replenished by the NPS (NPS unpublished data). Impacts and alterations to the site resulted from its use as a parking and staging area during private landownership. The NPS has continued use of the area by the public for parking access.

Access and Parking

Under Alternative 3, the Kaloko Road and Parking Area would be closed to public vehicles and the road would be used by hikers and for NPS and emergency service purposes including servicing the toilet facilities. The Kaloko picnic area would be removed and the public would access the area by foot from the trails or unimproved road. Access to the Center would be by foot on the coastal trail or Mamalahoa Trail from the Visitor Contact Station (approximately one mile). The closest public parking area would be at the Visitor Contact Station, approximately one mile away. For participants not able to walk the trail, a UTV may be used to transport them from the Visitor Contact Station along the existing coastal trail to the site. Participant parking would be at the Visitor Contact Station. No more than five to ten cars would be allowed in the Visitor Contact Station parking lot, and carpooling for classes would be required. No parking would be allowed at the Center site. UTV's may be used to transport larger items and/or supplies to and from the site using the coastal trail.

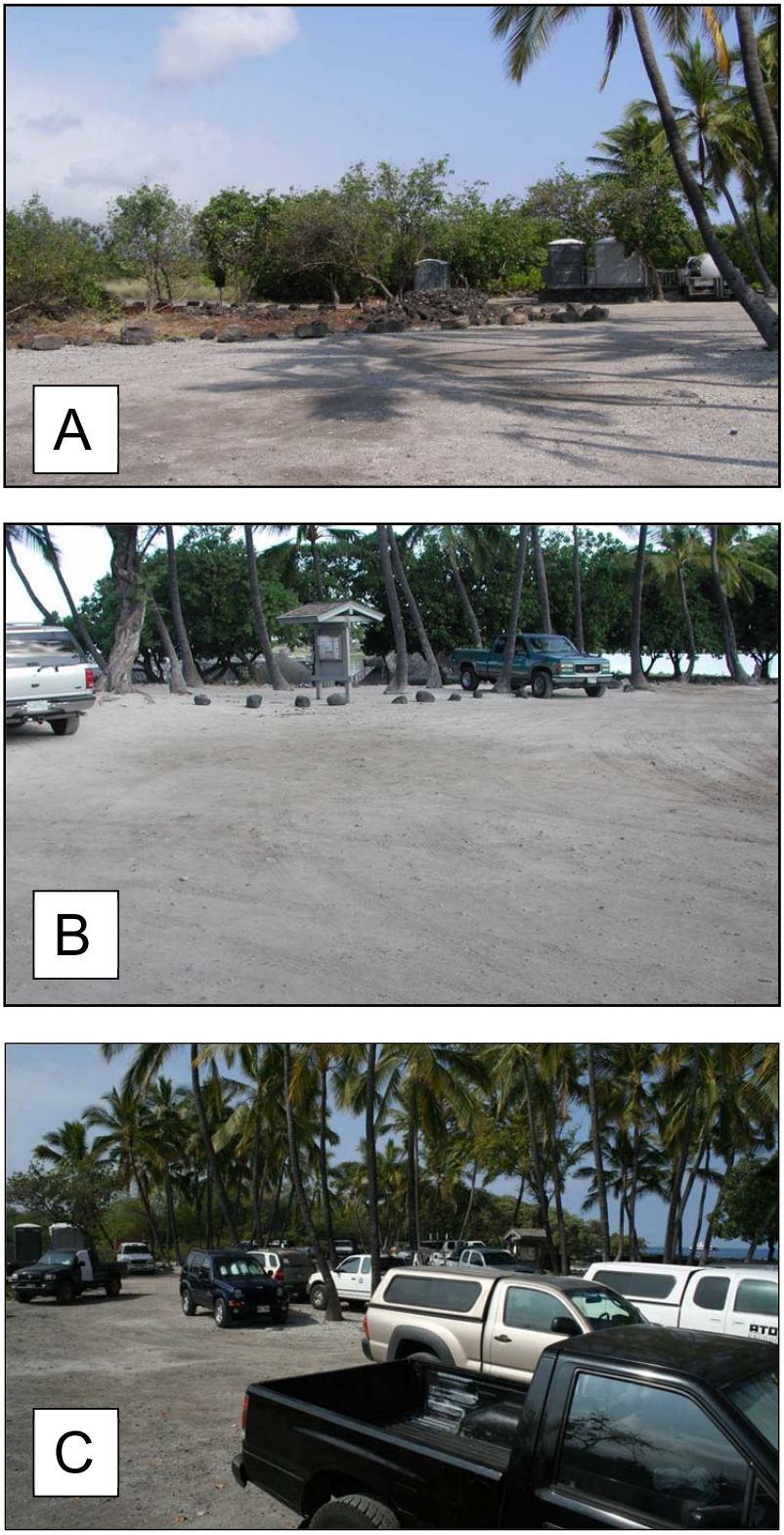

Figure 6. A. Kaloko Parking Area facing east. B. Kaloko Parking Area facing west. C. Kaloko Parking Area facing south during high visitation, April 2010.

Construction

As in Alternative 2, the Cultural Center would include a maximum of 12 traditional Hawaiian structures common to housing complexes and operation of the Center would include conducting classes in traditional building techniques. Concrete pier blocks may be used for the foundation of the traditional structures and may be placed on top of the existing sand. Materials may be transported to the site by truck. Only minimal ground disturbance 2 to 4 in necessary to level *hale* footings would be allowed in this location due to the presence of cultural material below the sand in the parking lot area. This depth is within the layer of replenished sand placed following storm surge and tsunami. For any ground-disturbing activities associated with the construction of the Cultural Center, test excavations would be completed prior to any activity, and all actions would be monitored on-site by an archeologist.

Toilet Facilities

Under Alternative 3, the existing portable toilet facility of two stalls would be maintained on the site for use by Center participants. A maximum of four small-footprint portable toilet facilities would be added to the site near the existing toilet facility. The toilet facilities would be designed to blend into the traditional village atmosphere and would be hidden as much as possible. To accommodate the mechanical aspects of the units, the toilets would be located 3 ft above the bottom of the unit. To allow user access to the elevated toilets, ramps and/or stairs would be built from the ground surface to the toilets with no soil disturbance.

Vegetation Management

Under Alternative 3, landscaping and agricultural plantings associated with Center activities would consist of plant species that are native to the Park and are historically appropriate. However, at Alternative 3, fertilizers or other sterile soil amendments would not be permitted because of proximity to water resources.

Irrigation Water

At this site, no waterline would be constructed. Non-potable water for plant irrigation would be provided to the site from a truck to two plastic tanks, no larger than 300 gallons, to hold non-potable water for irrigation purposes. Drip lines from the water tanks would be used to water the planters and landscaping as needed.

Alternatives Considered but Dismissed

Since the establishment of the Park, the NPS in collaboration with the Park's advisory commission, *Na Hoapili o Kaloko-Honokōhau*, considered the following locations and operation concepts in addition to the alternatives analyzed in this document. For the reasons stated, these alternatives were dismissed from further consideration:

- Establish a Cultural Center at the area at the junction of Huehue Ranch Road and the Coastal Trail. This alternative was dismissed due to its location in a heavily used public area. Since the approval of the GMP, this area has increased visitation by Park visitors, fisherpeople, and surfers, which would not meet the objective to provide a site where cultural activities will be away from major public use. This location also sits directly on the Ala Kahakai National Historic Trail, established in

2000. Closing off public access to the area is not possible given the Congressional designation as a National Historic Trail.

- Establish a Cultural Center on a parcel of land owned by DLNR near the Honokōhau Harbor (approximately 7 ac). This land is within the Park's boundary and is managed by the NPS through a DLNR permit. However, because the land is not owned by the NPS, this location is not feasible as a permanent location for the Cultural Center.

- Partner with the Department of Hawaiian Homelands (DHHL), to locate a Cultural Center on DHHL land. Because DHHL land is not owned by the federal government and is not within the Park, this location is unfeasible as a permanent location for the Cultural Center.

- Establish a Cultural Center at 'Ai-ōpio. The 'Ai-ōpio area is heavily used by the public, and therefore does not meet the objective of providing participants' privacy.

- Establish the Cultural Center at an area behind the Kaloko Fishpond. A 2005 survey of the area (Tomonari-Tuggle and Tuggle 2006b) discovered many archeological sites in the area, which would be disturbed by construction and operation of the Cultural Center. In addition, the luxury residential development on the north boundary of the Park would compromise the privacy of the Center participants. Therefore, this location does not meet the parameter of providing participants privacy away from public use.

- Establish the Cultural Center at an area immediately adjacent to the Kaloko Fishpond in the area currently used for storage for the fishpond-wall rehabilitation project. This small area is on the fishpond shore and does not meet the objective of maintaining the National Park Service values of conservation, historic and cultural preservation, and environmental responsibility.

Environmentally Preferred Alternative

The NPS is required to identify the environmentally preferred alternative(s) for any of its proposed projects (NPS 2011a). The Environmentally Preferred Alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969, which guides the Council on Environmental Quality. The CEQ provides direction that "[t]he environmentally preferable alternative is the alternative that would promote the national environmental policy as expressed in NEPA's Section 101(b):

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;

5. achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

In essence, the environmentally preferred alternative would be the one(s) that "*causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources*" (CEQ, 1978).

Alternative 2, the NPS Preferred Action, is the environmentally preferred alternative for Kaloko-Honokōhau NHP because it best meets goals 1, 2, 3, and 4 described above and provides a beneficial use of a previously disturbed area. Alternative 2 also meets goal 5 by achieving a balance between population and resource use in that it provides a private setting for cultural practitioners away from public use. Alternative 1 (No Action) is not the environmentally preferred alternative because it does the least to support goal 4. Alternative 3 meets goals 1 and 4. However, due to its close proximity to Kaloko Fishpond, Alternative 3 has the potential to affect endangered waterbird habitat and significantly limits public use of the Kaloko area.

Chapter 3: Affected Environment

This chapter describes existing environmental conditions in the area potentially affected by the alternatives. The affected environment is described for each of the impact topics retained for detailed analysis, as identified in Chapter 1 of this EA. For the purposes of analysis, the assessed area coincides with the boundaries of the Park.

Soundscapes

In accordance with NPS Management Policies (NPS 2006) and Director's Order #47, *Sound Preservation and Noise Management*, an important component of the NPS's mission is the preservation of natural soundscapes, also referred to as "natural ambient sounds" or "natural quiet," associated with national park units to the extent possible. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in parks together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive, and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound that are considered acceptable varies among national park units and even potentially within a park; generally, they are greater in developed areas and less in undeveloped areas. Culturally appropriate sounds are also important elements of national parks. The NPS seeks to protect opportunities for appropriate transmission of cultural and historic sounds that are fundamental components of the purposes and values for which the parks were established (NPS 2006). The NPS is also responsible for preventing inappropriate or excessive types and levels of sound (noise) from unacceptably affecting the soundscape.

Both natural and human-caused sounds are present within Kaloko-Honokōhau NHP. Natural sounds include the waves against the shore, wind rustling through plants, and the call of birds. Human-caused sounds result from interpretation programs, visitor

activities, cultural practitioners, vehicle traffic by Park staff and visitors on park roads, staff UTV traffic on Park trails, and mechanical equipment used by Park staff in alien vegetation clearing operations. In Park waters, noise is generated by motorized vessels transiting to and from the Honokōhau Harbor, and operating within Park boundaries. Personal watercraft are not permitted for use within the Park marine boundary (36 CFR 3.9), though they may transit to and from the harbor. Other noise originates beyond the Park boundaries. These sources include commercial (passenger and cargo) and military aircraft (e.g., C-130 cargo aircraft and fighter jets) over flights on approach to or take-off from the Kona International Airport, Honokōhau Harbor (e.g., dry-dock boat repair and other associated commercial activities), motorized vessel traffic transiting waters outside Park marine boundaries, Queen Ka‘ahumanu Highway traffic, construction noise (blasting, heavy equipment noise) on adjacent properties and roads undergoing development, and rock-quarry activities. Site-specific sound measurements are not available for any of the proposed alternative locations, but for the most part, natural sounds predominate, especially in the interior of the Park (Lee et al. 2006). Figure 7 depicts baseline ambient sound levels at Kaloko-Honokōhau NHP and is expressed as the A-weighted equivalent sound level. The A-weighted equivalent sound level can be thought of as a type of average, where noisy events have a significant influence.

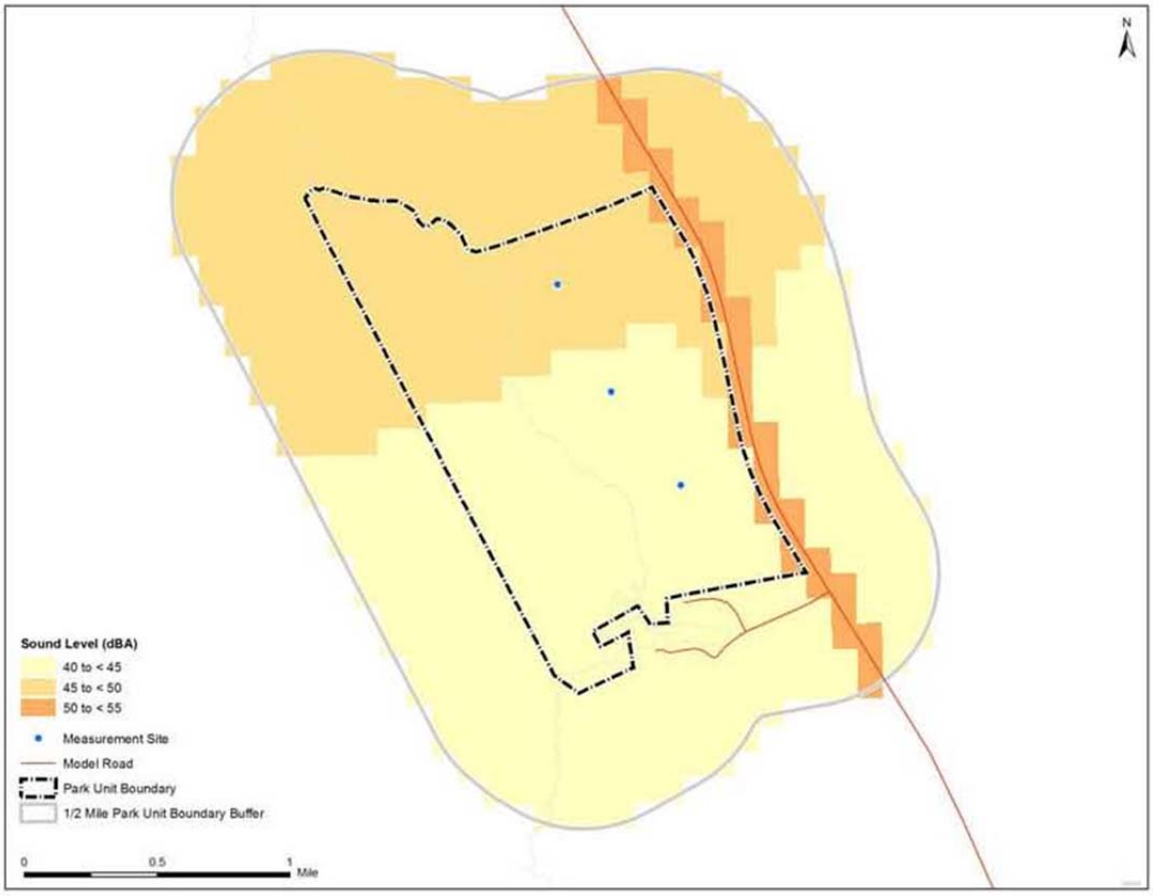

Figure 7. Baseline ambient sound levels for Kaloko-Honokōhau NHP (Lee et al. 2007:76).

Air Quality

Kaloko-Honokōhau NHP is classified as a Class II airshed under the Clean Air Act (CAA). The USEPA's general conformity rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. No areas in the State of Hawai'i are classified as non-attainment or maintenance areas. Consequently, the CAA conformity analysis procedures do not apply to NPS actions in Hawai'i.

Air quality is an important resource in the Park and is influenced by natural and human-caused pollutants dependent on prevailing wind patterns. Except for along the central Kona Coast of Hawai'i Island, trade winds are the prevailing winds in Hawai'i. The Kona Coast is protected from the trade winds by Mauna Loa, Mauna Kea, and Hualalai volcanoes. The wind pattern on the central Kona Coast is driven by the daily cooling and warming of the island landmass. A diurnal sea and air circulation system drives wind flow downslope and offshore from early evening to late morning, and upslope from late morning to early evening (Juvik and Juvik 1998).

The active volcano, Kilauea, located on the southeast portion of Hawai'i Island, produces large quantities of sulfur dioxide gas (SO_2) carbon dioxide gas (CO_2), water vapor, and minor amounts of other constituents from a vent in Halema'uma'u Crater and the Pu'u 'O'o vent on the volcano's East Rift. The SO_2 reacts with oxygen, sunlight, and water to form a mixture of gas and tiny sulfuric acid aerosol particulates locally called "vog" (a combination of the words "volcano" and "fog"). Vog is carried by the trade winds over the south end of the island and becomes pooled along the West Hawai`i coast where the local diurnal wind-pattern is not sufficient to clear the air of vog. In addition to vog, two rock quarries located directly across the highway from the Park generate fugitive dust that is carried into the parklands by down-slope winds until the late morning sea breeze can locally clear the air by pushing it upslope to residential areas. Vehicular traffic on Queen Kaahumanu Highway and adjoining surface streets and overflying commercial and military aircraft from the Kona International Airport are local sources of fine hydrocarbon particulates (<10 micrometers). Dry-dock boat maintenance activities at Honokōhau Harbor generate dust from fiberglass and paint removal. Construction and earthmoving activities adjacent to the Park also generate fugitive dust particulates. Particulate matter, also known as particle pollution, can affect the heart, lungs, and cause serious health effects (e.g., Delfino et al. 2005, Penn et al. 2005).

Some impacts to Park air quality also arise from activities within the Park. Vehicular and UTV traffic by staff and visitors generates dust and hydrocarbon emissions on the unpaved Kaloko Road and on trails. The level of vehicle-generated dust on Kaloko Road is controlled by a posted speed limit of 5 miles per hour (mph). Motor vessels transiting or operating in Park waters generate hydrocarbon emissions. Use of gas-powered mechanical equipment (line cutters, chain saws, blowers, mini-excavator) by Park staff for maintenance and resource projects also generate localized hydrocarbon emissions. Occasionally, visitors cook in portable barbeques at the Kaloko Fishpond picnic area, generating localized smoke.

Topography and Geology

The geology of Kaloko-Honokōhau National Historical Park comprises prehistoric lava flows from Hualalai Volcano (Figure 8). These prehistoric flows range in age from 1,000 to 10,000 years old. The lava is mostly *pāhoehoe* (smooth basaltic lava), with several large areas of *ʻaʻā* (rough, broken basaltic lava), and is characterized as alkaline olivine basalt. These flows are highly permeable and contain lava tubes.

The Park area is classified by the USDA Natural Resources Conservation Service**,** as Soil Map Unit rPYD- Punaluu extremely rocky peat, with 6 to 20 percent slopes. This map unit covers about 70 ac, approximately 11.6% of the Park. The soils in this area are organic soils (not mineral) and have a unique behavior to them. The Punaluu soil is classified as a Euic, isohyperthermic, micro Lithic Ustifolists. The soils are also very shallow (0 to 10 in to basalt bedrock) (Pete Biggam, NPS Geological Resources Division, pers. comm. 2010). This well-drained organic soil overlies *pahoehoe* lava bedrock. It occurs on gently sloping to moderately steep uplands. Rocky outcrops occupy about 30 percent of the surface area. The soil texture is peat, with organic matter content about 65 percent. This soil is moderately acid. The available water holding capacity is very low. Although this organic soil is rapidly permeable, the underlying *pahoehoe* lava is very slowly permeable, except where water moves rapidly through cracks. Runoff is slow, and the erosion hazard by water and wind is slight.

The Kaloko-Honokōhau shoreline is predominantly rough lava and rocky in appearance, owing to the geologic recency of the volcanic activity. There is a coral sand beach fronting Honokōhau Bay, the only large natural sand beach in the vicinity.

Hawaiʻi Island, including the parklands, is subsiding at a rate of approximately 0.1 in/yr (Walker 1990, Moore and Clague 1992). The topography of the Park is flat, rising in elevation from sea level to approximately 90 ft along the *mauka* portion. Although the general slope is relatively smooth, the actual surface is very rough as a result of past lava flows.

Although this EA separates resources into discrete categories for the purposes of impact analysis, in Hawaiian cultural tradition, natural resources are integrated into the traditional cultural landscape. Geologic features (including lava flows, volcanoes, and other topographic features) and the cultural world are intricately woven together; the spiritual world is not separate from the physical (e.g., Hono-kō-hau Study Advisory Commission 1974). Volcanic activity and landscapes are not only a part of geological history, but are also the embodiment of Pele, the volcano deity within Hawaiian cosmology. Kilauea volcano is home to Pele and her family (Beckwith 1970). Lava flows from Huʻehuʻe on Hualalai Volcano in north Kona are part of *moʻōlelo* (oral histories) describing the wrath of Pele against Kamehameha (Kamakau 1961). Additionally, the lava flows, lava tubes and other topographic and geological features within Kaloko-Honokōhau National Historical Park provided shelter from the elements, protection from enemies, water collection and storage, and are thus cultural features.

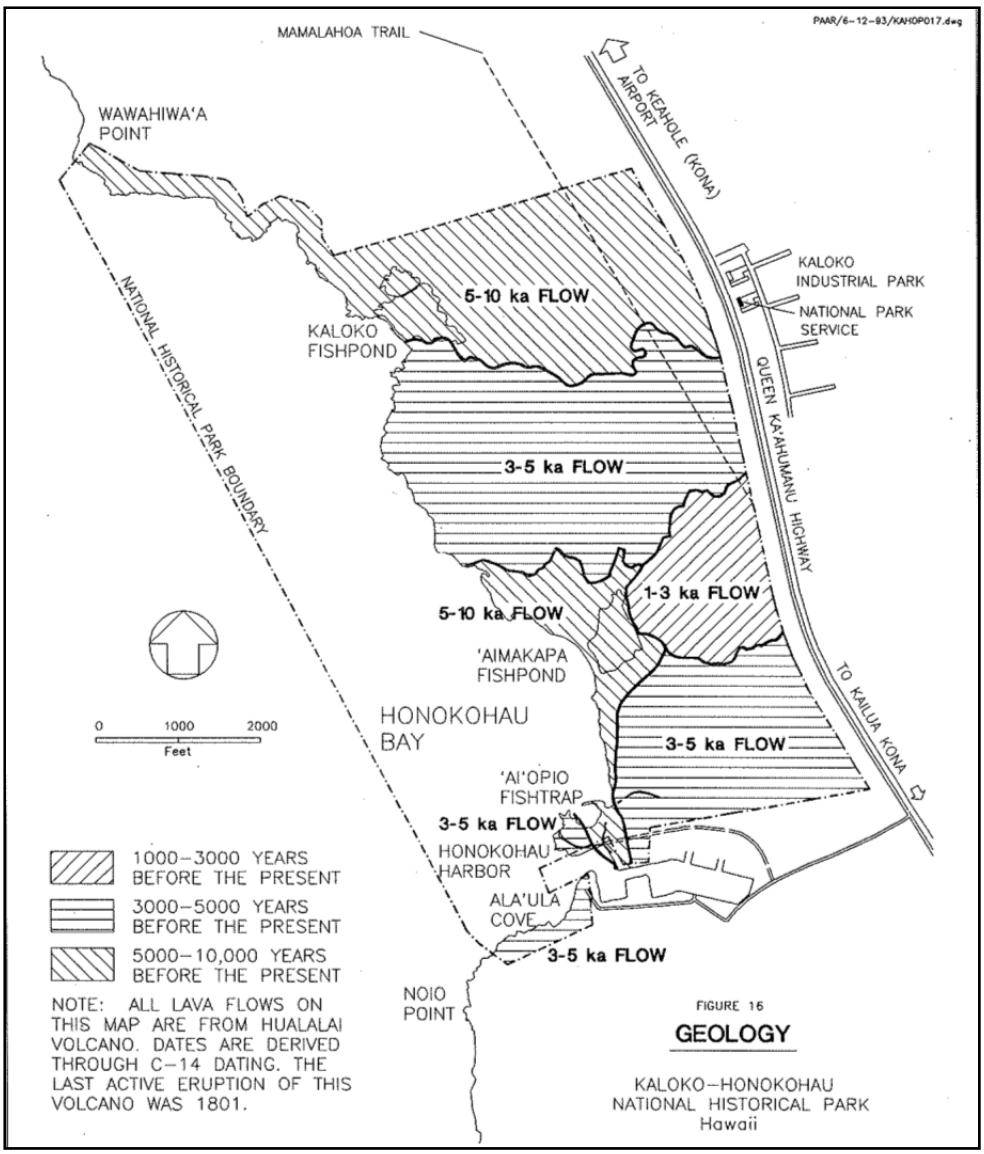

Figure 8. Geology of Kaloko-Honokōhau NHP (NPS 1994:100).

Water Resources and Wetlands

Fresh and Brackish Water Resources

Kaloko-Honokōhau NHP contains a variety of water resources fed by groundwater from the Keahou Aquifer. The coastal groundwater system within the Park is composed of brackish water overlying saltwater in a highly permeable volcanic-rock aquifer (Oki et al. 1999). The brackish water is formed by seaward-flowing fresh groundwater mixing with underlying saltwater from the ocean. Brackish water flowing through the Park ultimately discharges to the coastal Hawaiian fishponds and anchialine pools in the Park, and to the ocean, establishing estuarine-like conditions in the coastal nearshore waters (Juvik and Juvik 1998). Groundwater occurs a few feet above sea level within the Park, and is

affected strongly by ocean tides and ocean level (Oki et al. 1999). Groundwater recharge is mainly from places of higher rainfall on the slopes of Hualalai (Engott 2011). The Park is a located at the coastal foot of the watershed. No surface water streams or intermittent streams exist within the Park or in the area immediately surrounding the Park. Park waters are in relatively good condition (Hoover and Gold 2005). However, they are at risk of degradation from nonpoint source pollution (e.g., Oki et al. 1999, Parsons et al. 2008, Knee et al. 2008, Grossman et al. 2010) and groundwater development (e.g., Oki et al. 1999, Grossman et al. 2010) associated with urban development and human activities upslope of and adjacent to the Park. Within the Park, pollutants from paved-parking lot runoff at the Visitor Contact station are captured in a drainage filtration device. Other parking areas within (Kaloko Fishpond) or adjacent to (Honokōhau Harbor) the Park are unpaved and oils and other fluids may drip from vehicles and adhere to the gravel. Gas-powered chainsaws used within the Park use biodegradable bar lubricant. Additionally, wash water for vehicles in the Park is recycled and hydrocarbons separated from the water. The National Park Service Inventory and Monitoring Program monitors water quality in the Park's anchialine pools and marine waters on a quarterly basis.

The Park's unique water resources Include two large ancient Hawaiian fishponds and their associated wetlands: ʻAimakapā Fishpond (approximately 30.5 ac), and Kaloko Fishpond (approximately 17.4 ac). ʻAimakapā Fishpond is brackish, with no direct connection to the sea. It is fed by groundwater mixing with underlying saltwater and its salinity averages 12 parts per thousand (ppt). ʻAimakapā contains the highest proportion of groundwater, making it the most vulnerable to changes in groundwater quantity and quality (Hoover and Gold 2005). Kaloko Fishpond is also supplied by groundwater but has an open connection to the sea through two *mākāhā* (sluice gate) in the *kuapā* (seawall) and has higher salinities, around 22 ppt. (NPS unpublished data). These fishponds are described further in the *Special Status Species, Wildlife,* and *Cultural Resources* sections of this chapter. ʻAiʻōpio Fishtrap is a small, 1.7-ac marine fishtrap (salinity 35 ppt) at the southern end of Honokōhau Bay whose stone walls are constructed from the shoreline across a small bay forming an artificial enclosure around the naturally curving shoreline. The fishtrap wall has a large opening to the sea and its walls are submerged at high tide. ʻAiʻōpio is the Park's most utilized area by visitors and cultural practitioners.

The Park's wetlands comprise about 3% of the Park (not including submerged lands) and the major wetlands areas are associated with Kaloko and ʻAimakapā Fishponds and a small area inland of ʻAiʻōpio Fishtrap; smaller wetlands areas are associated with a few anchialine pools (Hoover and Gold 2005, Kikuchi and Belshe 1971, Canfield 1990, Pratt 1998, Cogan et al. 2011). Using the Cowardin classification system (Cowardin et al. 1979), the Park's wetlands are considered "Estuarine." The Estuarine System consists of "deepwater tidal habitats and adjacent tidal wetlands that are usually semi-enclosed by land but have open, partly obstructed, or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land" (Cowardin et al. 1979). Alien invasive vegetation dominates these wetlands; however, native species are mixed with aliens at ʻAimakapā Fishpond.

In addition to the two fishponds, more than 180 anchialine pools have been identified within the Park. Anchialine pools are small brackish coastal pools that lack a surface connection to the ocean but are hydrologically connected to groundwater and the ocean through a permeable aquifer (Holthuis 1973). The Park encompasses approximately

25% of the state's estimated (Mitchell et al. 2005) anchialine pool resources. These anchialine pools are significant biological and cultural resources within the Park, and are home to unique, endemic flora and fauna including three invertebrates, which are candidates for listing as endangered or threatened by the US Fish and Wildlife Service.

The waters of anchialine pools have a strong cultural significance. The only source of potable water along this area of the West Hawai'i shoreline, the pools were a significant factor in enabling Native Hawaiian settlement of the area, and continued to be important through historical times for a variety of uses including bathing, washing, and cooking (e.g., *see* Honokōhau Study Advisory Commission 1974). Many of the Park pools were modified for specific use by ancient Hawaiians with stone walls, platforms and other features.

In the Park, bathing or swimming in anchialine pools, and Kaloko and 'Aimakapā Fishponds, is prohibited through the Superintendent's Compendium (NPS 2012a).

Marine/Ocean Resources

The 600 ac of marine waters within the legislative boundary of Kaloko-Honokōhau NHP are under the jurisdiction of the United States (36 CFR 1.2(3)), and the submerged lands within in the legislated boundary are owned by the State of Hawai'i and are under the jurisdiction of the State Department of Land and Natural Resources (DLNR). The Park waters are classified by the state as Class AA, which are "*waters to remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions.*" (HAR Section11-54-3(c)(1)). Hawai'i Administrative Rules also require that "*where high quality waters constitute an outstanding national resource, such as waters of national and state parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected*." (HAR Section11-54-1.1(c)) Pursuant to section 303 (d) of the Clean Water Act, states are required to compile a list of waters that do not meet state water-quality standards. Waters off Honokōhau Beach do not meet State of Hawai'i water quality standards for total phosphorous, turbidity, ammonium, and phosphate. Waters from Pine Trees Beach in Kohanaiki *ahupua'a* to Honokōhau do not meet standards for turbidity, chlorophyll-a and phosphate. In 2008, the state listed the water quality of Park marine waters (Honokōhau Beach and Pine Trees – Honokōhau) as 303(d) "impaired" based on consistently elevated nutrient concentrations above state standards (Hawai'i DOH-CWB 2011). These increases in nutrient concentrations have been documented along with evidence of increased algal cover and coral decline (Parsons et al. 2008).

Special Status Species

Federally Listed Species

The Endangered Species Act of 1973 was enacted to conserve species that have been identified as threatened or endangered as well as those ecosystems upon which the species depend. *Endangered species* are species that are in immediate danger of becoming extinct and need protection to survive; *threatened species* are those that are declining in numbers and may become endangered in the foreseeable future if conservation efforts are not immediately taken. Thirteen species in the Park are listed as "threatened" or "endangered" under the ESA and four are considered "candidates" for

listing (Table 1; NPS 2011b). Although it is listed as "historic" in the Park by the NPS endangered species database (NPS 2011b), the endangered *koloa*, (Hawaiian duck, *Anas wyvilliana*), has never been confirmed as sighted within the Park's wetlands (Morin 1998). Sightings reported in the early 1990s at 'Aimakapā were identified as a feral mallard (Morin 1996).

Three candidate species of invertebrates recorded within the Park are associated with anchialine pool habitat; these are the *pinapinau* (Hawaiian orangeblack damselfly, *Megalagrion xanthomelas*), and two caridean shrimp, *'ōpae'ula,* (*Metabetaeus lohena,* and *Palaemonella burnsi.* Anchialine ecosystems appear to be relatively tolerant of variations in salinity, temperature, and nutrients however, tolerance probably varies from pool to pool, and they are vulnerable to nonpoint source pollution and long-term reductions in groundwater flow (Hoover and Gold 2005). Additional threats to anchialine pools species include loss of habitat from coastal development, degradation of habitat, invasive species (alien fish, prawns, insects, and vegetation) and possibly nighttime light pollution (USGS 2005, Hoover and Gold 2005). Anchialine pools will not be affected by the project as no pools occur in the action alternative locations and no impacts to water quality will result from the construction and operation of the Cultural Center.

Five endangered and one candidate species of plants have been out-planted in the Park (Table 1). NPS Management Policies (NPS 2006) requires the NPS to manage out-planted species for their natural distribution and abundance. None of the out-planted endangered or candidate plant species also currently occur naturally in the Park, although *loulu* (*P. affinis*) was found in the Park's pollen record (Athens and Ward 2006, Douglas and Hotchkiss 1998, Pratt 1998). The candidate *ko`oko`olau* (beggartick *Bidens micrantha* ssp. *ctenophylla*) was recorded by Pratt and Abbot (1996) and probably by Canfield (1990) as *B. hawaiensis* (Pratt and Abbot 1996) in their Park surveys. The out-plantings of *P. affinis* and *S. tomentosa* are part of a demonstration/education landscape planting and not a recovery population. No endangered or candidate plant species will be affected by the project as none are located at the site of either action alternative.

Kaloko Fishpond, 'Aimakapā Fishpond, and adjoining wetlands provide important waterbird habitat. The USFWS (2011a) identifies 'Aimakapā as a "core wetland" in its recovery plan for the endangered *ae'o* (Hawaiian coot*)* and the endangered *'alae kea* (Hawaiian stilt*)*. Kaloko Fishpond is a foraging area for the Hawaiian stilt and 'Aimakapā is a breeding area for both the stilt and the coot (Morin 1998, Waddington 2002-2010). Non-native, invasive pickleweed (*Batis maritima*) now dominates the edges of fishponds, many anchialine pools, and sections of the coastal strand (Pratt and Abbott 1996, Cogan et al. 2011). The growth and spread of this pickleweed along with the non-native grass *Paspalum* sp., in the wetlands deteriorates the habitat for endemic waterbird species and for migratory birds by excluding birds from breeding and foraging habitats (Morin 1996, 1998) and by providing ideal cover for predators who feed on birds. 'Aimakapā Fishpond and Honokōhau Reef, when exposed at low tide, are important resources for Kona Coast endemic and migratory waterbirds, whereas Kaloko Fishpond, because of its higher salinity and invasive shoreline vegetation, has marginal use for coots and migratory waterfowl (Waddington 2002-2010, USFWS 2011a, Moran 1996).

The endangered Hawaiian monk seal, '*Īlio-holo-i-ka-uaua* (*Monachus schauinslandi*) hauls-out onto beaches for resting, molting, giving birth or nursing (Antonelis et al. 2006, NMFS 2007). Although the monk seal is much less abundant in the main Hawaiian

Islands compared to the Northwestern Hawaiian Islands (Antonelis et al. 2006, NMFS 2007), they do enter National Park waters and occasionally haul out on the shoreline to rest. Pupping and nursing activity by monk seals has not been recorded within the Park. Information on the use of Park waters and shoreline by the monk seal is through opportunistic sightings rather than systematic surveys. Thirty opportunistic sightings have been recorded in the Park since 1994 (NPS unpubl. data; T. Wurth, National Marine Fisheries Service, pers. comm. 2012). The NPS coordinates with and reports monk seal sightings to the National Marine Fisheries Service (NMFS). The NMFS has issued a proposed rule-making (76 FR 32026; June 2, 2011) stating that they propose to expand the current critical habitat for monk seals to include areas in the Main Hawaiian Islands. The Park's shoreline falls within the criteria essential to monk seal conservation and will be included as critical habitat under the proposed revision.

Populations of the endangered humpback whale *koholā* (*Megaptera novaeangliae*) winter in the Hawaiian Islands. Whales may arrive in Hawaiian waters as early as November and a few may leave as late as June (NMFS 1991). During the peak abundance of the Hawaiian population, December to April, *koholā* are regularly observed within Park waters.

The green sea turtle *honu* (*Chelonia mydas*) forages on marine algae around the main Hawaiian Islands (Hirth 1997, Arthur and Balazs 2008), and are regularly observed foraging in nearshore waters at Kaloko-Honokōhau NHP (NPS unpubl. data, NMFS unpubl. data). The NPS has collaborated with the NMFS Pacific Islands Fisheries Science Center, Marine Turtle Research Program, to conduct research and monitoring on the demographics, health, and habitat use of these turtles since 2000. One hundred and ninety-six individual juvenile turtles have been tagged or identified at the Park since 2000 and the recapture rate is approximately 80% (NMFS/NPS unpubl. data) suggesting that these turtles are "resident" to some extent. Although the turtles can be found throughout the Park's waters, the main areas of use by the turtles for foraging, resting, and basking on the shore are Honokōhau Bay and the Aiʻōpio Fishtrap area. However, one turtle is known to enter Kaloko Fishpond occasionally to feed on algae in the pond. Although the Northwestern Hawaiian Islands, primarily French Frigate Shoals, continue to be the main breeding area for the green turtle, nesting has occurred on some beaches in the main Hawaiian Islands (Maison et al. 2010); however, no green turtle nesting or attempted nesting has been recorded in the Park.

The endangered hawksbill sea turtle, *honu* ʻ*ea* has been observed in Park waters by NPS and recreational divers, including repeat sightings of identified individuals. Hawksbill turtles in Hawaiʻi are opportunistic foragers on invertebrates and potentially algae (NMFS and USFWS 1998). The Hamakua Coast of Hawaiʻi Island has been identified as an important foraging ground for hawksbill sea turtles (Ellis et al. 2000). Hawksbill turtles nest in the main Hawaiian Islands, primarily on beaches along the south-facing shores coast of Hawaiʻi Island (Seitz et al. 2012). Although Hawksbill sea turtles occur in the Park's offshore waters, they are not known to bask on Park beaches or elsewhere in Hawaiʻi as do green turtles. No historic records have been found describing past nesting by hawksbill turtles in the Park. The proposed action will not affect the hawksbill sea turtle because the species does not haul-out or nest in the project area.

The endangered ʻ*ōpe*ʻ*ape*ʻ*a* (Hawaiian hoary bat, *L. cinereus semotus*) is the only existing native terrestrial mammal known from Hawaiʻi. The bat has been documented

in the Park (Fraser et al. 2007, Bonaccorso and Pinzari *in litt*. 2010). A 2005 acoustic survey detected bats on only four of 15 survey nights between April and July in the Park (Fraser et al. 2007). All bat detections were in April, with the exception of one in late May. At least two bats were detected foraging above Kaloko Fishpond, near the Alternative 3 area. In the Park, bats were active 40-60 minutes after sunset between April and July. Documented acoustic detections of bats in the Park consisted of foraging activity opportunistically in a variety of habitats: over native and non-native shrubland, roads and trails, and coastal water bodies (including ocean and brackish water pools) (Fraser et al. 2007). The presence of bats at the Alternative 2 location was recorded during a single deployment of an acoustic monitor from October 2 to 7, 2009. Bats vocalizations were recorded at the on all five nights and the majority of activity was just after sunset and the data suggest that the bat(s) were transiting the Alternative 2 location rather than feeding (Bonaccorso and Pinzari *in litt*. 2010). Hawaiian hoary bats roost in both exotic and native woody vegetation higher than 15 ft (4.6 m) (Frank Bonaccorso, US Geological Survey, pers. Comm. 2011; USFWS 2011b). The breeding season for the hoary bat is generally April through August. The lack of detections in the Park throughout the breeding season suggests that bats may not be breeding or have limited breeding in the Park. However, a yearlong acoustic study is currently underway by the USGS to collect baseline information on activity levels and annual variation in bat presence in the Park.

The endangered Blackburn's sphinx moth (*Manduca blackburni*) is known to occur near the Park (USFWS 2005); however, its status within the Park is unknown. The species is found in the dry to mesic habitats between the elevations of sea level and 5,000 ft (1,525 m) (USFWS 2005). Likely food sources for the adult moth are nectar from native plants including species in the genus *Ipomoea* (e.g., *koali 'awa*), *ile'e* (*Plumbago zeylanica*), *maiapilo* (*Capparis sandwichiana*); the larvae feed upon non-native tree tobacco (*Nicotiana glauca*) and the native *Nothocestrum breviflorum* (USFWS 2005, Black 2005). Several of these plant species occur within the Park; however, *Nothocestrum* sp and *N. glauca* have not been reported (Canfield 1990, Pratt and Abbot 1996, Cogen et al. 2011). Threats to the moth include habitat loss, fragmentation, and degradation from urban and agricultural development, invasion by non-native plant species, non-native parasitoids and insect predators, over-collection (trade and personal collections), and increased wildfire frequency (USFWS 2005, Black 2005). Potential nectar plants occur at Alternative 2 and 3 locations. Larval host plants do not occur at either site.

All currently known nesting sites for the threatened '*a*'*o, (Puffinus auricularis newelli,* Newell's shearwater) and the endangered '*ua*'*u* (*Pterodroma sandwichensis,* Hawaiian petrel) are at higher elevation than the Park (Simons and Hodges 1998). Occurrences of these species in the Park or of flying over the Park are unknown and have not been recorded. On land, these seabirds are threatened by introduced small-mammal predators, disorientation fledglings by urban lighting, and collisions with urban lights, utility lines and poles, buildings, and fencing (Simons and Hodges 1998). The proposed action will not affect the Newell's shearwater or the Hawaiian petrel because night lighting and collisions will not occur resulting from the project, and the species are not known to nest in the Park.

Table 1. Threatened, endangered, and candidate species at Kaloko-Honokōhau NHP.[1]

English Common Name	*Hawaiian Name*	*Scientific Name*	*Listing Category*	*Status in Park*	*Taxa*
Anchialine pool shrimp	*ʻōpaeʻula*	*Metabetaeus lohena*	Candidate	Current	Crustaceans
Anchialine pool shrimp	*ʻōpaeʻula*	*Palaemonella burnsi*	Candidate	Current	Crustaceans
Green sea turtle	*honu*	*Chelonia mydas*	Threatened	Current	Reptiles
Hawaiian coot	*ʻalae kea*	*Fulica americana alai*	Endangered	Current	Birds
Hawaiian hoary bat	*ʻōpeʻapeʻa*	*Lasiurus cinereus semotus*	Endangered	Current	Mammals
Hawaiian monk seal	*ʻĪlio-holo-i-ka-uaua*	*Monachus schauinslandi*	Endangered	Current	Mammals
Hawaiian stilt	*aeʻo*	*Himantopus mexicanus*	Endangered	Current	Birds
Hawksbill sea turtle	*honu* ʻea	*Eretmochelys imbricata*	Endangered	Current	Reptiles
Humpback whale	*kohola*	*Megaptera novaeangliae*	Endangered	Current	Mammals
Hawaiian fan palm	*loulu*	*Pritchardia affinis*	Endangered	Outplant	Flowering Plants
Hawaiian orangeblack damselfly	*pinapinau*	*Megalagrion xanthomelas*	Candidate	Current	Insects
none	*Hala pepe*	*Pleomele hawaiiensis*	Endangered	Outplant	Flowering Plants
none	*ko`oko`olau*	*Bidens micrantha ctenophylla*	Candidate	Outplant	Flowering Plants
none	*ko`oloa`ula*	*Abutilon menziesii*	Endangered	Outplant	Flowering Plants
none	*ohai*	*Sesbania tomentosa*	Endangered	Outplant	Flowering Plants
none	*uhiuhi*	*Caesalpinia kavaiense*	Endangered	Outplant	Flowering Plants

[1] **One species not included due to sensitive information**

Other Federally Protected Species and Species of Concern

Birds

The *'auku'u*, (black-crowned night heron, *Nycticorax nycticorax hoactli*), and the *kolea* (Pacific golden plover, *Pluvialis fulva*,) as well as three other common migratory shorebirds (sanderling, ruddy turnstone, wandering tattler) are frequently seen in the Park (Table 2) and are protected under the Migratory Bird Treaty Act (MBTA). Threats to the *'auku'u,* the *kolea*, and shorebirds include habitat loss or degradation, introduced predators, non-native invasive plants, avian diseases (most importantly avian botulism), and environmental contaminants (Mitchell et al. 2005, Englis and Naughton 2004).

The '*auku'u* is indigenous in Hawai'i and uses shallow wetlands for foraging and captures insects, fish, frogs, mice, and the young of other native waterbirds (Mitchell et al. 2005). Unlike mainland night-herons, the species is diurnal in Hawai'i (Mitchell 2005). According to Mitchell (2005), information on breeding in Hawai'i is limited, but in North America breeding occurs from December to August. Morin (1996) reports a single family-group in the Park in 1992 and 1993. An apparently inactive, unoccupied, heron nest is located near the trail leading to the Alternative 2 (NPS Preferred) location.

Table 2. Birds protected under MBTA, state recognized as indigenous, and commonly observed at Kaloko-Honokōhau NHP(Morin 1996, Mitchell et al. 2005).

Common Name	Hawaiian Name	Scientific Name
Pacific Golden Plover	*Kolea*	*Pluvialis fulva*
Ruddy Turnstone	*'Akekeke*	*Arenaria interpres*
Northern Pintail	*Koloa mapu*	*Anas acuta*
Northern Shoveler	*Koloa moha*	*Anas clypeata*
Sanderling	*Huna kai*	*Calidris alba*
Wandering Tattler	'*Ulili*	*Heteroscelus incanus*
American Wigeon	none	*Anas americana*
Black-Crowned Night-Heron	*'Auku'u*	*Nycticorax nycticorax hoactli*

The migratory Pacific golden plover (*kolea; Pluvialis fulva*) is indigenous in Hawai'i and is listed in the U.S. Shorebird Conservation Plan as "high concern" (Mitchell et al. 2005). The species is also listed as "least concern" on the International Union for Conservation of Nature's (IUCN) Red List of Threatened Species (IUCN 2011). The *kolea* breeds in Siberia and westernmost Alaska, and occupies Hawai'i from late summer to late spring foraging in natural areas such as crop fields, pastures, coastal salt marshes, mudflats, beaches, grassy areas in urban locations and woody areas (Mitchell et al. 2005). The

ruddy turnstone (*A. interpres*) and the wandering tattler (*H. incanus*) have also been identified as "high concern" and "moderate concern," species respectively by the U.S. Shorebird Conservation Plan. These bird populations in Hawai'i are important because they are hemispherically significant or relatively large (Engilis and Naughton 2004). The *kioea* (bristle-thighed curlew; *Numenius tahitiensis),* was listed by the U.S. Fish and Wildlife Service as a bird of conservation concern in 2008 (USFWS 2008), however the species has only been recorded in the Park as "Accidental: one or two records only" (NPS Checklist of Birds of Kaloko-Honokōhau, Morin 1996). The black-crowned night heron, the Hawaiian stilt, and the migratory shorebirds (e.g., wandering tattler, Pacific golden plover, ruddy turnstone, sanderling) use the shoreline habitat at Kaloko Fishpond, and the rocky intertidal beach areas of the Park for feeding (Morin 1996, Waddington 2002-2010) both of which are near the location for Alternative 3, Kaloko Parking Area.

Several other species of migratory waterfowl, which are protected under the MBTA, have been known to winter at 'Aimakapā Fishpond (see Morin 1996, and Waddington 2002-2010). These include *koloa māpu* (northern pintail; *Anas acuta*), *koloa moha* (northern shoveler; *Anas clypeata*), pied-billed grebe (*Podilymbus podiceps*) American wigeon (*Anas americana*), lesser scaup (*Aythya affinis*), green-winged teal (*Anas carolinensis*), semipalmated plover (*Charadrius semipalmatus*), and blue-winged teal (*Anas discors*). The Ruff (*Philomachus pugnax*) ring-necked duck (*Aythya collaris*), and tufted duck (*Aythea fuligula*) have been observed in the Park. A variety of other uncommon, rare and "accidental" sightings of bird species have been recorded over the years and can be found in the Park publication, *Check List of the Birds of Kaloko-Honokōhau NHP*, and Morin (1996).

Wedge-tailed shearwaters, *'ua'u kani* (*Puffinus pacificus*) have been recorded in the Park in the past, and nesting activity may have occurred. Several unattended burrows were discovered near the coastal trail and Huehue Trail intersection prior to the breeding season in 2003, but these were washed away by a storm-surge and high-wave event in January 2003. Since 2003, no new burrows have been recorded in the Park.

Marine Mammals

The Hawaiian insular false killer whale (*Pseudorca crassidens*) has been proposed for listing as endangered under the ESA (75 FR 70169; November 1, 2010) and has been recorded with waters of the National Park (R. Baird, Cascadia Research Collective, pers. comm. 2010). The *nai'a,* Hawaiian spinner dolphin (*Stenella longirostris longirostris*) regularly exhibits resting behavior in the Honokōhau Harbor channel and offshore of Kaloko Fishpond (Ostman et al. 2004, NPS data). Occurrences of resting spinner dolphins are recorded opportunistically by Park staff rather than as a result of systematic studies. The spinner dolphin is not listed under the ESA but is protected by the Marine Mammal Protection Act. When present, the species is typically closely approached by personal and tourism vessels.

Plants

The *maiapilo* (Hawaiian native caper, *Capparis sandwichiana*) is an endemic shrub that grows in dry, coastal habitats within the Park. *Maiapilo* distribution is widespread throughout the Park (Canfield 1990, Pratt and Abbott 1996), and it is abundant in the Park relative to adjacent areas outside the Park boundary. The plant is characterized by night-blooming, fragrant, large white flowers that open in the evening and fade in the daytime. *Maiapilo* is listed on the IUCN Red List as "vulnerable, (Bruegmann and

Caraway 2003) and is considered a species of concern by the USFWS because of habitat loss; however it is not presently a candidate for listing. It has been considered "vulnerable" since 1999 (Wagner et al. 1999). A large *maiapilo* is located in the Alternative 2 (NPS Preferred) location and several individuals are growing along the footpath leading to that site. No *maiapilo* are located at the Alternative 3 site.

Wildlife

The only remaining native, resident birds in Kaloko-Honokōhau are the waterbirds, the endemic *ae'o* (Hawaiian stilt, *H. mexicanus knudseni*) and the *'alae ke'oke'o* (Hawaiian coot; *F. alai*), and the indigenous *'auku'u* (black-crowned night heron; *N. nycticorax hoactli*) (Morin 1996). These species along with protected migratory waterbirds, Hawaiian hoary bat, marine turtles, candidate anchialine-pool invertebrates, and marine mammals are described and analyzed in the *Special Status Species* section.

The native *pueo* (Hawaiian short-eared owl; *Asio flammeus sandwichensis*) and alien barn owl (*Tyto alba*) are uncommon in the Park. Common non-native terrestrial bird species at Kaloko-Honokōhau include the Japanese white-eye (*Zosterops japonicas*), house finch (*Carpodacus mexicanus*), nutmeg mannikin (*Lonchura punctulata*), common myna (*Acridotheres tristis*), yellow-billed cardinal (*Paroaria capitata*), northern cardinal (*Cardinalis cardinalis*), warbling silverbill (*Lonchura malabarica*), zebra dove (*Geopelia striata*), spotted dove (*Streptopelia chinensis*), yellow-fronted canary (*Serinus mozambicus*), saffron finch (*Sicalis flaveola*), red-masked parakeet (*Aratinga erythrogenys*) and francolins (*Francolinus pondicerianus* and *Francolinus francolinus*). Another non-native species regularly seen in the Park is the cattle egret (*Bubulcus ibis)* (Morin 1998, Waddington 2002-2010).

The most noticeable terrestrial mammal in the Park is the Indian mongoose (*Herpestes javanicus*), an introduction to the islands in the 1800s that has played a part in upsetting the fragile terrestrial ecosystem of Hawai'i. In addition to the mongoose, feral cats (*Felis catus*) are in the Park. Mongoose and feral cats are significant predators of native wildlife and prey on the eggs and young of waterbirds. Mice (*mus musculus*) and rats (*Rattus* spp.) are in the Park, and rats may prey on waterbird eggs or chicks. Pet dogs and occasionally, feral dogs have been known to harass the waterbirds and basking green sea turtles. Feral goats and pigs, which cause major problems throughout the island's ecosystems, are currently uncommon in the Park. However, in 2010 one pig was discovered and removed from the Park.

A 2007 herpetological inventory of the Park identified seven species of herpetofauna from three different families. Green anole (*Anolis carolinensis*), honu (*Chelonia mydas mydas)* snake-eyed skink (*Cryptoblepharus peocilopleurus*), stump-toed gecko (*Gehyra mutilate*), house gecko (*Hemidactylus frenatus*), tree gecko (*Hemiphyllodactylus typus*), metallic skink (*Lampropholis delicate*), mourning gecko (*Lepidodactylus lugubris*), gold dust day gecko (*Phelsuma laticauda laticauda*), blind snake (*Ramphotyphlops braminus*), and other undidentified geckos, lizards and skinks were found (Bazzano 2007). The alien coqui frog (*Eleutherodactylus coqui*) has been reported in nearby areas but is not known to exist in the Park.

Culturally important native fish are found in both 'Aimakapā and Kaloko Fishponds. In Kaloko are *'ama'ama* (striped mullet; *Mugill cephalus*), *aholehole* (zebra-head flagtail;

Kuhlia sandvicensis), *ʻOʻopu akupa* (*Eleotris sandwicensis*) and *awa* (milkfish; *Chanos chanos*) among others. Kaloko is open to the sea through two *mākāhā* (sluice gates). An assemblage of common nearshore reef fish as well as the predatory barracuda (*kaku*; *Sphyraena barracuda*) enters the pond through these openings. ʻAimakapā also contains *awa* and *ʻamaʻama*. The native feeble shrimp, *Palaemon debilis,* is found in both fishponds (MacKenzie and Bruland 2012). Invasive species in fishponds include mosquito fish (*Gambusia affinis*) and guppies (*Poecilia reticulata*) in ʻAimakapā and mosquitofish in Kaloko Fishpond. Recently (2008), the alien, invasive tilapia (*Oreochromis mossambicus*) was illegally introduced to ʻAimakapā Fishpond by unknown persons (MacKenzie and Bruland 2012).

Native o*pae'ula*, (red shrimp; *Halocaridina rubra*), grapsid crabs, amphipods, snails (*Nerita* spp.) and undescribed invertebrate species inhabit the anchialine pools. In 1974, *Neritilia hawaiiensis*, a rare anchialine pool snail was recorded in the Kaloko area (Chai in press). In 2009, an undescribed neritiliid snail was identified in a Park pool and is in the process of being taxonomically described (Yasunori Kano, Ocean Research Institute, Univ. Tokyo pers. comm. 2009) as is an undescribed amphipod (Scott Santos, Auburn University, pers. comm. 2007) Anchialine ecosystems are vulnerable to nonpoint source pollution and long-term reductions in groundwater flow, loss of habitat from coastal development, degradation of habitat, invasive species (alien fish, prawns, insects, and vegetation) and possibly nighttime light pollution (USGS 2005, Hoover and Gold 2005). Over collection of*ʻōpaeʻula* for the aquarium trade is an emerging issue that may be a threat to these shrimp in the future.

Kaloko-Honokōhau NHP marine waters are one of several West Hawaiʻi Fisheries Management Areas designated by the State of Hawaiʻi, and are part of the National System of Marine Protected Areas (75 FR 29317, May 25, 2010). The National Park's 600 ac of marine habitat support a variety of wildlife; many of these are culturally significant species. The shoreline and intertidal (between high and low tides) habitat consists of sandy beach, lava benches with tide pools, lava cliffs, and rocky shore and contains an abundance of marine invertebrates (crustaceans, cnidarians, mollusks, echinoderms) and fish (see Parrish et al. 1990 for species lists). Common species in the intertidal and shallow subtidal zones include *ʻaʻama* (crabs; *Grapus tenuicrustatus)*, *ʻopihi* (limpets; *Cellana* spp.), *wana* (sea urchins; *Echinothrix* spp, *Echinometra* spp.),and *leho* (cowries, *Cypraea* spp.)

The subtidal marine habitat contains well-developed stony coral (*koʻa*) communities (dominated by *Porites* spp., *Pocillopora* spp., and others) interspersed among areas of hardbottom habitats that have very low coral cover and low spatial complexity (Beets et al. 2010, Gibbs et al. 2007). The soft octocoral, *Sarcothelia edmonsoni,* is common in the Park, particularly in areas of high submarine groundwater discharge (Grossman et al. 2008). These corals provide habitat and refuge for a diverse assemblage of reef fish, and invertebrates, many of which are culturally important fisheries species including *akule* (bigeye scad; *Selar crumenophthalmus*), *opelu* (mackerel scad, *Decapterus macarellus*) *heʻe* (octopus, *Octopus* spp.), *ula* (spiny lobsters, *Panulirus* spp.). See Parrish et al. (1990) and Beets et al. (2010) for detailed species lists. Two non-native fish species, the peacock grouper (roi, *Cephalopholus argus*) and bluestripe snapper (taʻape, *Lutjanus kasmira*), were introduced to the Hawaiian Islands from the South Pacific in the 1950s, and are common within the Park (Randall 1996, Beets et al. 2010). Effects of fishing pressure is evident at Kaloko-Honokōhau NHP where fish abundance, biomass, and diversity were lower than at the more remote Kalaupapa NHP which has

lower visitor use (Beets et al. 2010). Major threats to Park marine wildlife include over harvesting, and degradation of habitat from nonpoint source pollution, marine debris, boat groundings, and oil spills.

Vegetation

The vascular plants of Kaloko-Honokōhau National Historical Park have been well documented. Surveys were completed in 1987 (Canfield 1990) and in 1992-1993 (Pratt and Abbott 1996). Plant lists resulting from these surveys were summarized and revised in the Park's vegetation management plan (Pratt 1998). Cogan et al. (2011) recently prepared a GIS-based vegetation inventory and map for the Park. In total, 130 plant species have been recorded through surveys and incidental encounters within Kaloko-Honokōhau NHP since 1987, though not all species are currently present. Canfield (1990) identified eight plant communities and four coastal strand sub-communities. Pratt and Abbot (1996) identified six plant communities, combining Canfield's "grassland," "inland scrub," and "savanna" communities into "alien grass and shrubland." Cogan et al. (2011) classified and mapped 14 vegetation types (plant communities) but did not complete detailed surveys as part of that effort.

Canfield (1990) identified 69 flowering plants species, 39 (59%) of which were alien (introduced since 1778), and five (7%) were Polynesian introductions. Pratt and Abbott (1996) found 116 vascular plant species, 80 (69%) of which were alien, and four (3%) were Polynesian introductions. Pratt and Abbot (1996) added 56 species (46 alien, nine indigenous, and one endemic) to the Canfield (1990) survey. Of the alien species, 11 are especially invasive and likely to have a "serious negative impact on Park vegetation" (Pratt and Abbott 1996:10). Of these, fountain grass (*Pennisetum setaceum*) and ivy gourd (*Coccinia grandis*) are on the state Noxious Weeds list (HDOA 2003).

A study of pollen collected from cores of sediment in 'Aimakapā Fishpond suggests that pre-human vegetation assemblage in the area of the Park was an open forest with shrubby understory (Athens and Ward 2006). The dominant trees were *loulu* palms (*Pritchardia sp*.) and a type of *Euphorbia* (possibly *E. haeleeleana*) with an understory of *Chenopodium* (probably *āheahea Chenopodium oahuense*), *akoko* (*Chamaesyce sp.*) and *ilima* (*Sida sp*.) shrubs, some grass and other taxa (Athens and Ward 2006). According to the pollen record in the sample cores, the *loulu* forest rapidly declined in the years following human (Polynesian) settlement on Hawai'i Island and the landscape became much more open (Athens and Ward 2006). By the middle to late 19th century, historically introduced alien plants (plants introduced since 1778), begin to dominate the pollen assemblage including *kiawe* (*Prosopis pallida)*, ironwood (*Casuarina equisetifolia*), and pickleweed (*Batis maritima;* Athens and Ward 2006).

Thus, vegetation within the Park has been significantly altered over the years and is now dominated by alien species including the non-native fountain grass (*Pennisetum setaceum*), *koa haole* or *ekoa* (*Leucaena leucocephala*) and *klu* (*Acacia farnesiana*) shrubs, and *kiawe* (*P. pallida*) trees. Only the coastal low strand and strand scrub communities are not dominated by alien species (Canfield 1990, Pratt and Abbot 1996).

Eight alien species pose a significant threat to archeological sites. *Kiawe* (*Prosopis pallida*), Christmas berry (*Schinus terebinthifolius*), *koa haole* (*Leucaena leucocephala*), sour bush (*Pluchea indica*), *klu* (*Acacia farnesiana*), and *noni* (*Morinda* citrifolia) have

disturbed, and continue to disturb archeological features and sites throughout the Park. In the 1980s and 1990s, the alien red mangrove (*Rhizophora mangle*) invaded and damaged the Kaloko Fishpond and adjacent archeological remains. As a result, the NPS performed aggressive eradication measures on the red mangrove, removing it from approximately 5 ac in the Kaloko and ʻAimakapā wetlands (Fronda et al. 2008). Monitoring and removal of seedling mangrove in the wetlands is ongoing. Nearby populations at Alaʻula Bay, state-owned lands within the Park's boundary, regularly produce seeds that may be pushed into the fishpond areas by ocean currents and tides.

Two fire-adapted grass species are found within the Park; fountain grass (*P. setaceum*) is prevalent throughout the Park and natal redtop (*Rhynchelytrum* repensa) is moderately common. Both produce fuels that pose fire hazards to the Park and archeological sites. Non-native invasive pickleweed (*Batis maritima*) dominates the edges of fishponds, a few anchialine pools, and some areas of the coastal strand; however, native coastal species survive under this overgrowth in many wetlands areas. The growth and spread of the pickleweed deteriorates fishpond water quality by increasing deposits of organic material. The NPS has used handheld propane torches with positive results to singe pickleweed regrowth following its removal from shoreline areas. Given the proximity of the pickleweed to the Park's water resources, the application of propane torch to "sweat" new growth is preferred to the use of herbicides (Pratt 1998).

Many of the plants found within the Park are also cultural resources and are significant as food sources, medicine, tools, and as materials for thatching, weaving, cordage, and traditional Hawaiian crafts. The Park's GMP (NPS 1994) and vegetation management plan (Pratt 1998) guides management actions for alien vegetation control, fire fuel reduction, and native plant restoration. The NPS has restored 17.2 ac of coastal dryland shrub forest in Kaloko-Honōkohau NHP through clearing invasive species followed by outplanting native species and encouraging the native seed bank. Additionally, approximately 18.5 ac of lands surrounding archeological sites have been cleared and are maintained.

Aquatic plants and algae in the marine waters and brackish water fishponds and anchialine pools in the Park include varieties of seaweed (*limu*) and a native seagrass (*Ruppia maritima).* Many of these seaweeds are edible and were a staple in the Native Hawaiian diet (Abbott 1992). Edible *limu* in the Park include *limu kohu* (*Asparagopsis taxiformis*), *limu ʻeleʻele* (*Ulva sp.*) and *limu palahalaha* (*Ulva fasciata*). An inventory of marine algae for Kaloko-Honokōhau is in preparation by the University of Hawaii. One non-native marine alga, *Acanthophora spicifera,* has invaded Kaloko Fishpond and the NPS conducted a removal and plant control study in 2007 with mixed results (Weijerman et al. 2008). This species is still present in Kaloko Fishpond and has been documented in Honokōhau Harbor (Smith et al. 2002) and as a minor component of intertidal turf algae (McDermid et al. 2007), but has been not been found outside of the fishpond in NPS surveys for the past five years.

Plant species of concern discussed in the *Special Status Species* section are the *maiapilo* (*Capparis sandwichiana*) and the candidate species *koʻokoʻolau* (*Bidens micrantha* ssp. *ctenophylla*).

Visitor Experience and Safety

The enjoyment of national park resources and values by people is a fundamental purpose of all national park units (NPS 2006). Within the national parks, the NPS strives to maintain an atmosphere that is open, inviting, and accessible to all, and is appropriate to the exceptional natural and cultural resources found in national parks. Scenic views and soundscapes are also highly valued characteristics that the NPS is mandated with protecting. Kaloko-Honokōhau National Historical Park offers visitors unrivaled views of the ocean, beach, and rocky shorelines, ancient Hawaiian fishponds and *kuapā* (seawalls), evidence and examples of traditional Hawaiian life, examples of native dryland shrub forest, and some of the best-preserved anchialine pool and lava landscapes in central Kona.

In addition to providing a center for the preservation, interpretation and perpetuation of Hawaiian culture, Kaloko-Honokōhau National Historical Park was created "*to provide a needed resource for the education, enjoyment, and appreciation of such traditional native Hawaiian activities and culture by local residents and visitors*…" (Public Law 95-625). In addition to ongoing school programs and events, interpretation programs include weekly hula classes and ukulele lessons. Walk-and-talk-programs include geology hikes and a Kaloko Fishpond Wall tour. Monthly workshops and cultural events further provide visitors and the community the opportunity to explore aspects of Hawaiian culture in depth. Workshops include instruction in traditional activities such as bamboo flutes making, feather-work, *halau* building, and cordage lashing.

Although recreation is not the primary purpose of the Park, visitor recreation activities occur including picnicking at ʻAiʻōpio beach and the Kaloko picnic area, sunbathing, swimming, surfing, snorkeling, SCUBA diving, and fishing. The 9.5 miles (mi) (15.3 kilometers; km) of trails in the Park include the Ala Hele Poʻe Kahiko, Mamalahoa Trail, Ala Hele Huʻe Huʻe, Ala Kahakai, Ala Hele Ike Hawaiʻi, and Kiʻi Pohaku, which are enjoyed by hiking groups and individuals. Leashed-dogs are allowed in the Park (NPS 2012a) and dog walking is a common activity. Bird watching takes place at Kaloko and ʻAimakapā fishponds and on trails throughout the Park.

Park visitation is year-round with peaks at Christmas, spring break, and the summer months. Visitation has increased steadily since 2000 and has nearly doubled since 2005 (NPS 2012b). The 2011 annual visitation count was 162,906 visitors (NPS 2012b), of these 41,679 (25%) people visited the Kaloko area. Visitors access the Park by private or commercial vehicles for day visits, or by foot via the Ala Kahakai Trail ("the coastal trail") and access roads. Primary visitation areas in the Park are the Visitor Contact Station (*Hale Hoʻokipa*) located off Queen Kaahumanu Highway, the Kaloko area (fishpond, picnic area, beach, trail access), and the ʻAiʻōpio and Honokōhau Bay area. Visitors to the Kaloko Fishpond area may drive or walk along the gravel road, "Ala Nui Kaloko," to the Kaloko Fishpond Parking Area, or walk via the Ala Kahakai Trail. Visitors to ʻAiʻopio and Honokōhau Bay park at the Honokōhau Small Boat Harbor parking lot and access the Park on foot through one of two gates. Boating visitors to Park marine waters enter via the Honokōhau Harbor in motorized and non-motorized vessels (e.g., Hawaiian canoes, kayaks). Vessel launching is not allowed from the Park shoreline without a special use permit (36 CFR 3.8(2)).

ʻAiʻopio is the Park's most utilized area by visitors, local residents, and cultural practitioners. Viewing of archeological sites, sunbathing, swimming, picnicking,

observing wildlife (sea turtles, shore and waterbirds, tide-pool life), and fishing are common activities. The Kaloko Fishpond area (Alternative 3 location) is also heavily used by local residents, cultural practitioners, and visitors. Since 1994, when the Alternative 3 area was selected as the location for the Center, annual visitation to this area has nearly quadrupled (NPS 2012b). Visitors park in this area to picnic, hike, fish at Kaloko Fishpond, swim and hold family gatherings at the Kaloko picnic area, and access the coastal trail for hiking, walking to nearby surf breaks, shore dive spots, and fishing. Current Special-Use-Permit holders also park in this area, use the coastal trail, and picnic area prior to leading hikes and surfing lessons. The parking area is vehicle-accessible for handicapped visitors to access and view the fishpond and coast.

The Park's coastline is susceptible to flooding caused by high waves generated by winter storms and hurricanes, generally up to the 10-ft contour line and by tsunami as occurred in 2011 (see the *Floodplains Section* of this document). The NPS has finalized and tested an Emergency Operations Plan that includes procedures, and warning and evacuation times for securing Park operations and for evacuation of the Park in the event of a tsunami, high surf event, hurricane, or other life-threatening emergency. Based on information and notices regularly received from Hawai'i Civil Defense and the Pacific Disaster Center, the Park superintendent may cancel planned Park events, guided programs, and hikes, or close the Park as necessary in the event of a tsunami watch or warning, hurricane watch or warning, high surf advisory, or other dangerous conditions. Tsunami-warning sirens, activated by Hawai'i Civil Defense, are located at Honokōhau Harbor and to the north at the Natural Energy Laboratory Hawai'i Authority and can be heard from within the Park.

Floodplains

Flood-insurance rate maps prepared for the island area including the Park (USDHS/FEMA 2011) have identified coastal hazard areas in terms of susceptibility to flooding from 100-year and other floods, and wave-action floods. The Park is susceptible to flood hazard by "coastal flood with velocity hazards" or wave action, including inundation by tsunami, winter-storm waves, or hurricanes.

The Park is covered with highly permeable *'a'ā* and *pāhoehoe* lava flows that are between 1,500 to 10,000 years old (Oki et al. 1999). No defined drainage ways, streams, or perennial streams exist within the Park due to the porous character and rapid permeability of these lava flows combined with low annual rainfall. The mean annual rainfall at the Park is approximately 20 in per year (Giambelluca et al. 2011) and porous lava flows combined with the absence of streams inland of the Park serve to eliminate flood hazard from upland areas. Stormwater runoff discharges rapidly through the porous lava to groundwater. Surface runoff on natural substrate occurs infrequently except under conditions of intense rainfall. No floodways or flood zones have been identified or recorded in the Park.

Seven tsunamis have been recorded in Kailua-Kona since 1900. These are: 1901 (3 ft), 1933 (9 ft), 1946 (11 ft), 1952 (2 ft), 1957 (5 ft), 1960 (8 ft) and 2011 (official runup data in Kailua-Kona unavailable; Kahalui, Maui 6.5 ft) (National Oceanic and Atmospheric Administration (NOAA) 2012). The Alternative 2 and 3 locations are situated within the "tsunami evacuation zone." According to the Pacific Tsunami Warning Center, the

tsunami evacuation zone is a guideline that should be considered the minimum safe evacuation distance for non-locally generated tsunami (NOAA 2011).

Park GIS data from the 2011 tsunami shows run up as high as the 7 to 10 ft range within the Park. Damage was sustained in several areas along the Park's coastal trail, at the Kaloko Fishpond Wall, and the Alternative 3 location at the Kaloko Parking Area. The surge run up did not reach the Alternative 2 location; however, the area along the foot trail leading to the Alternative 2 site was reconfigured by the surge approximately 150 ft inland of the coastal trail. The high-water mark from the event stopped approximately 325 ft *makai* (ocean-ward) of the Alternative 2 location. During the 2011 tsunami event, the Alternative 3 location was inundated and the resulting debris and evidence of water action indicated that the water reached throughout the entire Alternative 3 location. High-surf events and winter storms regularly affect this area, and the dry-stack rock wall that separates the area from Kaloko Beach has sustained minor damage on a few occasions.

Hurricanes also generate coastal flooding. In 1982 and 1992, hurricanes (Iwa and Iniki, respectively) caused flooding in the coastal portions of the Park. In 1992, Hurricane Iniki also affected the Alternative 3 location by moving/damaging some Park temporary-structures, and toppling the portable restroom facilities (Cynthia Galieto, NPS, pers. comm. 2011). No damage to the Alternative 2 area was observed following Hurricane Iniki (Rizal Fronda, NPS, pers. comm. 2011); however, no structures were in place at that location.

Winter storms in the Pacific annually generate high-surf events along the Park's shoreline. Storm waves can be particularly hazardous, causing coastal flooding, if they occur during high tide. Since 2003, three storm events combined with extreme high tides have been severe enough to cause wave runup resulting in minor flooding above the high tide mark along the Park shoreline, including at the Alternative 3 location. Damage from high surf events or wave runup has not been observed at the Alternative 2 location.

To reduce hazards to human life and property, the NPS has finalized and tested an Emergency Operations Plan that includes procedures, and warning and evacuation times for securing Park operations and for evacuation of the Park in the event of a tsunami, high-surf event, hurricane, or other life-threatening emergency (see the *Visitor Experience and Safety* section of this document).

Climate change is predicted to raise sea level, and some storms may increase in intensity (NPS 2010), both of which could affect the Center at either of the Alternative locations. In the Kailua-Kona area, the threat of global sea-level rise is exacerbated by island subsidence (Fletcher et al. 2002). Subsidence is the continuing process of the Hawaiian Islands slowly sinking below mean sea level by approximately 0.1 in/yr because of volcanic and seismic activities (Walker 1990). Current sea level at the Park has not significantly changed from the 1990s; therefore, the statement of findings for floodplains (Appendix B), remains applicable.

Cultural Resources

Area of Potential Effects for Cultural Resources

Kaloko-Honokōhau NHP is also a designated National Historic Landmark (NHL), the Honokōhau Settlement NHL (NPS 1962). The area of potential effects for prehistoric and historic archeological resources, ethnographic resources, historic structures, and cultural landscapes includes the entirety of Kaloko-Honokōhau NHP and the Honokōhau Settlement NHL (Figure 1). Both the Honokōhau Settlement NHL and Kaloko-Honokōhau NHP are included on the National Register of Historic Places (1966 and 1978 respectively) under Criterion D (Information Potential). Thus, all archeological sites within the boundaries of the Park and NHL are eligible for the National Register as contributing elements, attesting to the level of significance of these sites at the regional and national levels. When a federal agency initiates undertakings with potential to affect a landmark or its contributing elements, the agency is required to consult with the Advisory Commission on Historic Properties (ACHP). The ACHP and the State Historic Preservation Officer were notified of the Proposed Action in June 2010. In March 2011, the ACHP was notified of the NPS's determination of No Adverse Effect to Historic Properties.

The Park contains the following types of cultural resources:

Archeological Resources- Archeological resources are the physical evidences of past human activity, including evidences of the effects of that activity on the environment. Archeological resources are significant based on their identity, age, location, and context in conjunction with their capacity to reveal information. Archeological resources represent both prehistoric and historic periods and are found above and below ground, and underwater. Examples of prehistoric archeological resources in the Park include *heiau* (temples), petroglyphs, fishpond walls, platforms, trails, and midden deposits. Examples of historic archeological resources in the Park include remnants of historic fishing villages, historic trash dumps, a historic church site, ranch walls, trails, and house sites.

Ethnographic Resources- Ethnographic resources may be any "site, structure, object, landscape or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (NPS 1998). Ethnographic resources within Kaloko-Honokōhau include Kaloko Fishpond, nearshore and offshore fishing grounds (*ko'a*), *ahupua'a* boundaries, anchialine pools, legendary stones, trails and *heiau*.

Cultural Landscapes- A cultural landscape is "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 exhibiting other cultural or aesthetic values" (NPS 1998). Although a Cultural Landscape Inventory for the Park has not been completed, potential impacts to cultural landscape resources such as historic setting, spatial organization, historic viewsheds, archeological sites and features, and circulation systems are considered in this EA, focusing on the pre-contact through 20th century periods of significance described in the NHL nomination.

Historic Structures- A "historic structure" (including prehistoric) is "a constructed work …consciously created to serve some human activity" (NPS 1998). Because all "historic structures" within the area of potential effect are also considered archeological resources by definition (NPS 1998), and are all components of larger

historic/prehistoric complexes, these resources will be analyzed as archeological resources in this document.

Museum Collections- A museum collection is an assemblage of objects, works of art, historic documents, and/or natural history specimens collected according to a rational scheme and maintained so that they can be preserved, studied, and interpreted for public benefit (NPS 1998). No museum collections are within the study area. Therefore, the impact topic of museum collections is dismissed from further analysis.

Within the boundaries of Kaloko-Honokōhau National Historical Park, evidence of the ancient Hawaiian culture that once thrived here is abundant. Archeological sites and ethnographic resources within the Park represent a wide range of the different aspects of that culture including societal organization and leadership, agriculture, aquaculture, religion, recreation, housing, and burial practices. These sites represent not only pre-contact Hawaiian culture, but also the changes that took place in that culture over time during post-contact.

Previous archeological surveys documented the historic properties within the APE at length (Reinecke 1930, Ching and Rosendahl 1968a, 1968b, Renger 1970, Emory and Soehren 1971, Cluff 1971, Statewide Inventory 1971+, Renger 1974, Cordy et al. 1991, O'hare and Goodfellow 1992, Walsh and Hammatt 1995, Durst and Glidden 1999, Stasack and Stasack 2001, 2004a, 2004b, 2005a, 2005b, in prep a, b, c; Nelson and Gmirkin 2001, Stasack et al. 2002, Tomonari-Tuggle and Tuggle 2006a, 2006b). A Cultural Landscape Inventory (CLI) has not been completed for Kaloko-Honokōhau NHP.

To date, 461 archeological sites have been recorded in the Park and 18% of the Park's total area (land and water) has been intensively inventoried. Undoubtedly, many more terrestrial and submerged sites remain unrecorded. These sites substantiate significant prehistoric and historic Hawaiian occupation of this area. The area was used by *makaʻāinana* (common people), and *aliʻi* (chiefs, nobles) until the late nineteenth century (Tomonari-Tuggle and Tuggle 2006a, 2006b).

The traditional Hawaiian economy was based on agriculture, aquaculture and fishing utilizing the resources of the land and the sea (Greene 1993). This land use was tied to a system of land divisions called *ahupuaʻa* ran from the forested uplands, across agricultural lands, and out to the coast and sea. The coastal and seaward portions of the *ahupuaʻa* of Kaloko and Honokōhau are within the boundaries of the Park, as are parts of the lower portions of the *ahupuaʻa* of Kealakehe and Kohanaiki. The *ahupuaʻa* concept is an important component of Hawaiian land use, subsistence practices, and societal organization from prehistoric through modern times.

Some of the most significant and unique sites in the Park are the Kaloko and ʻAimakapā Fishponds, and the ʻAiʻōpio Fishtrap. The Kaloko Fishpond is a *loko kuapā*-type pond, a natural embayment separated from the sea by a massive, 800-ft long constructed seawall (*kuapā*). The *kuapā* is an excellent example of the engineering skill of the ancient Hawaiians. Approximately 11 ac (4.5 ha) in size, Kaloko Fishpond also has secondary walls within the pond forming five discrete areas (Renger 1974). Kaloko is an area of spiritual importance and has been documented in oral histories as home to a spirit guardian of the pond (*moʻo*) and other supernatural beings. Many archeological

sites surrounding the pond indicate significant human occupation and include habitation sites, burial grounds, and petroglyph fields. Kaloko Fishpond is one of only two *loko kuapā* left on the island that have not been overtaken by lava flows (Kikuchi and Belshe 1971). The Kaloko Fishpond was managed as a functioning aquaculture fishpond until the late 1950s but by 1961, it was in disrepair (Bond and Gmirkin 2003). Oral histories and ethnographic studies indicate Kaloko Fishpond and the surrounding area contain ethnographic resources including the fishpond, anchialine pools, fishing *ko*‘*a*, offshore and nearshore fisheries, shoreline gathering areas, and trails (Maly and Maly 2002). Important historic leaders, ‘Umi, Kahekili, Kamehameha I, Hoapili, and Kamehameha V are associated with the Kaloko area (Tomonari-Tuggle and Tuggle 2006a, 2006b). A large platform in the Kaloko *ahupua‘a* is interpreted as a *heiau* that may be associated with the Kaloko Fishpond (Cordy et al. 1991).

'Aimakapā fishpond, a *loko pu'uone* (large pond formed behind a barrier beach), is the largest of the Park’s fishponds and comprises approximately 12 ac of water. The pond has secondary walls forming at least six compartments for separating fish. A partially buried, stone-lined channel (*mākāhā*) cut through the north end of the barrier beach once formed the sluice gate by which seawater entered the pond. Numerous archeological sites indicate intensive human activity in the area, particularly use by *ali'i* for recreational and ceremonial purposes (NPS 1994). Sites near the fishpond include a *holua*, *heiau*, a large platform, and petroglyph fields.

The 'Ai'ōpio Fishtrap is a 1.7-ac pond, consisting of a stone and coral wall forming an artificial enclosure along a naturally curving shoreline. The only fishtrap on Hawai‘i Island; it had a variety of uses well into recent history. 'Ai'ōpio is referred to as a fishtrap, rather than fishpond, because there is no *mākāhā* or sluice gate, and the trap contains four rectangular walled enclosures that may have been used as holding pens for netted fish (Kikuchi and Belshe 1971). ‘Ai‘ōpio is a *loko kuapā*-type fishtrap, meaning the builders created a wall as an artificial means for trapping fish as opposed to using natural shoreline features or an inland pond (Apple and Kikuchi 1975).

At the south side of the ‘Ai‘ōpio Fishtrap is the *Pu‘uoina Heiau*, probably the finest example of a platform type in Kona. To the west of *Pu‘uoina Heiau* at Ala‘ula Cove (Alula Bay) is a *heiau* known as *Maka‘opio*. The striking feature of this *heiau* is two great upright stone slabs. Several other *heiau* are present in the Honokōhau and Kealakehe *ahupua‘a*.

The Park also contains numerous Hawaiian burial sites. These sites are important to Native Hawaiians, and most especially to descendants of the area. In Hawaiian culture, burial sites are considered especially sacred grounds with *mana* (supernatural or divine power).

The Ala Kahakai National Historic Trail traverses Kaloko-Honokōhau National Historical Park and includes prehistoric *ala loa* (main trails), and other trails on or parallel to the seacoast as well as *mauka-makai* trails. A system of *mauka-makai* trails (trails extending from mountain to sea) within the Park was used by Hawaiians to travel and communicate within the *ahupua‘a*. These trails were important to the livelihoods of the ancient Hawaiians. These trails were commonly used by Hawaiians living *makai* (near the sea) to take ocean products, fish, salt, *limu* (seaweed), and other items to people living *mauka* (upland). In return, they were given agricultural food products such as *kalo* (taro) and other items unavailable closer to the sea. This form of exchange was the

basis of the Hawaiian economy, and the system of trails provided the physical means to make it possible (Hono-kō-hau Study Advisory Commission 1974). Another trail with historical significance is the portion of the Mamalahoa Trail (also known as the King's Highway) that runs through Kaloko- Honokōhau. This trail extends around the Island of Hawai'i and was built between 1822 and 1855. Many parts of the trail outside the Park have been destroyed by urban development (NPS 1994).

Numerous other sites of significance are located throughout the Park, including: *kahua hale* (house platforms); *ko'a* (fishing shrine); *ahu* (stone mounds); a concentration of more than 50 stone enclosures (believed to be agricultural planters); lava tube shelters; canoe landings and shelters; salt pans; and important concentrations of petroglyphs. These concentrations include *papamu* (grids of pecked holes used for the Hawaiian game *konane* and most likely other uses (Ed Stasack, pers. comm. 2010) and *poho piko* (pecked cups in the lava used for ceremonial placement of a baby's umbilical cords) (Stasack and Stasack 2007, Durst and Glidden 1999, Emory et al. 1959); and battered processing areas. One of the petroglyph sites is the only known commemoration of the *Makahiki*, an annual event beginning with the *Lono* ceremony and ending with the *Ku* ceremony (E. Stasack pers. comm. 2010).

More than 180 anchialine (brackish) pools have been identified in the Park, many of which were modified with rock walls, platforms and other features for access. Specific uses of pools included bathing, washing, and cooking (e.g., *see* Honokōhau Study Advisory Commission 1974). The coastal pools were a shoreline source of potable water in this area of West Hawai'i, and enabled human settlement of the area. The pools continued to be important through historical times for a variety of uses.

Within Kaloko-Honokōhau NHP, the *ahupua'a* of Kaloko and Honokōhau are intertwined with the history of the Hawaiian Kingdom. The *ahupua'a* of Kaloko and Honokōhau with their large fishponds were reserved for important Hawaiian chiefs (Emory and Soehren 1971, Tomonari-Tuggle and Tuggle 2006a, 2006b, Wyban 1996, Emory and Soehren 1971). Kaloko, and its large fishpond, was set aside for Kamehameha V, the grandson of Kamehameha the Great. Honokōhau Nui (large), with its very large fishpond, was set aside for Kekau'onohi, a cousin of Kamehameha V and a granddaughter of Kamehameha the Great. Honokōhau Iki (small), with its fish trap, was set aside for Leleiohoku, the husband of Princess Ruth Ke'elikolani, great granddaughter to Kamehameha the Great (Tomonari-Tuggle and Tuggle 2006a).

Park Operations

Trail and facility maintenance, resource management, law enforcement patrols and interpretation are the main Park operations relevant to the project area. Trails and roads used to access the alternative locations are maintained by Park staff. Maintenance staff cleans the Kaloko picnic area and maintains bathroom facilities on a daily basis at the Kaloko Parking Area. Other Park operations in the Kaloko area include ongoing resource management activities such as invasive vegetation removal, rehabilitation of Kaloko Fishpond wall, cultural resource projects (including archeological documentation, condition assessments, surveys, and ethnographic interviews), water quality monitoring, and other natural resource research projects. The south shore of the Kaloko Fishpond is currently used as a base and storage area for the Kaloko Fishpond wall rehabilitation project. A green-waste container is temporarily stationed here for disposal and transport

of removed vegetation to the county green-waste facility. All areas are patrolled by NPS law enforcement. Interpretive programs and service learning projects are regularly given at the Kaloko Fishpond, Visitor Center, trails and ʻAiʻōpio area. The open sandy area adjacent to Kaloko Fishpond and Kaloko Beach (the Alternative 3 location) is used for visitor parking. Space is limited and often this area becomes busy and full of vehicles (Figure 6).

Climate Change

The impacts of climate change could conceivably affect this project because all action alternatives are located near the coast. Climate change is predicted to increase sea levels and storms may increase in intensity (NPS 2010), both of which could affect the Center in either of the action-alternative locations. In the Kailua-Kona area, the threat of sea-level rise is especially high, because of relatively rapid island subsidence in addition to global sea-level rise (Fletcher et al. 2002). These issues are addressed in the *Impacts to Floodplains* Section of this document.

Chapter 4: Environmental Consequences

Methodology

Potential impacts associated with the proposed alternatives are described below in terms of type (beneficial or adverse), context (site specific, local, or regional), duration (short-term or long-term), and intensity (negligible, minor, moderate, or major). Both indirect and direct impacts are described; however, they may not be identified specifically as such. These terms are defined below. The impact analyses and conclusions were based on the review of existing literature and studies, information provided by on-site experts and other government agencies, professional judgments, and NPS staff insight. Impact topics were analyzed for each alternative based on published and unpublished reports, expertise, and judgment of the Interdisciplinary Team, and consultation with resource specialists. Topics analyzed in this chapter include Soundscape, Air Quality, Topography and Geology, Water Resources and Wetlands, Special Status Species, Wildlife, Vegetation, Visitor Experience and Safety, Floodplains, Cultural Resources, Park Operations, and Climate Change.

Type of Impact: A measure of whether the impact will improve or harm the resource and whether that harm occurs immediately or at some later point in time.

- Beneficial: A positive change in the condition or appearance of the resource, a change that reduces resource impact being discussed, or a change that moves the resource toward a desired condition.
- Adverse: A change that moves the resource away from a desired condition or detracts from its appearance or condition. Depletes resources.
- Direct: An effect that is caused by an action occurring in the same time and place as the action.
- Indirect: An effect that is caused by an action occurring later in time, or farther removed in distance, but is still reasonably foreseeable.

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

- Site Specific: Impacts would be restricted to the project footprint and the use corridor around the project footprint.
- Local: In the general project area, defined as the Kaloko ahupuaʻa section of the Park.
- Park Wide: Includes the entire Park
- Regional: Includes the west coast of Hawaiʻi Island, or Hawaiʻi Island (Hawaiʻi County), and/or neighbor islands.

Duration: describes the length of time an effect would occur, either short-term or long-term:

- Short-term impacts generally last only during construction, and the resources resume their preconstruction conditions following construction.
- Long-term impacts last beyond the construction period, and the resources may not resume their pre-construction conditions for a longer period following construction.

Intensity of Impact: describes the degree, level, or strength of an impact. Intensity definitions are presented below and are applied to each impact topic. Beneficial impacts are described but are not assigned a level of intensity.

- Negligible: Impacts would be at the lowest levels of detection and would have no perceptible effect on resources, values, or processes.
- Minor: Impacts would be perceptible but slight. If mitigation were needed to offset any adverse effects, it would be relatively simple to implement and would likely be successful.
- Moderate: Impacts would be readily apparent and measurable. The resource might deviate from normal levels but would remain viable. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.
- Major: Impacts would be readily apparent and widespread, and would result in a substantial alteration or loss of resources, values, or processes and would likely be permanent. Mitigation measures to offset adverse effects would be necessary, extensive, and their success could not be guaranteed.

Impact Mitigation: Impacts have been assessed under the assumption that proposed measures to minimize or mitigate the impact would be implemented. The following terms identify the way to change the intensity of impacts. Project actions can:

- Avoid conducting management activities in an area of the affected resource;
- Minimize the type, duration or intensity of the impact to an affected resource; and
- Mitigate the impact by:
    - **Repairing** localized damage to the affected resource immediately after an adverse impact;
    - **Rehabilitating** an affected resource with a combination of additional management activities; or

- **Compensating** a major long-term adverse direct impact through additional strategies designed to improve an affected resource to the degree practicable.

Cumulative Impact Analysis

The CEQ regulations (40 CFR 1508.7) require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are the effects on the environment that would result from the incremental impacts of the action when added to other past, present and reasonably foreseeable future actions. Impacts are considered cumulative regardless of what agency or group (federal or non-federal) undertakes the action.

The cumulative projects addressed in this analysis include past and present actions, as well as any planning or development activity currently being implemented or planned for implementation in the reasonably near future at Kaloko-Honokōhau National Historical Park and in the surrounding region. Cumulative actions are evaluated in conjunction with the impacts of each Alternative to determine if they have any additive effects on a particular resource. Because most of the cumulative projects addressed in this analysis are in the early planning stages, the evaluation of cumulative impacts was based on a general description of the project. The following projects, together with ongoing Park operations, were included in the cumulative effects analysis presented in this chapter:

- Urban Development Projects: an estimated 16,000 new residences are planned for lands near the National Park (Honolulu Star-Advertiser, 17 October 2010). These residences are part of the Kula Nei, Palamanui, Kamakana Villages, Villages at Laʻiʻopua, Shores at Kohanaiki, and Kaloko Makai developments, some of which are proposed (Kaloko Makai) or recently approved (Kula Nei, Kamakana Villages) and some are underway in varying stages of development (Palamanui, Villages at Laʻiʻopua, Kaloko Heights, Shores at Kohanaiki). Other proposed projects in the vicinity include the Kona International Airport expansion, Air Force military training routes, a municipal-waste incinerator facility, and Honokōhau Harbor improvements. The approved C-17 Short Austere Air Field construction at Kona International Airport, and the construction of two new light industrial parks, West Hawaiʻi Business Park, Kaloko Phases III and IV, are approved but are in various stages of development. The Queen Kaʻahumanu Highway Widening Phase 2 project will expand the highway from two to four lanes along the Park's eastern boundary.
- Kaloko Fishpond Management: As planned in the Park's GMP, Kaloko Fishpond would be restored to a functioning fishpond through the practice of traditional Hawaiian aquaculture. A fishpond *hui* (group) would be organized to work with the NPS to manage the pond. This activity would include removal of alien vegetation from the pond shoreline to improve water quality and fish harvest activities.
- Construction of the Kaloko-Honokōhau Curation Facility: The NPS has proposed the construction of a curation/museum facility adjacent to the Hale Hoʻokipa Visitor Contact Station (to be built in 2018-2025, if funding is provided).
- Development of an ʻAimakapā wetlands vegetation and waterbird management plan/EA to guide future wetlands restoration actions at ʻAimakapā Fishpond aimed at improving native plant and waterbird habitat and increasing the population of waterbirds using the wetlands (2013-2014).

- Park Operations: resource management projects (removal of alien vegetation, archeological site rehabilitation, maintenance of Kaloko Fishpond wall), interpretation activities (school group tours, cultural activity workshops, annual children's cultural festival, ranger-led hikes, and special events), law enforcement activities, and facilities management and maintenance (trail maintenance, vegetation maintenance, beach and parking area maintenance, facilities repair).

Cumulative Impact Contribution Methodology

In defining the contribution of each alternative to cumulative impacts, the following terminology is used:

- Imperceptible: The incremental effect contributed by the alternative to the overall cumulative impact is such a small increment that it is impossible or extremely difficult to discern.
- Noticeable: The incremental effect contributed by the alternative, while evident and observable, is still relatively small in proportion to the overall cumulative impact.
- Appreciable: The incremental effect contributed by the alternative constitutes a large portion of the overall cumulative impact.

Impact Analysis

Impacts to Soundscape

This section analyzes impacts to soundscapes associated with the establishment of a Cultural Center and continuation of current programs. NPS policy is to preserve to the extent possible the natural quiet and natural sounds associated with the physical and biological resources of parks. NPS policy also requires the restoration of degraded soundscapes to the natural condition whenever possible, and the protection of natural soundscapes from degradation due to noise (undesirable human-caused sound) (NPS 2006).

Alternative 1 (No Action): Under Alternative 1, if the Cultural Center were not constructed and not operated, there would be no change from the current visitor use, Park operations, and interpretive programs within the Park. Natural sounds would continue to predominate through the Park with periodic noise intrusion from the nearby highways, airport, military over-flights, and other sources originating outside of the Park. Within the Park, visitors would occasionally cause noise from recreation, trail use, ranger-led walks and hikes, and the use of picnic areas above the natural ambient sound level. Examples of noise sources within the Park include human voices, vehicle traffic on Park roads, people recreating, resource crews operating chainsaws for removal of non-native species, maintenance crews using blowers, and use of UTV's on trails for resource projects.

Alternative 2 (NPS Preferred): Under Alternative 2, the construction of the Cultural Center and all associated operation activities would occur in proximity to an area of the Park that is heavily used by visitors; the Ala Kahakai National Historic Trail and the Kaloko Fishpond area. Sound generated by the short-term construction of the Center may include sounds from machinery, cutting logs, moving rock, and other similar sounds. In the long term, the capacity for the Center is capped at 50 people at a time, which would limit noise produced at the center. Because the Center would be focused

on teaching and practicing traditional Hawaiian cultural practices the sounds produced by the participants (beating *tapa*, *oli* (chanting), *hula*, etc.) would be an audible part of the traditional cultural landscape, and therefore appropriate for the area. In addition, rules and regulations enforced by the NPS would specify that noise levels be culturally appropriate to traditional Native Hawaiian ambience, i.e., only normal volume for speech or chanting. The Center would not have electrical power, therefore a generator or other power source would not be a source of noise in the area. The short-term temporary construction sounds and long-term sounds associated with operation and management are not expected to increase the noise levels significantly in the local area.

Natural sounds would continue to predominate in the area with periodic noise intrusion from the nearby highways, airport, and other sources outside of the Park. Within the Park, visitors would occasionally cause noise from recreation, trail use, guided ranger-led walks and hikes, and/or the use of picnic areas above the natural ambient sound level. Examples of noise sources include human voices, vehicle traffic on Park roads, people recreating, resource crews operating chainsaws for removal of non-native species, and use of UTV's on trails for resource projects.

Alternative 3: Under Alternative 3, the construction of the Cultural Center and all associated operation activities would occur in an area of the Park that is adjacent the Kaloko Fishpond. As described in Alternative 2, construction-related sounds will be generated by the short-term construction of the Cultural Center. In the long-term, the noise produced at the Center will be limited somewhat by the 50-person/event cap on participants, and because the majority of human induced noise will be associated with human voices teaching and practicing traditional Hawaiian cultural activities and the sounds produced by the participants activity (beating *tapa*, *oli* (chanting), *hula*, etc.). Under Alternative 3, the Kaloko Road would be closed, decreasing noise from vehicles using the road. Visitation would decrease to the area due to the lack of vehicle access thereby decreasing human noise in the area when the Center is not in operation. The proposed project area is already subject to human-caused sound. At this location, the short-term construction sounds, and long-term operations and management sounds are not expected to increase the noise levels significantly in the local area.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have affected, and would continue to affect, the natural soundscape within the Park. These actions include continued use of the Kona International Airport by commercial and military planes, Honokōhau Harbor, and traffic on the highway. Additionally, construction activities associated with projected development in the areas outside of the Park will generate noise, as will activities taking place in these new developments once they are constructed, including Kona International Airport expansion and operation of the short austere airfield for C-17 military cargo plane training flights. With new development, population and associated traffic will increase. Alternatives 1, 2, and 3 would contribute an imperceptible site-specific adverse cumulative impact on the natural soundscape. During the construction phase of the project, Alternatives 2 and 3 would have short-term impacts that would contribute in a short-term, minor, adverse way to the cumulative natural soundscape. Alternatives 2 and 3 would contribute a beneficial although cumulatively imperceptible impact through addition of the appropriate audible component (e.g., sounds of chanting and beating *tapa* cloth) to the traditional cultural landscape within the Park. All three Alternatives would have no cumulative effect on the soundscape outside of the Park, and would have imperceptible cumulative effects on management of Kaloko and 'Aimakapā fishponds, and the proposed Curation Facility.

Conclusion: Alternative 1 would result in continued localized, long-term, minor, adverse impact on the natural soundscape. Alternatives 2 and 3 would result in minor short-term adverse impacts to the soundscape during the construction phase of the project. During operation of the Center, Alternatives 2 and 3 would result in a localized, long-term minor adverse impact on the natural soundscape, as well as a beneficial impact on the cultural soundscape. Short-term construction sounds and long-term use sounds are not expected to increase the noise levels significantly near the Cultural Center.

Impacts to Air Quality

This section analyzes impacts to air quality associated with the establishment of a Cultural Center and continuation of current programs. NPS policy is to perpetuate the best possible air quality in parks to preserve natural and cultural resources and sustain visitor enjoyment and scenic vistas (NPS 2006).

Alternative 1 (No Action): Under Alternative 1, if the Cultural Center were not constructed and not operated, there would be no change from the current visitor use, Park operations, and interpretive programs within the Park. Air quality in the Park would continue to be impacted by vog from Kilauea volcano. Kilauea produces large quantities of sulfur dioxide and sulfate particulates. In addition to vog, the two quarries located directly across the highway from the Park are likely to continue generating fugitive-dust particles. Visitors and Park staff driving on the Kaloko Road will continue to generate minor amounts of air-blown dust particles, contributing to minor, localized, short-term, adverse impacts to air quality. Occasionally there will continue to be localized, short-term, minor impacts to air quality from visitors' barbeques at the Kaloko Picnic Area.

Overall, impacts resulting from the continuation of existing management would result in localized, long-term, minor impacts to the existing air quality.

Alternative 2 (NPS Preferred): Under Alternative 2, the proposed actions do not have the potential to be a "major point source" of air pollution under the Clean Air Act (CAA). During the construction phase of the Center development, particularly the ground-preparing activities, air quality could be temporarily lowered by air-blown dust particles. This temporary adverse effect would be confined to the construction area itself and would be suppressed with water application. The dust would affect the rest of the Park in a negligible way. Air-blown dust generated during construction activities would be controlled by watering of the area during construction. Once the Center is in operation, there may be up to six more vehicles per day traveling on the graveled Kaloko Road during Center events. Smoke from fire pits or *imu* (traditional cooking ovens) would generate temporary minor negative air quality impacts during Center events. Multi-day events involving fire pits or *imu* may occur as frequently as once per week.

Air quality in the Park would continue to be impacted by vog from Kilauea volcano that produces large quantities of sulfur dioxide and sulfate particulates. In addition to vog, the two quarries located directly across the highway from the Park are likely to continue generating fugitive dust. Visitors driving on the Kaloko Road will continue to generate minor amounts of dust, leading to minor, localized, short-term, adverse impacts to air

quality. Occasionally there will be localized, short-term, minor impacts to air quality from visitors' barbeques at the Kaloko picnic area.

Alternative 3: Under Alternative 3, the proposed actions do not have the potential to be a "major point source" of air pollution under the CAA. During the construction phase of the Center development, particularly the ground-preparing activities, air quality could be temporarily lowered by air-blown dust particles. This temporary adverse effect would be confined to the construction area itself and suppressed with water application. The dust would affect the rest of the Park in a minor way. Air-blown dust generated during construction activities would be controlled by watering of the area during construction. Once the Center is in operation, there may be a fewer vehicles traveling on the Kaloko Road resulting in less generation of dust. Smoke from fire pits or *imu* (traditional cooking ovens) would generate short-term, localized, minor negative impacts to air quality.

Air quality in the Park would continue to be impacted by vog from Kilauea Volcano, which produces large quantities of sulfur dioxide and sulfate particulates. In addition to vog, the two quarries located directly across the highway from the Park are likely to continue generating air-blown dust.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have affected, and would continue to affect, air quality within the Park. These actions include air-blown dust generated from the quarries across the highway from the Park and construction activities within the vicinity of the Park. Widening of the Queen Kaahumanu Highway is scheduled to begin within the next year. Additionally, commercial areas, thousands of residences, schools, and associated infrastructure are proposed for construction for areas within close proximity of the Park. All three Alternatives, in combination with planned projects within the Park, would contribute localized, long-term, minor impacts to air quality, resulting in imperceptible adverse impacts to the air quality of the Park and surrounding areas.

Conclusion: Short-term negligible adverse effects on air quality from the transport of materials to the project area and from some construction activities, such as soil excavation and rock moving in Alternative 2, and rock moving in Alternative 3, would occur within the project area. However, these impacts are small in comparison to regional effects from transportation, volcanic emissions, and other more widespread construction and quarry activities, and would not result in long-term adverse impacts to air quality.

Impacts to Topography and Geology

This section analyzes impacts to geologic resources associated with the establishment of a Cultural Center and continuation of current programs. The term "geologic resources" includes both geologic features and geologic processes. The National Park Service is responsible for assessing the impacts of natural processes and human activities on geologic resources, maintaining and restoring the integrity of existing geologic resources, integrating geologic resource management into Service operations and planning, and interpreting geologic resources for Park visitors (NPS 2006).

Alternative 1 (No Action): Under Alternative 1, if the Cultural Center were not constructed and operated, there would be no change to the current visitor use, park operations, and interpretive programs within the Park. Interpretive programs on the geology of the Park would continue to be offered. Under this Alternative, no construction and no alterations would be made to the topography of the Park, and there would be no impacts to natural topographic features and geological formations at either action Alternative location.

Alternative 2 (NPS Preferred): Under Alternative 2, impacts to topography and geology would be beneficial. The original geologic features of this location were significantly altered in the 1970s when the area was bulldozed by the Huʻehuʻe Ranch to create a basin in the *ʻaʻā* flow to deposit dredge spoils from Kaloko Fishpond. This basin comprises the Alternative 2 location. The substrate of this area is composed of the non-native deposit of the dredge spoils (sandy silt, shell, etc.) from the pond, pumped into the area. During construction of the *hale* for the Center, concrete piers would be installed in this deposit but not deep enough to disturb the original substrate or bedrock. If digging were required for any footing, an archeologist would conduct test excavations prior to work and would monitor all ground disturbances. Any removed deposits would remain on-site within the project area. Given that the geologic features in this area were previously disturbed, no impacts to the underlying native soil or other geologic resources are anticipated.

Site preparation and *hale* construction may necessitate use of the rock materials that were pushed into a berm around the site by the bulldozer in the 1970s. The berm sits approximately 10 to 13 ft higher than the surrounding native topography, creating an artificial topographical feature not representative of the original *ʻaʻā* lava flow. Removal of this artificial berm and would result in a beneficial impact to the current (1970s era) topography by somewhat restoring the original landscape.

Alternative 3: Under Alternative 3, no adverse impacts to topography and geology would occur because the cultural layer and native ground surface is covered and protected by imported sand. This location is within the boundaries of an archeological site, an early to mid 20th century walled housing complex including a dry-stack wall enclosure. The substrate of the site consists of approximately 4 in of imported coral sand and sifted sand from Kaloko Fishpond overlaying the native sand. Four test excavations within the parking area revealed a cultural layer 4.7 to 5.9 in below the surface in an area where sand has not been replenished by the NPS (NPS unpublished data). Construction of *hale* and other structures would involve minor ground disturbance no deeper than 4.7 in for the placement of footings. No impacts to natural topographic features are anticipated.

Cumulative Impacts: No cumulative effects on geology and topography are anticipated from any of the three Alternatives.

Conclusion: No impacts to geology or topography would occur because of Alternative 1, or because of constructing and operating the Cultural Center through agreement with *Makani Hou o Kaloko-Honokōhau* under Alternatives 2 or 3.

Impacts to Water Resources and Wetlands

This section analyzes impacts to water resources and wetlands associated with the establishment of a Cultural Center and continuation of current programs.

Alternative 1 (No Action): If the Cultural Center were not constructed and operated, ongoing visitor use of water resources, Park operations, and interpretive programs would continue within the Park as described by the 1994 GMP, including public usage of the Kaloko Fishpond parking and picnic areas and the ban on swimming or wading into the fishponds or anchialine pools (NPS 2012a). Ongoing negligible effects to water resources would continue to occur from short-term dripping of automotive fluids from visitor's parked cars, and from visitors swimming in the ocean while wearing sunscreens containing certain chemical constituents that may be harmful to some corals and other aquatic life (Danovaro et al. 2008, Than 2008).

Alternative 2 (NPS Preferred): No wetlands, or water resources exist at the Alternative 2 location, however groundwater at this elevation is close to the surface. Physical construction of the Cultural Center at this location would not affect Park water quality. At this location, "zero discharge" composting toilets would be installed to keep human waste from entering natural water systems. Natural water resources within the Park would not be pumped for use. During operation of the Center, participating groups would be required to carry in drinking water and non-potable water would be pumped to a holding tank for irrigation via waterline from the Kaloko Road. Showering and bathing would not be permitted at the Cultural Center site; therefore, no on-site water runoff would occur. Participants may bathe in the ocean without the use of soaps, shampoos, and personal hygiene products. Waste wash-water from food preparation and dish and utensil cleaning would be collected, contained, removed from the site, and disposed of in appropriate wastewater systems. Short-term automotive fluid drips would continue to occur from ongoing public use of the Kaloko Parking Area.

Alternative 3: The Kaloko Fishpond and wetland are within 50 ft of the Alternative 3 location and groundwater is close to the surface at this elevation. A dry, in-filled anchialine pool is within 20 ft of the site. Construction of the Center at the Alternative 3 location would avoid the footprint of the former pool. Two existing portable chemical toilets at the Alternative 3 location would remain on-site for wastewater and a maximum of four small-footprint portable toilet facilities would be added to the site near the existing toilet facility. Natural water resources within the Park would not be pumped for use. Closure of the Kaloko Parking Area and public picnic area would likely result in fewer required trips to pump out the portable toilets, and eliminate parked cars dripping oil and other automotive fluids. As in Alternative 2, showering and bathing would not be permitted at the Cultural Center site except in the ocean without the use of soaps or other personal hygiene products. Water and non-potable water would be delivered to the location by truck, and waste wash-water would be collected and disposed of offsite in appropriate wastewater systems.

Cumulative Impacts: Surrounding urban development projects, both proposed and underway, could have short-term and long-term, direct and indirect, minor to major adverse impacts on water resources and wetlands within the Park from nonpoint source pollution and over withdrawal of groundwater. The NPS actively engages in cooperative conservation efforts with neighboring landowners to encourage their employment of best management practices for eliminating sources of nonpoint pollution and preserving

groundwater. At the local level, under Alternative 1 (No Action) and Alternative 2, the Kaloko Parking Area may be at full capacity of potentially leaky cars more frequently because of increased use of the area associated with population growth adjacent to the Park leading to localized, negligible long-term impacts on water quality. Impacts to water resources and wetlands contributed by construction and operation of the Cultural Center at either Alternative location in combination with urban development would be imperceptible on a regional level. Alternative 3 would potentially increase the number of vehicles using the Visitor Contact Station and Harbor parking areas. Alternatives 2 and 3 in combination with Kaloko and Aimakapā Fishpond management may have a positive cumulative impact on water resources and wetlands if Center programs activities incorporate assisting with clearing alien vegetation around the ponds' shorelines to improve water quality. Development and construction of the Curation Facility in combination with construction and operation of the Center at either Alternative location would not result in cumulative effects to water resources and wetlands. Alternative 3 would have a positive long-term cumulative effect on water resources and wetlands in combination with ongoing Park operations by reducing the number of trips (potential automotive leakage) by the toilet facility pump truck on the Kaloko Road. However, Alternative 2 would require additional truck trips to supply irrigation water to the Alternative 2 location leading to potential negligible long-term impacts on Park water quality from potentially leaking automotive fluids.

Conclusion: Alternative 1 would result in the continuation of ongoing negligible indirect impacts to water quality from dripping of automotive fluids from parked cars at the Kaloko and Honokōhau Harbor parking areas. Constructing and operating the Cultural Center at the Alternative 2 and 3 locations would potentially result in imperceptible indirect impacts to water quality from additional truck trips on Kaloko Road. Beneficial impacts to water quality at the Alternative 3 location would result from closure of the Kaloko Parking Area to vehicles. Cumulative effects of the Alternatives on water resources are imperceptible in combination with urbanization, and beneficial in combination with Park operations and planned projects.

Impacts to Special Status Species

State and federally listed species and species of concern that could potentially be affected by the proposed project were identified through informal consultation with the US Fish and Wildlife Service and National Park Service lists of status and trends of special status species.

Alternative 1 (No Action): If the Cultural Center were not constructed and not operated, ongoing visitor use, Park operations, and interpretive programs would continue within the Park. Special status wildlife species may be chance-encountered from time to time during ongoing Park interpretation programs and activities, Park operations, and visitor use. Some negligible, temporary disturbance to wildlife may occur during these activities due to human presence. Predator control activities would continue and special status plant species would continue to be monitored and interpreted where they occur in the Park.

Alternative 2 (NPS Preferred): The Alternative 2 location is approximately 500 ft inland from the coastline and 650 ft south of Kaloko Fishpond. At this location UTV would be required to shuttle material to the site and UTV access to the site is far enough away

from Kaloko and ‘Aimakapā fishponds to avoid disturbance to stilts and coots. A helicopter may also be used to shuttle material to the site. The helicopter would avoid flying over fishponds where stilts and coots occur, and flights would occur only during daylight hours when bats are not transiting the area. It is unknown if bats use the area for roosting, however to prevent potential impact, flights would not occur during the April 15-August 15 hoary bat breeding-season.

With the exception of the *kolea* (Pacific golden plover; *Pluvialis fulva*), the Cultural Center construction and operation activities at this location will not affect Special Status shorebirds, waterbirds, sea turtles, or marine mammals. No anchialine pools are located within the proposed site and construction, and operation of the Center at this site will not affect anchialine pool invertebrates. Endangered plant species will not be affected by construction or operations because they are not found at this location or in the surrounding area. The candidate endangered plant species, *Bidens micrantha* ssp. *ctenophylla*, does not occur at this location or in the surrounding area.

An individual plant of the species of concern, *maiapilo* (*Capparis sandwichiana*) exists within in the proposed construction area at this location and other individuals are in the local area. This individual plant may need to be pruned, or potentially removed. *Maiapilo* do not transplant well. If removal is necessary, new *maiapilo* will be out-planted in an appropriate location at the site.

Individual *kolea* (Pacific golden plovers) have been observed at the Alternative 2 location, and center activities may displace or disrupt plovers with established wintering territories in the area. Construction and subsequent operation of the Center at the Alternative 2 location could disrupt plover activity in the area, resulting in negligible to minor, short-term to long-term, site-specific adverse impacts to individual *kolea*. An unoccupied, deteriorating *auku‘u* (black-crowned night-heron, *Nycticorax nycticorax*) nest is located near the foot access trail to the Alternative 2 location. Should the nest become re-occupied by nesting *auku‘u*, negligible to minor, short-term to long-term adverse impacts to nest occupants may occur from human presence on the trail during active nesting periods.

Hawaiian hoary bat acoustic activity was detected at the Alternative 2 location during acoustic monitoring of the site in 2009. Foraging (flying) Hawaiian hoary bats would be intermittently exposed to short-term, site-specific low-level (negligible) noise and light from participants in nighttime programs associated with Center activities. It is unknown if bats roost in the area. Roosting bats, if any, would be exposed to short-term, local, minor noise associated with daytime construction of the Center and ferrying materials to the center. They would be exposed to short-term, site-specific low-level (negligible) noise from participants in daytime program activities. Additionally, tree removal or tree pruning may affect roosting bats, and if during the breeding season, this activity could affect breeding bats and pups. To avoid potential impacts to the Hawaiian hoary bat, removal or thinning of woody vegetation taller than 15 ft would be limited to months outside of the April 15 to August 15 breeding season.

Blackburn’s sphinx moth may occur in the Park; however, it has not been recorded. No larval-host plants are present at the Alternative 2 location. *Maiapilo* (*C. sandwichiana*) may be a food plants for adult moths and is present at this location. Removal or pruning of an individual *maiapilo* at the site is not likely to affect highly mobile adult moths able to locate other individual plants in the local area.

Alternative 3: The Alternative 3 location is less than 50 ft from the shore of Kaloko Fishpond, a known foraging area for the Hawaiian stilt. An individual green sea turtle has also been sighted in Kaloko Fishpond several times. Hawaiian monk seals have hauled out at Kaloko in 2007 and 2008 within 100 ft of the Alternative 3 location. In 2002 a seal hauled out on the north end of the Kaloko *kuapā*. Humpback whales are often seen offshore of Kaloko in winter months. Hawaiian hoary bat foraging activity has been recorded within 300 ft of the Alternative 3 location (Fraser et al. 2007, Bonaccorso and Pinzari *in litt*. 2010), and it is likely that there is activity at this location. No special status species plants are present at the Alternative 3 location.

If monk seals were to "haul-out" (come ashore to rest), a 150-ft buffer from humans would be established. Park action, if any, (e.g. placing barriers or signage to keep people away from the animal) would be in coordination with the National Marine Fisheries Service. Because monk seal presence in the area is a rare occurrence, only localized, negligible to minor impacts to seals during haul-out events are anticipated.

Construction of the Cultural Center at the Alternative 3 location could temporarily disrupt Hawaiian stilt and migratory shorebird foraging behavior, and may result in minor to moderate, short-term adverse impacts in a localized context. Human presence from long-term operation of the Cultural Center would have localized, minor to moderate, long-term adverse on stilts and other migratory waterbirds. However, because the Parking Area and adjacent picnic area would be closed to visitors under this Alternative and because Center activities will not occur on a continual basis, there may be fewer continual disturbances to native waterbirds from human presence. No impacts to green sea turtles or humpback whales are anticipated.

Because construction activity would take place during the day, no negative impacts to flying Hawaiian Hoary Bats are anticipated. However, tree removal or pruning may affect roosting bats, and, if taking place within the breeding season, could affect breeding bats and pups. To avoid potential impacts to the Hawaiian hoary bat, tree removal or thinning would be limited to months outside of the April 15 to August 15 breeding season

Blackburn's sphinx moth may occur in the Park. Prior to mechanical removal of vegetation, treatment areas would be surveyed for the presence of Blackburn's sphinx moth host plants and if host plants were found, they would be marked with flagging. No host plants would be removed or trimmed and the soil within 30 ft of the plants would be protected from disturbance.

The *auku* '*u* (black-crowned night-heron; *N. nycticorax*) is known to use the Alternative 3 area for foraging. It is possible that stilts use the area more when no humans are present.

No anchialine pools or associated special status species exist within the Alternative 3 location or surrounding area. Endangered plant species and the candidate endangered plant species, *Bidens micrantha* ssp. *ctenophylla*, will not be affected because they do not occur at this location or in the surrounding area.

Impact Avoidance, Minimization, and Mitigation Strategies
To avoid, minimize, or mitigate special status species impacts, the following additional measures would be used during proposed implementation:

- At Alternative 2: If removal of the individual *maiapilo* is necessary, new *maiapilo* will be out-planted at the site.
- To avoid potential impacts to the Hawaiian hoary bat, removal or thinning of woody vegetation taller than 15 ft would be limited to months outside of the April 15 to August 15 breeding season.
- At Alternative 3: To avoid potential impacts to the Hawaiian monk seal, viewing of monk seals on the shoreline must be from at least 150 ft away, and limited to one-half hour. Swimming with or touching Hawaiian monk seals are prohibited.
- At Alternative 2, if helicopters are used to ferry materials, they will not fly over fishponds where stilts and coots occur, and will operate outside of the April 15 to August 15 hoary bat breeding-season.

Cumulative Impacts: In Hawaiʻi, native species (including threatened and endangered species) are vulnerable to the combined effects of habitat loss, introduced predators, non-native invasive species, disease, and environmental pollutants and contaminants from past, present, and reasonably foreseeable future actions. Habitat loss from existing urban development of the West Hawaiʻi coastline and alien invasive plants coupled with impacts from introduced predatory species have contributed to low-level native wildlife populations on the Kona Coast including populations of species within the Park. The cumulative effects of existing and future external development and human encroachment on Park resources continue to build. Urban development projects surrounding the Park, both proposed and underway, could have ongoing, short-term and long-term, direct and indirect, minor to major, adverse impacts on special status species within the Park in a variety of ways. These potential impacts include: increased human interactions with special status species from increased Park visitation, adverse impacts to water quality and quantity, potential introduction of invasive species, and increases in numbers of predators (domestic cats, feral cats, mongoose, and rodents) associated with increased human population. Mongoose and rodent populations may increase in the general area because of additional food sources associated with increased human populations, and increase within the Park as land-clearing activities associated with construction push animals into available habitat within the Park. Cumulative impacts resulting from any of the three Alternatives in combination with surrounding urban development on special status species would be imperceptible on a regional level. Development and construction of the Park's proposed Curation Facility would not result in additional cumulative effects to Special Status Species. Planned operation of Kaloko Fishpond in combination with Alternative 3 would contribute noticeable cumulative impacts in a localized context on the Hawaiian stilt and migratory shorebirds resulting from increased human activity in the shoreline area. The ʻAimakapā wetlands management plan would ultimately result in improved habitat within the Park for native waterbirds and migratory waterfowl, and there would be no negative cumulative effect from construction and operation of the Cultural Center in combination with the wetlands management plan.

Conclusion: Alternative 1 would result in ongoing, localized, negligible adverse disturbance impacts and imperceptible cumulative effects on Special Status Species. Under Alternative 2 individual *kolea* establishing winter foraging areas may experience direct negligible to minor, short-term to long-term, site-specific adverse impacts and

imperceptible cumulative effects. Constructing and operating the Center at the Alternative 3 location may result in direct and indirect, localized, minor to moderate, short and long-term adverse impacts to the Hawaiian stilt and migratory shorebirds. Localized, short-term, negligible to minor impacts to monk seals may occur during rare haul-out events.

Impacts to Wildlife

This section analyzes impacts to wildlife associated with the establishment of a Cultural Center and continuation of current programs. Impacts to specific threatened, endangered, candidate species, and species of special concern are addressed in the *Special Status Species* Section of this document as a separate impact topic.

Alternative 1 (No Action): If the Cultural Center were not constructed and not operated, there would be no change to current visitor use, Park operations, and interpretive programs within the Park. Wildlife species may be chance-encountered from time to time during ongoing Park interpretation programs and activities, Park operations, and visitor use. Some negligible, temporary, site-specific disturbance to wildlife may occur during these activities due to human presence and chance encounters.

Alternatives 2 (NPS Preferred), and 3: Construction of the Center and subsequent human presence at Alternative 2 and 3 locations during Center operation may cause some bird species to avoid the area. However, because the Alternative 3 area is currently used for day-use visitor parking, and is adjacent to the public picnic area, there may be little effect on wildlife already habituated to human presence. Wildlife in the Alternative 2 and 3 locations primarily consists of exotic species including invasive mongoose, rodents, and various alien birds. Exotic gray francolins (*Francolinus pondicerianus*) are frequently seen ground foraging near the Alternative 2 location. Rats, mice and feral cats also frequent the Alternative 3 location, likely because of the picnic area adjacent to the Kaloko Fishpond and Parking Area. In fact, human activity and long-term presence in the area may result in localized, long-term, direct, minor negative impacts from increased populations of some pest species such as mongoose, feral cats, and rodents that are detrimental to native species. Negligible short-term adverse impacts to lizards (anole, skinks, and geckos) may result from habitat displacement during alien vegetation removal associated with Center construction activities at both Alternative locations. However, new habitat will be provided through native plant restoration. Geckos and others may also inhabit *halau* structures once they are constructed.

Construction of the Cultural Center would include removal of invasive plant species at the selected site. However, Center operations and activities would also include restoration of appropriate native and Polynesian-introduced plant species to the Center's landscape, resulting in improved habitat for terrestrial wildlife.

Center-related marine fishing and shoreline gathering activities would be subject to State of Hawai'i fishing regulations and would focus on traditional methods of resource protection, and on education of participants to prevent overharvesting of resources. Negligible to minor negative impacts on marine wildlife species are anticipated from operation of the Cultural Center at this location. Anchialine pools remain closed to all activities including bathing, gathering, and modification; therefore, no negative impacts

to anchialine pool wildlife will occur. Aimakapā Fishpond is closed to fishing and swimming, however Kaloko Fishpond will be used as a traditional aquaculture for culturally significant fish. Negative impacts to fish populations (overharvesting) in fishponds will be prevented through traditional methods of resource management and protection, and through education of participants.

Constructing and operating the Cultural Center at the Alternative 3 location may also have beneficial impacts to wildlife species. Vehicle traffic and vehicle parking would be excluded from the area, and human presence in the area would be minimized compared to current usage of the parking and picnic areas.

Cumulative Impacts: As discussed in the *Special Status Species* section, Hawaiʻi's wildlife species are vulnerable to the combined effects of habitat loss, introduced predators, non-native invasive species, disease, and environmental pollutants and contaminants from past, present, and reasonably foreseeable future actions. Habitat loss from existing urban development of the West Hawaiʻi coastline and alien invasive plants coupled with impacts from introduced predatory species have contributed to low-level native wildlife populations on the Kona Coast including populations of species within the Park. The cumulative effects of existing and future external development and human encroachment on Park resources continue to build. Urban development projects surrounding the Park, both proposed and underway, could have ongoing, short-term and long-term, direct and indirect, minor to major, adverse impacts on wildlife species within the Park in a variety of ways. These potential impacts include increased human interactions from increases in Park visitation, increased visitor-use pressure on certain resources such as fishing, adverse impacts to water quality and quantity, potential introduction of invasive species, and increased numbers of predators (domestic cats, feral cats, mongoose, and rodents) associated with increased human population. Mongoose and rodent populations may increase in the general area because of additional food sources associated with increased human populations, and increase within the Park as external land-clearing activities associated with construction push animals into available habitat within the Park. Cumulative impacts resulting from the No Action Alternative (Alternative 1) and the Cultural Center project at the Alternative 2 or Alternative 3 locations are in combination with surrounding urban development on wildlife species are imperceptible on a regional level with the exception that populations of alien small mammal predators are likely to increase within the Park. Development and construction of the Park's proposed Curation Facility will not result in additional cumulative effects to wildlife. Planned operation of Kaloko Fishpond in combination with Alternative 3 would include clearing invasive plant and algae species from within and around the pond, resulting in a beneficial impact for native fish habitat. The Aimakapā wetlands management plan will ultimately result in improved habitat within the Park for culturally important fish and there would be no negative cumulative effect from construction and operation of the Cultural Center in combination with the wetlands management plan.

Conclusion: Alternative 1 would result in ongoing negligible impacts to wildlife from continuing chance encounters from visitor use, Park operations, and some interpretive programs. Constructing and operating the Cultural Center at the Alternative 2 location would have negligible to minor, direct, and indirect, localized, short and long-term adverse impacts to native wildlife. Constructing the Cultural Center at Alternative 3 location would have negligible to minor, direct and indirect, localized, short and long-term adverse impacts to wildlife. Beneficial impacts at both Alternative 2 and 3 locations

would include improved native plant habitat for native animal species. Local beneficial impacts to wildlife at the Alternative 3 location may result from closure of the parking and picnic areas to the public.

Impacts to Vegetation

This section analyzes impacts to Park vegetation associated with the establishment of a Cultural Center and continuation of current programs. Impacts to specific plant species that are endangered, candidate endangered, or are species of special concern are addressed in the *Special Status Species* section of this document.

Alternative 1 (No Action): Under Alternative 1, if the Cultural Center were not constructed, there would be no change to current visitor use, Park operations, and interpretive programs within the Park. Ongoing interpretation programs on native and Polynesian-introduced plants would continue, as would long-term, Park-wide beneficial impacts from ongoing invasive plant control and restoration of native plant communities.

Alternative 2 (NPS Preferred): The majority of the vegetation in the Alternative 2 location and the foot trail leading to it is comprised of alien species: fountain grass (*Pennisetum setaceum*), pickleweed (*Batis maritima*), sourbush (*Pluchea carolinensis*), *kiawe* (*Prosopis pallida*), and *klu* (*Acacia farnesiana*). Few native species exist in the Alternative 2 location with the exception of several individual *naupaka* (*Scaevola sericea)* and *pa'u o hi'iaka* (*Jacquemontia ovalifolia*) at the site, and *milo* (*Thespesia. populnea*) along the foot trail. Construction and operation of the Cultural Center would include removal of invasive species in the project area and restoration of appropriate endemic, indigenous, and Polynesian-introduced species resulting in long-term, local beneficial impacts to native plant communities. Existing native vegetation at the Alternative 2 site may need to be pruned in some cases to allow for construction activities, however, pruning would not adversely affect native vegetation.

Alternative 3: Native and Polynesian-introduced vegetation in the Kaloko Parking Area includes *niu* (coconut, *Cocos nucifera*), *milo* (*T. populnea*), and *kipukai* (seaside heliotrope, *Heliotropium curassavicum*). An alien tree, *kiawe* (*P. pallida*) is also within the parking area. Vehicle traffic in the Kaloko Parking Area has resulted in relatively little vegetation immediately within the Alternative 3 location. As a result, constructing the Cultural Center at this site would have beneficial impacts on vegetation because cars would be excluded from the area. However, concentrated human activity in and around the Center would curtail plant life in certain high-use areas. Construction and operation of the Cultural Center would include removal of invasive species in the project area and restoration of appropriate endemic, indigenous, and Polynesian-introduced species resulting in beneficial impacts to native plant communities. Native and Polynesian-introduced plants adjacent to the parking area include *naupaka* (*S. sericea*), *kipukai* (seaside heliotrope; *H. curassavicum*), *pa'u o hi'iaka* (*J. ovalifolia*), *akulikuli* (*Sesuvium portulacastrum*), *ohelo kai* (*Lycium sandwicense*), *milo* (*T. populnea*), and *naio* (*Myoporum sandwicense*). Non-native plants present include sourbush (*Pluchea carolinensis*), pickleweed (*Batis maritima*), *kiawe* (*P. pallida*) and tree heliotrope (*Tournefortia argentea*). No native vegetation would be disturbed by the construction of *hale* and *hālau* structures. Existing native vegetation ground cover adjacent the site may experience site-specific, short and long-term, negligible to minor adverse impacts from trampling by Center participants straying off trail or off site.

Cumulative Impacts: Native plant species are vulnerable to the combined effects of non-native invasive species, and habitat loss. Habitat loss from existing urban development of the West Hawai'i coastline and alien invasive plants have contributed to a low-level of native plant populations in West Hawaii, including within the Park. Habitat and species loss will continue as the lands surrounding the Park are developed. In combination with past, present and future projects within the Park (Park operations, Kaloko and 'Aimakapā Fishpond management) and surrounding the Park (urban development), the cumulative impacts of Alternative 1, or the construction and operation of the Cultural Center to vegetation at Alternative 2 or 3 locations, would be noticeable, beneficial, and long-term on a site-specific to regional scale. There will be no cumulative impact to vegetation from any Alternative in combination with the Curation Facility project.

Conclusion: Alternative 1 would result in continued beneficial, long-term, Park-wide impacts on vegetation within the Park. Alternatives 2 and 3 would result in beneficial, long-term, site-specific to Park-wide impacts on vegetation. All Alternatives will benefit native and culturally significant plant communities, and the traditional cultural landscape.

Impacts to Visitor Experience and Safety

This section analyzes impacts to visitor experience based on how the Alternatives would affect the visitor experience, particularly with regard to the visitor enjoyment of the Park's primary resources. Impacts to safety are considered in the context of Center operations (safety of participants), visitor and resource protection, and emergency response for both Center participants and visitors.

Alternative 1 (No Action): Under Alternative 1**,** if the Cultural Center were not constructed and not operated, there would be no change from the current visitor use, Park operations, and interpretive programs within the Park. Park visitors would continue to access the Park on foot or by vehicle, either on a self-guided basis, with private tours, on ranger-guided tours, or with hiking groups. Interpretive educational opportunities would continue to introduce visitors to the Park's natural and cultural resource themes and history. Opportunities to experience Hawaiian cultural activities would continue through Park-sponsored events. All NPS safety procedures, visitor and resource protection services, and the Park's Emergency Operations Plan would continue to be followed to ensure the safety of Park visitors, staff, and resources. Under Alternative 1 the recommendations of the Spirit Report (Hono-kō-hau Study Advisory Commission 1974) and the GMP (NPS 1994) regarding a Cultural Center would be unfulfilled.

Alternative 2 (NPS Preferred): Constructing and operating the Cultural Center at the Alternative 2 location would have negligible, long-term, site-specific adverse indirect impact on visitor use of the Kaloko Parking Area. Although the Alternative 2 site is removed from areas now open to the public, at certain times during Center activities and events the Kaloko Parking Area may be crowded with vehicles (up to six) thus limiting parking for regular day-use visitors.

The Alternative 2 location would have a negligible to minor, adverse, direct effect on access for emergency response by local agencies, and visitor protection services. Emergencies requiring vehicles to access the Alternative 2 location would require a UTV

for a short distance (804 yards; 735 m) on the coastal trail. If necessary, UTVs can access the site by travelling south from the Kaloko Parking Area and using existing bulldozed roads. However, a UTV would be stored on site for emergency use during events, in which case the same route would be used to transport injured individuals to the Kaloko Parking Area for transfer to county emergency vehicles. Transport of injured participants from the Alternative 2 location would take approximately eight minutes longer than from the Alternative 3 location. The NPS has procedures in place for emergency evacuation, from the Alternative 2 location in the event of tsunami, hurricane, or other urgent situation.

Alternative 3: Constructing the Cultural Center at the Kaloko Parking Area would have a local, direct, and long-term major adverse effect on visitors relying on vehicles to access the Kaloko *ahupua'a* in the Park, on scheduling non-Center related ranger-led programs at Kaloko Fishpond, and on overall visitor use-levels of the Kaloko *ahupua'a* area. Since 1994, when the Alternative 3 area was selected as the location for the Center (NPS 1994), annual visitation to this area has nearly quadrupled (NPS 2012b). If the Cultural Center were constructed and operated at this location, public vehicle access to Kaloko Fishpond would be closed and public parking would be re-located to the Hale Hoʻokipa Visitor Contact Station. General visitor access would be limited to pedestrians hiking on the shoreline and mauka-makai roads and trails. Visitors parking at the contact station lot would walk in to the Kaloko area (a distance of 1.4 mi (2.2 km) via Mamalahoa Trail, Hue Hue Trail, and the Ala Kahakai Trail). The picnic area would be closed to public use. Staff-led interpretation and education programs that occur at Kaloko, but that are not part of the Cultural Center Curriculum, would be limited in access and by the Center activity schedule. The relatively long hike to this area would mean that certain groups that currently use the area for programs and service learning projects, such as special education students, would no longer be able to do so, or would need to be shuttled in to the area. Interpretive programs at Kaloko Fishpond may become limited, as fewer people may be willing to walk from the Visitor Contact Station to access interpretation programs at this location. Additionally, commercial tour companies with special use permits would no longer be able to start their tours at the Kaloko Parking Area.

Prohibiting public vehicles in the Kaloko area would also have a beneficial effect on visitor experience by providing pedestrian-only access to an area of the Park that is more remote, enhancing the traditional sense of the cultural landscape.

The Alternative 3 location would have no effect on access for emergency response by local agencies, or visitor protection services. Because Alternative 3 is located on Kaloko Road, emergency vehicles would have sufficient direct access for transport of injured individuals from the site.

Alternatives 2 and 3: The development and operation of the Cultural Center in the coastal area places Center participants in a coastal hazard zone, potentially posing a long-term, minor to major, risk to participant safety. However, the NPS has emergency operation procedures in place to evacuate the Park during tsunami and hurricane events.

At both Alternative locations, the Center's traditional Hawaiian *hale* would be visible from certain points along the coastal (Ala Kahakai) trail and other locations within the Park and would add to the feeling of the traditional Hawaiian landscape, creating a long-term beneficial impact to visitor experience. However, the visual presence of the Center

buildings at both Alternative locations may also have a potential negligible to minor, short-term, direct, adverse affect on visitor experience and safety in that it may attract transient use and illegal camping.

At Alternatives 2 and 3, risk of fire is a minor to major, direct, long-term adverse impact to visitor and participant safety. The wood and thatching building materials for the Cultural Center are flammable. With the exception of stone bowls fixed in the Center of traditional structures to contain traditional *kukui* oil lamps, open flame would not be permitted inside any *hale.* All *hale* would be fitted with a minimum of two (2) battery-powered smoke detectors. Cooking fires will be a minimum of 20 ft away from flammable structures and would be prohibited when winds exceed 10 mph. Fire extinguishers will be placed in easily accessible locations. During the required orientation briefing, participants will be informed of the fire risks and trained in what to do in the event of fire.

At Alternatives 2 and 3, Center participants would experience Hawaiian cultural activities and practices in an authentic manner in a unique traditional setting. Park visitors not directly involved in the Cultural Center programs would benefit by observing and hearing participants practicing Hawaiian cultural activities throughout the Park; adding life to the fabric of the Park's traditional Hawaiian landscape. Education programs would be added, and existing programs enhanced and expanded if the Center were established at either location.

Impact Avoidance, Minimization, and Mitigation Strategies

- Increase law enforcement foot-patrols in both Alternative 2 and 3 locations to prevent unauthorized use of the Center facility.
- Provide UTVs on-site during Center programs for emergency use.
- Restrict cooking fires to wind conditions less than 10 mph and locate a minimum of 20 ft away from flammable structures.
- Provide smoke detectors and fire extinguishers on-site.

Cumulative Impacts: Surrounding urban development projects, both underway and proposed, including 16,000 proposed new residences near the Park have the potential for adverse impacts on visitor experience and safety in the Park. Population growth near Kaloko-Honokōhau may result in thousands of additional regular users of the Park and its resources, resulting in moderate to major, short to long term, direct and indirect adverse affects on resource condition (affecting visitor experience), staffing of visitor and resource protection services (affecting visitor safety), and ability to provide sufficient interpretation programs. Urban development significantly alters the viewshed from the Park and the natural and cultural landscapes surrounding the Park, resulting in direct, long-term moderate to major adverse impacts to visitor experience. Cumulative impacts resulting from the No Action Alternative (Alternative 1) and the Cultural Center project at the Alternative 2 or Alternative 3 locations in combination with surrounding urban development on visitor experience and safety are imperceptible on a regional level. High visitor-use may result in a higher rate of inadvertent disruptions to Cultural Center programs, particularly if the Center is located at the Alternative 3 site. A beneficial impact from increased local resident users would be increased demand for Cultural Center programs from the community. Although construction of the Center at either alternative location would enhance the traditional Hawaiian landscape within the Park, it would have an imperceptible effect on the regional cultural landscape. Impacts of the

Cultural Center project in combination with proposed projects to manage Kaloko and ‘Aimakapā fishponds, and ongoing Park operations would be beneficial to visitor experience through continuing efforts to remove alien vegetation, stabilize archeological sites, maintain Kaloko Fishpond wall, and to restore and interpret the natural and cultural landscape. Cumulative effects on visitor experience and safety would be noticeable with regard to additional time needed to evacuate Center Participants from the Park in addition to regular Park-wide evacuation of visitors and staff. Cumulative effects on visitor experience and safety would be imperceptible in combination with development of the proposed Curation Facility.

Conclusion: Under Alternative 1 the recommendations of the Spirit Report (Hono-kō-hau Study Advisory Commission 1974) and the GMP (NPS 1994) regarding a Cultural Center would be unfulfilled. Construction and operation of the Cultural Center at the Alternative 2 location would have long-term, negligible to major, direct adverse impacts to visitor and participant safety, and long-term negligible indirect adverse impacts on visitor experience in a site-specific context. Construction of the Cultural Center at the Alternative 3 location would have long term, negligible to major, direct, adverse impacts to visitor and participant safety in a site-specific context, and long-term, major, direct, adverse impacts on visitor experience in a local context. Alternatives 2 and 3 would each also result in beneficial impacts to visitor experience through enhancement and addition of educational programs and improvements of the existing cultural setting within the Park.

Impacts to Floodplains

The Park is not within a 100-year floodplain, and no floodways or flood zones have been identified or recorded in the Park. Although the alternatives presented in this EA are not expected to modify or influence existing floodplains, the action alternatives are both within coastal hazard floodplains. The Park coastline is within the coastal hazard area and is susceptible to flooding caused by high ocean waves, generally up to the 10-ft (3-m) contour line, that are generated by winter storms, hurricanes, and tsunami. This section analyzes impacts associated with coastal flood-hazard floodplains related to the construction and operation of a Cultural Center, and to the continuation of current Park operations under the No Action Alternative.

The traditional Hawaiian design and construction of the *hale* and *hālau* buildings for the Center would be dry-stack masonry platforms. The thatch and pole structures sit on top of these platforms. This design results in structures sitting 1 to 3 ft (0.5 to 1 m) above ground level, affording minimal protection of the raised flooring from high-water events.

Alternative 1 (No Action): Under Alternative 1, if the Cultural Center were not constructed and operated, there would be no change from the current response to coastal flooding events in visitor use, Park operations, and interpretive programs within the Park. The NPS would continue to use the Hawai‘i Civil Defense, the regional Tsunami Warning System, and the Park’s Emergency Operations Plan, which includes procedures, and warning and evacuation times for securing Park operations and for evacuation of the Park in the event of a tsunami, high surf event, hurricane, or other life-threatening emergency.

Alternative 2 (NPS Preferred): The Alternative 2 location is approximately 500 ft inland from the coastline and 650 ft south of Kaloko Fishpond. This location is within the

tsunami inundation zone, which poses risks to the proposed Cultural Center and its participants. The risk to human safety would be managed by utilization of the Park Emergency Operations plan (including Park evacuation procedures) and the regional Tsunami Warning System. The Alternative 2 location would be less vulnerable than Alternative 3 to inundation by tsunami, high surf, or hurricanes, and climate-induced sea-level rise and storm surge. Under Alternative 2, there could be direct, short or long-term, negligible to major adverse impacts due to tsunami, high surf, or hurricanes.

Alternative 3: Locating the Cultural Center at the Alternative 3 location would place the Center in the more vulnerable of the two locations to coastal flooding and inundation by tsunami, high surf, or hurricanes. This location can be affected on an annual basis by high-wave events and storm surges. The Alternative 3 location is less than 65 ft from the coastline and Kaloko Fishpond, where it is susceptible to sea-level rise and storm surge events. Under Alternative 3, there could be direct, short to long-term, negligible to major adverse impacts due to tsunami, high surf, or hurricanes.

Cumulative Impacts: Past, present, and reasonably foreseeable flooding events have affected, and would continue to affect, Park resources and operations. The Action Alternatives will have a noticeable cumulative impact on Park operations if inundation by tsunami, high surf, or hurricanes occurs, particularly at the Alternative 2 location because it adds a new, previously little-used area of the Park to manage during emergency operations. Cumulative effects would be imperceptible in combination with development of the proposed Curation Facility and management of Kaloko and ‘Aimakapā fishponds.

Conclusion: There will be no impacts to Floodplains under any of the Alternatives. Flooding from tsunami, high surf, or hurricanes will affect structures and people in the coastal area, and require evacuation of people from the Park. Under Alternative 1, there would be no change from the current response to coastal flooding events in visitor use, Park operations, and interpretive programs within the Park. Under Alternative 2, there could be direct, short- or long-term, negligible to major, adverse impacts to the Cultural Center due to tsunami, high surf, or hurricanes. Under Alternative 3, there could be direct, short- to long-term, negligible to major, adverse impacts to the Cultural Center due to tsunami, high surf, or hurricanes. The Alternative 2 location would be less vulnerable than Alternative 3 to inundation by tsunami, high surf, or hurricanes, and climate-induced sea-level rise and storm surge.

Impacts to Cultural Resources

Potential impacts to cultural resources were assessed by following the Advisory Council on Historic Preservation’s regulations under Section 106 of the NHPA (36 CFR Part 800, *Protection of Historic Properties*). The “area of potential effects” (APE) was determined (Figure 1) and cultural resources listed in or eligible to be listed in the National Register of Historic Places were identified within the APE. The Advisory Council’s regulations (36 CFR 800) were applied to those resources and ways to avoid, minimize, or mitigate adverse effects were considered.

The potential to affect eligible cultural resources (historic properties) must be evaluated for the APE for a given undertaking. The APE is the footprint of all project activities and may include the surrounding viewshed. For this project, the APE is the entire Park and

National Historic Landmark. Archival and GIS research identified 461 archeological sites within the APE. Many of these sites are also ethnographic resources, such as Kaloko Fishpond and surrounding archeological sites, trails and rock art sites. Additional ethnographic resources within the Park include near and offshore fishing grounds, coastal gathering areas, and anchialine pools.

No adverse effects to historic properties are anticipated from the construction and operation of the Center in any of the action alternatives or from associated Center activities. Therefore, the primary concern is the effect of the Center on the viewsheds of historic properties surrounding the alternative locations. Comments received during the Section 106 consultation meeting (October 2, 2010) indicated that the presence of the traditional-style complex and cultural activities within the APE would enhance viewsheds and the traditional cultural landscape in the area.

Alternative 1 (No Action): If the Cultural Center were not constructed and operated, there would be no change from the current use, management, or education programs within the Park. Off-trail pedestrian use (with the exception of shorelines) would continue to be prohibited to protect archeological sites and deposits and historic structures (NPS 2012a). However, direct and indirect, negligible to minor, short to long-term impacts would continue from visitors leaving established trails. Under Alternative 1, protection and preservation of cultural resources (including archeological and ethnographic resources, historic structures, and cultural landscapes) in the Park would continue through NPS management practices (NPS 2006). Certain archeological sites, such as the Kaloko *kuapā* would continue to be interpreted through guided tours. Under Alternative 1, public education on appropriate cultural use and awareness of ethnographic resources may not reach its full potential, and the recommendations of the Spirit Report (Hono-kō-hau Study Advisory Commission 1974) and the GMP (NPS 1994) regarding a Cultural Center would be unfulfilled.

Alternative 2 (NPS Preferred): Prior to this project, no archeological surveys had been conducted within the Alternative 2 location since before the 1970s, when the area was disturbed by dredging operations at Kaloko Fishpond prior to Park establishment. This area was bulldozed and sediments dredged from Kaloko Fishpond were pumped to the area and deposited over the disturbed ground surface. Therefore, little natural ground surface remains and any historic properties previously present in the area were destroyed or buried by dredge spoils. There are no known archeological deposits in the Alternative 2 location and the bulldozing of the area make it unlikely that buried deposits exist. Constructing the Center at this site would involve minor ground disturbance. It may be necessary to move dredge materials or areas of previously bulldozed rock for placement of structure footings, and the possibility exists that buried deposits may be discovered when conducting ground-disturbing work. Archeological test-excavations would be conducted to determine presence of archeological sites or features in the substrate below the dredge spoils.

The construction footprint for the Alternative 2 area was surveyed, including the proposed foot trail and proposed waterline corridors to the site (Johnson-Campbell 2011). The survey revealed areas of natural, undisturbed ground within the larger bulldozed area of Alternative 2, the re-identification of a known historic trail segment, and identification of one previously unrecorded archeological feature within the Alternative 2 area. The existing trail segment is a small portion of a *mauka-makai* (mountain-to-sea) trail that passed through the area. The majority of the historic trail

within the Alternative 2 area was destroyed by bulldozing in the 1970s prior to Park establishment. The proposed foot trail leading from the Ala Kahakai Trail would route participants from the coastal trail to the previously bulldozed corridor to the Center. No historic properties were found within the proposed foot trail or the bulldozed corridors. However, a previously recorded archeological site and several archeological features were found adjacent to the corridor. In total, ten previously undocumented archeological features were identified nearby, outside of the footprint of the proposed project area.

Archeological Resources- During construction and operation of the Center at this location, the historic trail segment and rock cairn identified within the proposed project area footprint would be flagged and avoided. The placement of an aboveground HDP waterline from the Kaloko Parking Area to the Alternative 2 site would skirt a previously identified early to mid 20th century walled habitation complex and continue south along the previously bulldozed dredge-pipeline corridor and the above-mentioned bulldozed trail (proposed foot trail). Because the waterline would be placed on the surface along the bulldozed dredge-line trail, the installation and maintenance of this waterline would not cause physical impacts to archeological features. However, the waterline would be somewhat visible from outside the site where it would extend along a portion of the site boundary wall. The waterline could have a direct, long-term negligible visual impact on a small portion of the site at the boundary wall. No additional adverse impacts to cultural resources would result from Alternative 2. Several previously unrecorded features were found within 15 ft of the foot trail corridor, but would not be affected by regular use of the trail. No impacts are expected to occur to these features because the access path would be used for foot access only, and the Cultural Center participants would be required to stay on the trail.

Alternative 3: *Archeological Resources*- The Alternative 3 area was re-surveyed for this proposed project (Johnson-Campbell 2011). The area is encompassed by a walled habitation complex dating from possibly pre-contact times to mid 20th century (Tuggle and Tuggle 2006). The following sites, the Kaloko *kuapā*, and the Kaloko Nui section of the pond are adjacent to this area. No direct impacts to these archeological sites are anticipated from Center construction and management. Constructing the Center at this location would involve minor ground disturbance for the placement of structure footings planned to be no deeper than 4.7 in. The substrate of this area consists of approximately 4 in of imported coral sand and sifted sand from Kaloko Fishpond overlaying and protecting the native sand. Four test excavations within the parking area revealed a cultural layer 4.7 to 5.9 in below the surface in an area where sand has not been replenished (NPS data). Because minimal ground disturbance will occur, no adverse impact is expected to affect the underlying archeological deposits. However, if ground disturbance deeper than 4.7 in is needed to construct the Center, direct, long-term adverse impacts to the archeological deposits may occur. Center activity located at the fishpond will increase pedestrian use of the fishpond wall by participants, however, decreased use by the public visitors will most likely mean less overall pedestrian traffic on the Kaloko Seawall in Alternative 3.

Ethnographic Resources- The exclusion of public vehicles from the area may result in minor beneficial impacts to the area's ethnographic resources and their underlying natural resources from less overall human impact. However, exclusion of vehicles may also result in fewer traditional cultural practitioners using Park ethnographic resources in the Kaloko coastal area.

Alternatives 2 and 3: *Archeological Resources*- As in Alternative 1, within the Park, unauthorized visitor access into areas that are closed to the public occurs occasionally and sometimes results in resource damage. The presence of the Cultural Center at either Alternative 2 or Alternative 3 location may draw non-participating visitors off trail to the area because they can see the facility or hear activities going on. Additional direct and indirect, short and long term, negligible to minor impacts to resources may occur as a result. However, increased presence at either of the alternative locations by Center participants and NPS staff during Center activities would also serve to deter resource damage by discouraging unauthorized access to closed areas. Signage and/or culturally appropriate demarcations (i.e. *kapu* [prohibition] sticks) would also deter potential damage from unauthorized visitation.

Ethnographic Resources- A primary concern is the effect of the Center on the viewsheds of historic properties surrounding both the Alternative 2 and 3 locations. Comments received during the Section 106 consultation meeting (October 2, 2010) indicated that the presence of the traditional-style complex and cultural activities within the APE would enhance viewsheds and the traditional cultural landscape in the area. Beneficial impacts to the viewshed of ethnographic resources in the area may result from enhancement of the traditional Hawaiian structures and activities on the landscape, setting, and sense of place. Introduction of visual, atmospheric, and audible elements would occur, but all introductions would be culturally appropriate traditional Hawaiian elements that would be relevant to Park cultural resources. Beneficial impacts to ethnographic resources in the area may result from increasing Center participants' and Park visitors' awareness of these resources and their appropriate cultural use and care. Additionally, Center programs and management may benefit ethnographic resources through perpetuation of knowledge and respect of these resources.

Impact Avoidance, Minimization, and Mitigation Strategies

- Signage and/or culturally appropriate demarcations at the selected location to discourage visitors from exploring off trail near the Center.
- Archeological test-excavations would be conducted to determine presence of archeological sites or features if any ground disturbance is required for structure footings.
- An archeological monitor would be on-site for ground-disturbing work.
- At Alternative 2, the waterline would be on the surface and would follow the previously disturbed dredge-line trail to avoid any physical disturbance of archeological resources, and an archeological monitor would be on-site for waterline installation.
- Should presently unidentified archeological resources be discovered during construction, work in that location would be halted, the park Cultural Resources Program Manager contacted, the site secured, and the NPS would consult according to 36 CFR 800.11 and, as appropriate, provisions of the Native American Graves Protection and Repatriation Act of 1990. Any archeological site would be properly recorded by an archeologist and evaluated under the eligibility criteria of the National Register of Historic Places.
- If the resources are determined eligible, appropriate measures would be implemented either to avoid further resource impacts or to mitigate their loss or disturbance (e.g., by data recovery excavations or other means) in consultation with the Hawai'i State Historic Preservation Division and the Advisory Commission on Historic Properties as required.

- In compliance with the Native American Graves Protection and Repatriation Act of 1990, the NPS would also notify and consult Park lineal descendants and Native Hawaiian Organizations for the proper treatment of human remains, funerary and sacred objects, should these be discovered during the course of the project.
- Center participants would be required to stay on designated trails.
- Sites identified prior to construction within the proposed project area would be flagged and avoided during construction and operation of the Center.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have affected and would continue to affect the cultural resources within the Park. Proposed urban development projects could potentially create 16,000 new residences in close proximity to the Park (Honolulu Star-Advertiser 2010). A significant increase in Park use by thousands of new resident visitors could have major cumulative adverse impacts on Park cultural resource condition and over-use of ethnographic resources. Effects of pollutants associated with urban development could have major cumulative negative effects on traditional use of ethnographic water resources. Additionally, increasing urban development adjacent and upslope of the Park boundary is a cumulative long-term major adverse impact to the Park's cultural landscape viewshed. Cultural landscapes and associated sites outside of the Park continue to be lost, fragmented, or degraded by land development activities. Alternatives 1, 2, and 3, would not contribute to negative cumulative effects from urban land use on archeological sites, cultural landscapes, and ethnographic resources occurring outside of the Park.

Alternatives 2 and 3 would have noticeable and beneficial cumulative effects on ethnographic resources in combination with the proposed management and operation of the Kaloko Fishpond for traditional Hawaiian aquaculture, and the restoration of 'Aimakapā wetlands. At the Alternative 2 location, the construction and operation of the Cultural Center and its accompanying landscape restoration would offset the adverse effects to cultural resources that resulted from the bulldozing of the landscape in the 1970s. Combined with Park operations to remove alien vegetation from archeological sites, Alternatives 2 and 3 would have noticeable cumulative beneficial effects on ethnographic resources and archeological sites. There would be no cumulative impacts from the creation and operation of the Cultural Center in conjunction with the proposed Curation Facility.

Conclusion: Under Alternatives 1, 2 and 3, direct and indirect, negligible to minor, short to long-term adverse impacts would continue from visitors leaving established trails. Under Alternative 1, public education on appropriate cultural use and awareness of ethnographic resources may not reach its full potential. Beneficial impacts to the previously disturbed (bulldozed) cultural landscape would occur at this location. At Alternative 2, direct, long-term, negligible adverse visual impacts may occur because of the waterline placement along a historic wall. At the Alternative 3 location, if ground disturbance deeper than 4.7 in is required for the placement of footings of Center structures, then direct, long-term adverse impacts to the archeological deposits may occur. No adverse impacts to historic properties are anticipated from operation of the Cultural Center at the Alternative 3 location. Beneficial effects to ethnographic resources would result from construction and operation at Alternative 3. At both Alternative 2 and 3 locations, there would be beneficial effects to the viewshed by enhancing the traditional Hawaiian setting.

Section 106 Summary: After applying the Advisory Council's regulations (36 CFR 800), the NPS finds that Alternative 1 and Alternative 2 would have No Adverse Effect on historic properties or the cultural landscape. Alternative 3, may result in an Adverse Effect on the archeological deposits if ground disturbance deeper than 4.7 in is required to set footings for Center structures.

Impacts to Park Operations

The National Park Service must consider the potential effects of proposed actions on overall Park operations. Use of the Kaloko area, along with Park operations, has changed significantly since the adoption of the GMP (NPS 1994). In turn, potential impacts to Park operations in this area have changed as well. The following analysis is based on current levels of Park staff and budget. These levels not are expected to increase in the foreseeable future.

Alternative 1 (No Action): Under Alternative 1, there would be no changes to current Park operations, and therefore no impacts to Park operations and budget.

Alternative 2 (NPS Preferred): Constructing the Cultural Center at the Alternative 2 location would result in minor to moderate impacts to maintenance operations in both increased workload and restrictions in work scheduling. Increased workload includes maintaining the new foot trail leading to the Alternative 2 area, trucking water to Kaloko and pumping water to the site on a regular basis, and performing preventative maintenance and regular monitoring of composting toilet facilities. Additional equipment (water tanks, pump, and hoses) and supplies (e.g. toilet paper) would be required if the Center were established at this location. However, upkeep and maintenance of structures, general cleaning of bathroom facilities, and grounds of the Cultural Center area would be the responsibility of *Makani Hou o Kaloko-Honokōhau* at either action alternative location.

Alternative 3: Constructing the Cultural Center at the Kaloko Parking Area would have direct and indirect, long-term, moderate to major, Park-wide adverse impacts on scheduling and accomplishing maintenance and resource management operations including maintaining area trails, coconut-tree trimming, maintaining and stocking toilet facilities, maintaining Kaloko Fishpond seawall and area archeological sites. The Alternative 3 location would also result in direct, long-term, major, localized adverse affects to the ability to access the site and adjoining parklands for a variety of Park operations. Access for large vehicles for contracted pumping of the toilet facilities, green-waste removal, and tree trimming equipment would be affected both by available area to maneuver equipment and the permanent closure of the Kaloko Road gate. Pumping of toilet facilities would increase with additional use. New, alternate routes to access trails would need to be created for maintenance, law enforcement, and resource management UTVs. The maintenance of the Kaloko seawall would continue into the future, requiring the Park's mini-excavator and support UTV to traverse the Center site on a regular basis. Additionally, a Park or emergency vehicle turnaround area would need to be sited at the Center site or at the junction of the road and Center site.

Alternatives 2 and 3: Both alternative locations would result in direct and indirect, long-term, moderate to major, Park-wide adverse affects on Park operations by placing additional burden on Park staff schedules and workload, and on the Park budget. It may

be necessary to take time from other scheduled programs or daily work schedules. Law enforcement staff would be needed to enforce area closure. During construction, and later when the Center is operating, additional staff presence would be needed to educate public about the purpose of the Center and to dissuade visitors from straying off-trail or into areas restricted to non-Center participants. Signs and barriers would need to be created and appropriately placed to inform general visitors of the purpose of the area.

Law enforcement presence and patrols would need to be increased for nighttime use of the facility. Additional patrol time would also be needed to prevent vandalism, inform visitors of the area closure, and to track authorized overnight vehicles at the pond parking area or the visitor contact lot. These additional patrols would need to occur daily whether Center programs are occurring or not; and would affect patrol schedules in other areas of the Park. Integrated pest management activities necessary to prevent and control rodents would increase at both alternative locations. The need for resource condition monitoring in the areas around either location would also increase. Additional interpretation-staff time would be required to liaison with *Makani Hou o Kaloko-Honokōhau* to coordinate and integrate Center programming with regular Park operations if the Center were located at either alternative location. This additional time may affect scheduling and availability of staff for non-Center related programs elsewhere in the Park.

Cumulative Impacts: Surrounding proposed urban-development projects could potentially result in 16,000 new residences in the vicinity of the Park (Honolulu Star-Advertiser 2010). This increase in adjacent population may result in thousands of additional regular users of the Park and could have major cumulative adverse impacts on Park operations and workload including increased impacts on the resource condition, facilities, and visitor safety.

The construction of the Cultural Center at the Alternative 3 location in combination with future active management of the fishpond for traditional aquaculture would mean a substantial change in the current use of the Kaloko area, which may mean eventual closures of a larger area of Kaloko Fishpond to public use. This closure may further affect resource management, law enforcement, maintenance, and interpretation activities, and would result in direct, major, long-term adverse effects to Park operations. Cumulative impacts to Park operations from the Cultural Center project in combination with urban expansion, restoration of the ‘Aimakapā wetland, Kaloko Fishpond management, and construction and operation of the Curation Facility are likely to result in an appreciable changes to demands on staff workload, and schedules.

Conclusion: There would be no impacts to Park operations from the implementation of Alternative 1. Construction and operation of the Cultural Center at either the Alternative 2 or the Alternative 3 locations would result in direct and indirect, long-term, moderate to major, Park-wide adverse impacts to Park operations. Cumulative effects of the Cultural Center in combination with other proposed projects and particularly increasing urban development will also result in an appreciable incremental effect on Park operations.

Impacts on Climate Change

In a memorandum dated February 18, 2010, the Council on Environmental Quality provides draft guidance on considering the effects of federal projects on: (1) the

Greenhouse Gas (GHG) emissions effects of a proposed action and alternative actions; and (2) the relationship of climate change effects to a proposed action or alternatives, including the relationship to proposal design, environmental impacts, mitigation and adaptation measures.

Alternative 1 (No Action): If the Cultural Center were not constructed and operated, there would be no change from current levels of GHG emissions associated with park operations and visitation or and there would be no change in the impact of climate change effects.

Alternative 2 (NPS Preferred): Locating the Cultural Center at the Alternative 2 location would have negligible effects on climate change. The location of Alternative 2 would make the Center slightly less susceptible to the climate-induced sea-level rise and storm surges, as the Center would be located roughly 500 ft away from the current coastline and 650 ft from Kaloko Fishpond. There are no plans to run electric lines to the Center. There would be a negligible effect on climate change through the emission of small amounts of carbon dioxide and other potential global warming gases from operation of vehicles accessing the site. The proposed planting of native vegetation at the site would have beneficial, but negligible impacts on climate change through carbon-dioxide capture. In addition, the "green" design and operation of the facility could have a minute long-term beneficial impact on climate change by reducing energy demands and minimizing the carbon footprint of the Center. Facility design elements that make the Center “green” include low-impact, open-air traditional (thatch and pole and dry-stack masonry) structures which maximize airflow from ocean breezes and providing zero-energy use shade structures. In addition, this climate-appropriate type of infrastructure is exemplary of sustainable traditional Hawaiian practices. In the event of extreme weather or damage, structures are reparable and replaceable because the structures would be made of local, natural, biodegradable materials. Solar power would be used for the only modern structure planned at the center, the composting toilet. This would be considered a “green” facility, as it requires no water, treats waste biologically, is “zero-discharge”, uses long-lasting construction material and has low power requirements (provided by solar panels).

Alternative 3: Locating the Cultural Center at the Alternative 3 location would have negligible effects on climate change. The Alternative 3 location is less than 60 ft from the current coastline and Kaloko Fishpond making it very susceptible to climate induced sea-level rise and storm surge issues. There are no plans to run electric lines to the Center. There would be a negligible effect on climate change through the emission of small amounts of carbon dioxide and other potential global warming gases from operation of vehicles accessing the site. The proposed planting of native vegetation at the site would have beneficial, but negligible impacts on climate change through carbon-dioxide capture. In addition, the "green" design and operation of the facility could have a minute long-term beneficial impact on climate change by reducing energy demands and minimizing the carbon footprint of the Center. Facility design elements that make the Center “green” include low-impact, open-air traditional (thatch and pole and dry-stack masonry) structures which maximize airflow from ocean breezes and providing zero-energy use shade structures. In addition, this climate-appropriate type of infrastructure is exemplary of sustainable traditional Hawaiian practices. In the event of extreme weather or damage, structures are reparable and replaceable because the structures would be made of local, natural, biodegradable materials. Solar power would be used for the only modern structure planned at the center, the composting toilet. This would be

considered a “green” facility, as it requires no water, treats waste biologically, is “zero-discharge”, uses long-lasting construction material and has low power requirements (provided by solar panels).

Cumulative Impacts
Impacts of the Cultural Center project, in addition to existing Park Operations are negligible. On a larger scale, climate change impacts on a regional level, the island and state of Hawai‘i, are also are negligible. The cumulative effect of teaching sustainable traditional Hawaiian construction techniques and ways of living (taught as part of the Hawaiian cultural education curriculum to Park visitors and Center participants), would have a cumulative beneficial, but negligible effect on climate change.

Conclusion: Under any of the three alternatives, GHG emissions and effects on climate change would be negligible. Locating the Cultural Center at the Alternative 2 site, would make the Center slightly less susceptible to sea-level rise and storm surges than locating the Center at the Alternative 3 site.

Environmental Assessment Review Period

To inform the public of the availability of the EA, the NPS will publish and distribute a letter or press release to various agencies, members of the public on the Park’s mailing list, as well as place an ad in the local newspaper, and announced on the Park website, http://www.nps.gov/kaho. Copies of the Environmental Assessment will be provided to interested individuals, upon request. Copies of the document will also be available for review at the Park’s visitor center and on the internet at http://www.nps.gov/kaho/parkmgmt/planning.htm and at http://parkplanning.nps.gov/.

The EA is subject to a 30-day public comment period. During this time, the public is encouraged to submit their written comments to the NPS address provided at the beginning of this document. Following the close of the comment period, all public comments will be reviewed and analyzed, prior to preparation of the decision document. The NPS will respond to any substantive comments received during the public comment period, in preparing the final decision."

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Agencies and Persons Consulted

In addition to internal scoping- the following people and agencies were consulted on the preparation of this EA.

Makani Hou o Kaloko-Honokōhau
Kaloko-Honokōhau Descendents
Advisory Council on Historic Preservation
Office of Hawaiian Affairs
Hawai‘i County Fire Department
Hawai‘i Department of Land and Natural Resources, Division of Forestry and Wildlife
Conservation Council for Hawaii
Planning Director, County of Hawaii
Kamehameha Schools
Kona Hawaiian Civic Club
Royal Order of Kamehameha I, Moku o Kona
Hawai‘i Audubon Society
U.S. Fish and Wildlife Service, Pacific Islands Office
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Ed Stasack, October 31, 2010
T. Wurth, National Marine Fisheries Service, January 19, 2012
Cynthia Galieto, National Park Service
Rizal Fronda, National Park Service, Retired

Appendices

Appendix A ***Section 106 Terms***

Appendix B ***Floodplains Statement of Findings***

Appendix A: Section 106 Terms[2]

A ***historic property (or historic resource)*** is defined in the NHPA [16 U.S.C. Section 470w(5)] as any "prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on, the National Register of Historic Places, including artifacts, records, and material remains related to such a property or resource." Following National Register Bulletin No. 36, "Guidelines for Evaluating and Registering Archeological Properties" (www.cr.nps.gov/nr/publications/bulletins/arch/).

An ***archeological site*** is "a location that contains the physical evidence of past human behavior that allows for its interpretation." The term ***archeological site*** refers to those that are eligible for or are listed on the National Register (historic properties) as well as those that do not qualify for the National Register. The commonly used term ***cultural resource*** does not have a consistent or legal definition.

Significance of a property refers to its ability to meet one of the four National Register criteria (A-D) (www.achp.gov/nrcriteria.html). According to National Register Bulletin No. 15, "How to Apply the National Register Criteria for Evaluation" (www.cr.nps.gov/nr/publications/bulletins/nrb15/), "[t]he quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association" and that meet one or more of the four criteria (A-D).

Integrity is the ability of the property to convey this significance through physical features and context. Historic properties are significant because they do meet these criteria and have integrity. Pursuant to Section 101(d)(6)(A) of the NHPA, properties of traditional religious and cultural significance to an Indian tribe or NHO may be deemed eligible for listing on the National Register.

Indian tribes, NHOs, ethnic or religious groups, communities, professional and other organizations, or the public may ascribe a cultural, historical, or religious ***value*** to an archeological site. The term *value* here refers to the site's worth and importance to them and their experience, regardless of whether the site possesses National Register ***significance****.* For example, an archeological site may be of historical or cultural value to the Mormons, or to an African-American community (See the description of the African Burial Ground at www.achp.gov/casearchive/casessum03NY1.html), or to the Order Sons of Italy in America, with or without its meeting the criteria for listing in the National Register.

Mitigation is a way to remedy or offset an adverse effect or a change in a historic property's qualifying characteristics in such a way as to diminish its ***integrity****.* ***Treatment*** is the act of mitigating those effects, or how one goes about implementing the mitigation measure(s) agreed upon in consultation. Thus, a mitigation plan for the undertaking may contain several treatment plans, one for each property being adversely affected. Data recovery is a common mitigation measure that, through implementation of a treatment plan, retrieves the important information present within an archeological site that makes it eligible before the site's integrity is compromised or destroyed.

[2] Advisory Council on Historic Preservation 2009

Appendix B: Floodplains Statement of Findings[3]

[3] Floodplains Statement of Findings for Cultural Center (Cultural Education Complex) (NPS 1994:337)

KALOKO-HONOKOHAU NATIONAL HISTORICAL PARK
HAWAII

Statement of Findings
(Coastal High Hazard Area)

The general management plan for Kaloko-Honokohau National Historical Park proposes the development of a Hawaiian cultural education complex within the identified coastal high hazard area* susceptible to flooding by winter storm or hurricane generated waves or tsunamis (see map). The type of development being proposed is similar to a NPS group campground facility.

The proposed development is to consist of the construction of several traditional Hawaiian structures, including *hālau* (for canoes or hula instructions), *kua* (for beating tapa), *hāwai* (for ceremonies), *moku hale* (for instruction), and *hale* (houses). The latter would be where a limited number (25 maximum) of participants at the complex could stay overnight.

All structures at the complex would be built with traditional Hawaiian materials and would therefore not be regarded as permanent structures; i.e., if damaged by storm waves or winds, they could easily be replaced. No utilities are to be brought into the site. Water is to be carried in by NPS ATV's on park trails and the toilet facilities are to be self-contained. The nature of the developments would be similar to a group campground. Based on the above, it does not appear that the Standards and Criteria of the National Flood Insurance Program (NFIP) would apply to the proposed development. Moreover, the proposed action does not violate state or county standards for development in coastal high hazard areas.

The park area long ago was the site of a thriving Hawaiian settlement. The location for the proposed live-in cultural education complex was selected because it was a site the ancient Hawaiians likely would have chosen — oriented toward the ocean to allow for activities such as fishing and the gathering of ocean products to take place. The site's proximity to Kaloko fishpond, a major food source for the Hawaiians, was also an important selection factor. Finally, the site was the only one near any of the park's three fishponds that was known <u>not</u> to contain significant cultural resources. Consequently, alternative sites were considered to be neither practicable nor suitable. Not developing a live-in cultural education complex would be contrary to the park's enabling legislation. In summary, there is no practicable alternative to the proposed action.

Development at this site would not adversely affect any Hawaiian archeological sites or features, thus there would be no risk to irreplaceable artifacts. As noted, the risk to structures would be minimal because of the nature of the proposed developments.

Regarding the risk to people, the park is an official contact with the Hawaii County Civil Defense Agency. Through direct radio contacts, the park will be notified in the event of any natural disaster, including approaching hurricanes, winter storms, and tsunamis, and is provided with continually updated forecast information. Park evacuation plans are now in place to ensure public safety. Park staff members are trained and prepared to evacuate visitors on an emergency schedule, including any participants at the proposed live-in cultural education complex. Evacuation procedures would be carried out only during the most severe storm conditions and in the event of any and all approaching tsunamis.

Recommended: _____ 12-21-93
Chief, Water Resources Division, NPS — Date

Recommended: _____ 1/10/94
Regional Safety Officer, WRO — Date

Recommended: _____ 5/11/94
Regional Compliance Officer, WRO — Date

Approved: _____ 5/20/94
Regional Director, WRO — Date

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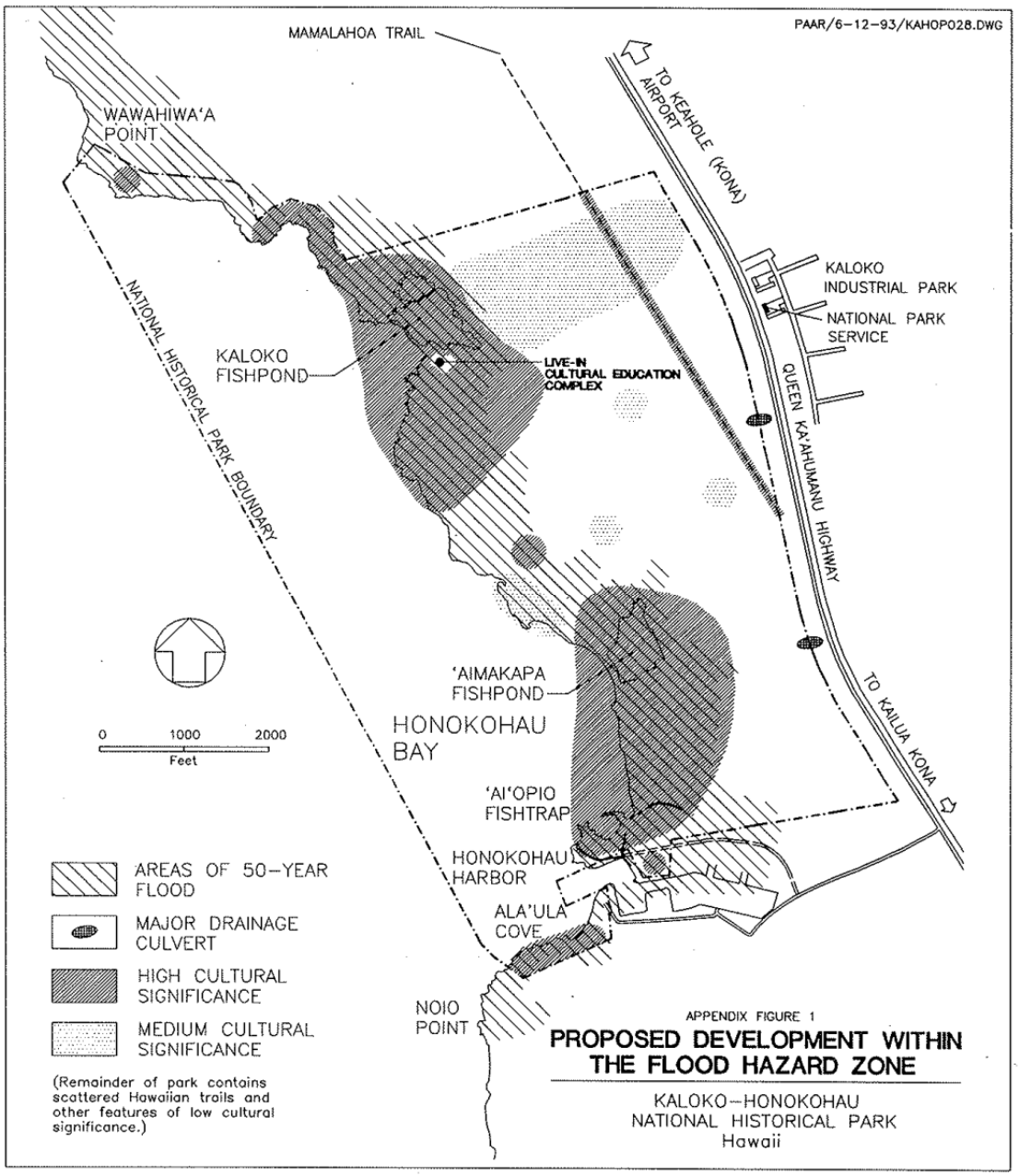
* Based on Flood Insurance Rate Map (Panel 691), County of Hawaii, Department of Public Works


PAAR/6-12-93/KAHOP028.DWG
MAMALAHOA TRAIL
WAWAHIWA'A POINT
TO KEAHOLE AIRPORT (KONA)
KALOKO INDUSTRIAL PARK
NATIONAL PARK SERVICE
NATIONAL HISTORICAL PARK BOUNDARY
KALOKO FISHPOND
LIVE-IN CULTURAL EDUCATION COMPLEX
QUEEN KA'AHUMANU HIGHWAY
'AIMAKAPA FISHPOND
HONOKOHAU BAY
0 1000 2000
Feet
TO KAILUA KONA
'AI'OPIO FISHTRAP
HONOKOHAU HARBOR
ALA'ULA COVE
NOIO POINT
AREAS OF 50-YEAR FLOOD
MAJOR DRAINAGE CULVERT
HIGH CULTURAL SIGNIFICANCE
MEDIUM CULTURAL SIGNIFICANCE
(Remainder of park contains scattered Hawaiian trails and other features of low cultural significance.)
APPENDIX FIGURE 1
PROPOSED DEVELOPMENT WITHIN THE FLOOD HAZARD ZONE
KALOKO-HONOKOHAU NATIONAL HISTORICAL PARK
Hawaii

United States Department of the Interior

NATIONAL PARK SERVICE
Pacific West Region
333 Bush Street, Suite 500
San Francisco, California 94104-2828

IN REPLY REFER TO:
L7617 (PWRO-PP)

15 MAY 2013

Memorandum

To: Acting Superintendent, Kaloko-Honokohau National Historical Park

From: Regional Director, Pacific West Region

Subject: Environmental Compliance for Cultural Center

The *Finding of No Significant Impact* for the construction of the new Cultural Center, and its operation in partnership with Makani Hou o Kaloko-Honokohau, is approved. To conclude this particular environmental compliance effort, the park should provide for notice of the decision to all individuals, agencies, and organizations that received or commented on the EA during the winter 2013 public review.

Congratulations are extended to all the park staff for their concerted efforts to achieve this milestone, envisioned in the park's enabling legislation and as called for in the 1994 General Management Plan.

Christine S. Lehnertz

Attachment

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Finding of No Significant Impact

Cultural Center

Kaloko-Honokōhau National Historical Park

Kailua-Kona, Hawaii

April 2013

INTRODUCTION

The Department of the Interior, National Park Service (NPS) has prepared this Finding of No Significant Impact (FONSI) for the Environmental Assessment (EA) for constructing and operating a Cultural Center in Kaloko-Honokōhau National Historical Park (Kaloko-Honokōhau NHP or the park). This FONSI states the decision, identifies the other alternatives considered and the environmentally preferable alternative, discusses the basis for the decision, lists measures to minimize environmental harm, and briefly describes public and agency involvement in the decision-making process. The determination of non-impairment of resources in the park for the selected action, pursuant to NPS *Management Policies 2006* (NPS 2006), is attached to this FONSI as Attachment A. References for citations used in the FONSI and non-impairment determination are available in EA.

PURPOSE AND NEED FOR FEDERAL ACTION

Congress established Kaloko-Honokōhau NHP in 1978 "to provide a center for the preservation, interpretation, and perpetuation of traditional native Hawaiian activities and culture, and to demonstrate historic land use patterns as well as provide needed resources for the education, enjoyment, and appreciation of such traditional native Hawaiian activities and culture by local residents and visitors." 16 U.S.C. Section 396d(a) Congress's creation of the park was based primarily on the Hono-kō-hau Study Advisory Commission (1974) Report entitled Spirit of Ka-loko Hono-kō-hau ("Spirit Report"), which was developed by an advisory commission of Native Hawaiians and the NPS. Recognizing the importance of the Spirit Report, in the park's enabling legislation, Congress stated that "[t]he Secretary shall administer the park . . . generally in accordance with the guidelines provided in the [Spirit Report]." 16 U.S.C. Section 396d(c). The Spirit Report called for the creation of the Cultural Education Complex. In 1994, the NPS adopted a General Management Plan/Environmental Impact Statement (GMP) that set out the general programmatic direction for managing Kaloko-Honokōhau NHP. The GMP established the goals for the Cultural Center, set parameters for the construction and operation of the Center, and identified a specific location for where the Center should be.

SELECTED ACTION AND OTHER ALTERNATIVES CONSIDERED

Selected Action

After careful review of scoping comments, public and agency review of the EA, and with due consideration of potential impacts to affected resources and visitor use, the NPS has selected Alternative 2 (preferred alternative) for implementation (as presented in the EA; there are no

modifications due to public and agency comment incorporated herein). The actions selected for implementation include the following elements.

Alternative 2: Cultural Center South of Kaloko Fishpond Area
A Cultural Center would be constructed, managed and operated by the National Park Service and Makani Hou o Kaloko-Honokōhau through partnership agreements at a previously disturbed area approximately 650 feet (ft) south of Kaloko Fishpond and 500 ft from the ocean. The Center would be constructed on less than one acre within the 1.65-acre (ac) disturbed area. The site comprises a basin constructed in the 1970s by the private landowner of Huehue Ranch who bulldozed a portion of ʻaʻā lava flow to deposit dredge spoils from Kaloko Fishpond. The substrate of this disturbed area is composed of the sand, silt, shell and other contents that were pumped out of Kaloko Fishpond and diverted via a pipeline to the area. The site is dominated by alien invasive vegetation. The Center construction footprint would be confined to the disturbed area and no construction would be permitted beyond this area.

Construction
The Cultural Center would include a maximum of 12 traditional Hawaiian structures (hale) common to housing complexes. Other non-traditional structures designed to camouflage operational requirements would be constructed and could include as many as 10 small structures. Construction of the Center would include conducting classes in traditional building techniques to the extent practicable. Although traditional skills are to be relied upon where possible, modern safety practices will be employed to fully meet safety requirements and initial site preparation requirements. Building materials would include rocks, concrete pier blocks, wood, thatching, concrete, lashing, and other associated materials needed for hale construction.

Operation and Management

- Activities and multi-day programs would be managed using "leave no trace" principles. Participants would be capped at 50 people per workshop (less than 8 hours) and at 25 people per overnight event. Participants would stay for up to seven days at the site. Activities that would occur at the Center include building traditional Hawaiian structures and minor constructed units including *imu* (fire pits) for demonstration cooking, planters, and drying racks.

- No electrical power would be provided to the site. Nighttime lighting would be limited to flashlights, battery operated lanterns, camping candle lanterns, *kukui* oil lamps, and fires contained within fire pans. A small generator may be used for lighting in an emergency.

- Prepared food would be subject to inspection for compliance with all applicable health and sanitation requirements of local and state agencies. Fires for cooking would be contained in the *imu* or on a fire pan above ground.

- Bathing in anchialine pools and fishponds is prohibited within the park. Showering and bathing would not take place at the Cultural Center site; therefore, no water runoff would occur. Participants may bathe in the ocean or rinse onshore without the use of soaps and shampoos. Wastewater from food preparation and dish and utensil cleaning would be collected, contained, removed from the site, and disposed of in appropriate wastewater

systems. Any wastewater that can be recycled to meet state and county code may be used to irrigate plants within the site. Participants would provide their own water for drinking.

- Trash, leftover food, and litter would be held in animal-proof containers and at the conclusion of events would be placed in park trashcans at the Kaloko Parking Area or removed from the park by the participants.

- Sounds would be generated by participants talking during classes, singing, chanting, *hula*, beating *tapa*, and/or playing traditional instruments. Noise would be reflective of traditional Hawaiian village sounds. At night, natural sounds would prevail. Rules for the Center will specify that noise levels be kept at a low-level that is culturally appropriate to traditional Native Hawaiian ambience. Participants would not be allowed to use electronic devices with speakers, and/or other loud devices.

- Fishing activities would continue to be in accordance with Hawai‘i state law and the Superintendent’s Compendium.

- Landscaping and agricultural plantings associated with Center activities would consist of plant species that are native to the park, and are historically and culturally appropriate agricultural species.

- Participants at the Cultural Center would be required to attend an orientation to the Center including proper behaviors regarding cultural resources and archeological sites, and sensitive natural resources (sensitive species, water resources, native plants, marine resources). During the required orientation, all participants will be instructed on safety precautions and procedures for the Center and the planned activities.

- A maximum of four small-footprint compost toilet facilities with two stalls each would be constructed and maintained on the site. The toilet facilities would be designed to blend into the traditional village atmosphere and would be hidden within the disturbed area to the extent possible.

The NPS has selected Alternative 2 for implementation for the following reasons: 1) the location meets the objectives for participant privacy and proximity to ocean, fishponds and planters set forth in the Spirit Report and the GMP (NPS 1994); 2) the location is a previously disturbed area in need of restoration; 3) creating the Center at this location would have no adverse effects on historic or archeological features; 4) the inland location would provide the Center some protection from storm surge and climate change related sea level rise; and 5) the size of the area would allow for the construction of many different hale in a concentrated area.

OTHER ALTERNATIVES CONSIDERED

Alternative 1 -No Action Alternative

Under the No-Action Alternative, current management, operations, and conditions would continue. This Alternative is essentially the management structure that has been in place since the GMP was approved in 1994. Under the No-Action Alternative, ongoing cultural

demonstrations and interpretive programs would continue to be presented at areas throughout the park. Ongoing programs offered to the public include cultural demonstrations at the Visitor Contact Station, the Kaloko Fishpond Picnic Area, the Kaloko Demonstration *Halau* and the ‘Ai’ōpio Fish Trap area. Programs and workshops offered by park rangers and cultural practitioners include, but are not limited to, *hula,* ukulele, *ipu* crafts, lashing, geology tours, trail hikes, and tours of the Kaloko Fishpond wall. Program duration varies from less than an hour to six hours. There would be no multi-day programs.

Alternative 1 was rejected because it does not meet the goal of establishing a cultural education complex as called for in the 1974 Spirit Report and the 1994 GMP.

Alternative 3: Cultural Center at Kaloko Parking Area
Under Alternative 3, a Cultural Center would be constructed and operated at the Kaloko Parking Area. The Kaloko Parking Area was identified as the location for the Cultural Center in the park GMP (Figure 2; NPS 1994). The Center would be managed and operated by the National Park Service and *Makani Hou o Kaloko-Honokōhau* through partnership agreements. The Kaloko Parking Area is located adjacent to Kaloko Fishpond and Kaloko Beach and is approximately 0.2 ac in size. Under Alternative 3, the Kaloko Road and Parking Area would be closed to public vehicles and the road would be used by hikers and for NPS and emergency service purposes including servicing the toilet facilities. The Kaloko picnic area would be removed and the public would access the area by foot from the trails or unimproved road. Access to the Center would be by foot on the coastal trail or Mamalahoa Trail from the Visitor Contact Station (approximately one mile). The closest public parking area would be at the Visitor Contact Station, approximately one mile away. Constitution, operation and management for Alternative 3 would be similar to Alternative 2.

Alternative 3 was rejected because it would significantly limit public use of the Kaloko area and due to its close proximity to Kaloko Fishpond, has the potential to affect endangered waterbirds and their habitat.

OTHER OPTIONS DISMISSED FROM ANALYSIS
Since the establishment of the park, the NPS in collaboration with the park’s advisory commission, Na Hoapili o Kaloko-Honokōhau, considered the following locations and operation concepts in addition to the alternatives fully analyzed in the EA document. For the reasons stated, these preliminary alternatives were dismissed from detailed consideration in the EA:

• Establish a Cultural Center at the area at the junction of Huehue Ranch Road and the Coastal Trail. This alternative was dismissed due to its location in a heavily used public area. Since the approval of the GMP, this area has increased visitation by park visitors, fisherpeople, and surfers, which would not meet the objective to provide a site where cultural activities will be away from major public use. This location also sits directly on the Ala Kahakai National Historic Trail, established in 2000. Closing off public access to the area is not possible given the Congressional designation as a National Historic Trail.

• Establish a Cultural Center on a parcel of land owned by DLNR near the Honokōhau Harbor (approximately 7 ac). This land is within the park’s boundary and is managed by the NPS

through a DLNR permit. However, because the land is not owned by the NPS, this location is not feasible as a permanent location for the Cultural Center.

• Partner with the Department of Hawaiian Homelands (DHHL), to locate a Cultural Center on DHHL land. Because DHHL land is not owned by the federal government and is not within the park, this location is unfeasible as a permanent location for the Cultural Center.

• Establish a Cultural Center at ‘Ai-ōpio. The ‘Ai-ōpio area is heavily used by the public, and therefore does not meet the objective of providing participants’ privacy.

• Establish the Cultural Center at an area behind the Kaloko Fishpond. A 2005 survey of the area (Tomonari-Tuggle and Tuggle 2006b) discovered many archeological sites in the area, which would be disturbed by construction and operation of the Cultural Center. In addition, the luxury residential development on the north boundary of the park would compromise the privacy of the Center participants. Therefore, this location does not meet the parameter of providing participants privacy away from public use.

Environmentally Preferred Alternative

The “environmentally preferred” alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that “the environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA Section 101. The environmentally preferred alternative would:

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

2. ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

3. attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;

4. preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;

5. achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life’s amenities; and

6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.”

In essence, the environmentally preferred alternative would be that course of action that “causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources” (CEQ, 1978).

Alternative 2, the NPS Preferred Action, is the environmentally preferred alternative for Kaloko-Honokōhau NHP because it best meets goals 1, 2, 3, and 4 described above and provides a beneficial use of a previously disturbed area. Alternative 2 also meets goal 5 by achieving a balance between population and resource use in that it provides a private setting for cultural practitioners away from public use. Alternative 1 (No Action) is not the environmentally preferred alternative because it does the least to support goal 4. Alternative 3 meets goals 1 and 4. However, due to its close proximity to Kaloko Fishpond, Alternative 3 has the potential to affect endangered waterbird habitat and significantly limits public use of the Kaloko area.

WHY THE SELECTED ALTERNATIVE WILL HAVE NO SIGNIFICANT EFFECT ON THE QUALITY OF THE HUMAN ENVIRONMENT

As defined in 40 CFR 1508.27, significance is determined by examining the following criteria:

Degree to Which the Action may Affect Public Health or Safety

During the required orientation, all participants will be instructed on safety precautions and procedures for the Center and the planned activities. There were no negative effects on public safety identified during preparation of the Environmental Assessment or agency consultation.

Unique Characteristics of the Geographic Area such as Proximity to Historic or Cultural Resources, Park Lands, Prime Farmlands, Wetlands, Wild and Scenic Rivers, or Ecologically Critical Areas

Unique characteristics of the areas potentially affected by Alternative 2 include special status species, visitor experience and safety, and cultural resources. Mitigating measures that would reduce impacts on the unique characteristics of the park are highlighted in the accompanying Mitigation Matrix.

Degree to Which Effects on Quality of the Human Environment would be Likely to be Highly Controversial.

There were no highly controversial effects identified during preparation of the Environmental Assessment, during the public review period, or from the Section 7 of NEPA and Section 106 of the National Historic Preservation Act consultation.

Degree to Which the Possible Effects on the Human Environment are Highly Uncertain or Involve Unique or Unknown Risks.

There are no highly uncertain effects, nor any unique or unknown risks.

Degree to Which the Action May Establish a Precedent for Future Actions with Significant Effects or Represents a Decision in Principle about a Future Consideration.

The selected action is consistent with the park's 1994 General Management Plan and Resource Management Goals and Objectives. Nothing described in the selected alternative precludes or

constrains future actions, nor does it commit the NPS to other impacts with significant impacts. It does not set a precedent for future actions with significant impacts or represent a decision in principle about a future consideration.

Whether the Action is Related to Other Actions with Individually Insignificant but Cumulatively Significant Impacts

Implementing the selected alternative will have no significant, cumulative impact.

Degree to Which an Action may Adversely Affect Districts, Sites, Highways, Structures, or Objects Listed in or Eligible for listing in the National Register of Historic Places or May Cause Loss or Destruction of Significant Scientific, Cultural, or Historical Resources.

Implementation of Alternative 2 should have no adverse effect on districts, sites, highways, structures, or objects listed on the National Register of Historic Places and should not cause loss or destruction of significant scientific, cultural, or historical resources.

Degree to Which the Action May Adversely Affect an Endangered or Threatened Species or Its Habitat that has been Determined to be Critical Under the Endangered Species Act of 1973.

The selected action would have no apparent adverse effect on endangered or threatened species.

Whether the Action Threatens a Violation of Federal, State, or Local Law or Requirements Imposed for the Protection of the Environment.

No such violations will occur.

PUBLIC INVOLVEMENT & AGENCY CONSULTATION

The NPS conducted both internal scoping with appropriate NPS staff and external scoping with the public, and interested and affected groups and agencies.

Internal scoping was conducted with an interdisciplinary team from Kaloko-Honokōhau NHP beginning in January 2007. Prior to the January 2007 interdisciplinary team meeting, data needed to identify potential impacts to resources had been obtained during site visits to the proposed project area by interdisciplinary team members and other technical experts. Additional internal scoping meetings were held in 2009 to discuss the purpose and need for the project; various alternatives; potential environmental impacts; past, present, and reasonably foreseeable projects that may have cumulative effects; and to develop mitigation measures. The team developed five alternatives, three of which are analyzed in the EA. Seven additional alternatives were considered but dismissed. The team also reviewed impact topics to be analyzed and determined which topics needed no further consideration.

As part of the external scoping process, information regarding the Cultural Center planning process was collected from Na Hoapili o Kaloko-Honokōhau Advisory Council meeting minutes (1997-2006), the Spirit Report and GMP (NPS 1994). Additional community meetings were held with interested parties beginning in March 2008, culminating in the formation of the group

Makani Hou o Kaloko-Honokōhau whose mission is to partner with the NPS for the creation and management of the Cultural Center.

External scoping was initiated with the distribution of a scoping letter to inform the public of the proposed Cultural Center, and to generate input relevant to the preparation of this EA. The scoping letter, dated January 7, 2010, was mailed to 103 interested parties including local, state, and federal agencies; special interest groups; academic institutions; businesses; and individuals (62). In addition, the scoping letter was mailed to the park's descendants. Scoping information was also posted on the park's website.

Two external scoping meetings were held, in open-house format: January 20, 2010, at Pu‘uhonua o Honaunau National Historical Park and January 23, 2010 at Kaloko-Honokōhau. In addition to the January 7, 2010, scoping letters, the scoping sessions were publicized via flyers posted at both parks, announcements in North Hawai‘i News, Hawai‘i Tribune Herald, West Hawai‘i Today, and Big Island Weekly, and a submission of a community announcement to the radio station KAPA

During the meetings, informational displays were presented including history of the Cultural Center concept, an overview of Makani Hou o Kaloko-Honokōhau, and detailed descriptions/depictions of the Alternatives. Sixteen members of the public attended the two sessions. Comments were submitted via "sticky notes" directly adhered to displays, note cards, personal communication with park staff and on "mana‘o forms" (a questionnaire created to collect comments regarding the Center and alternative preferences). Twenty-five comments were received during the meetings. Of those, five were specific to the alternatives; all of which supported Alternative 2 (the park preferred alternative). The remainder of the comments were: 1) general comments, 2) questions concerning how the Center will operate including parking issues, and 3) suggestions for the Center's curriculum. No comments were received that were unsupportive of the project, and no additional alternatives were suggested.

During the 30-day scoping period, two responses were received by mail: one declining any further comment and one in favor of the project and requesting more information.

On December 1, 2011, the NPS requested the U.S Fish and Wildlife Service (USFWS) provide a species list and other pertinent information regarding the proposed action of constructing and operating a Cultural Center in the park. On December 20, 2011, the USFWS sent the NPS a species list. On January 14, 2013, the NPS requested USFWS concurrence with the NPS determination that construction and operation of a Cultural Center may affect, but is not likely to adversely affect, federally listed species in the park; and on February 15, 2013, the USFWS sent a letter of concurrence with the park's determination.

On March 31, 2011, the NPS submitted a consultation letter under Section 106 of the National Historic Preservation Act (NHPA) to the Hawaii State Historic Preservation Division (SHPD) seeking review and concurrence of proposed area of potential effects (APE), for the construction and operation of the Kaloko-Honokōhau Cultural Center within Kaloko-Honokōhau NHP. Additionally, the NPS requested review and comments on the undertaking and the park's determination of no adverse effects to historic properties. The NPS did not receive comments

from SHPD at this time. On February 14, 2013, the NPS sent another letter to the SHPD stating the NPS expanded the proposed APE to include all lands within the boundary of Kaloko-Honokōhau NHP. The boundary of the park is inclusive of the Honokōhau Settlement National Historic Landmark. The NPS also stated the alternatives evaluated in the EA had been modified (from descriptions considered during the scoping phase). As before, the NPS requested review and comments on the undertaking and the determination of no adverse effects to historic properties. The NPS again did not receive comments from SHPD.

The EA for the Cultural Center at Kaloko-Honokōhau National Historical Park was open for public review and comment from January 25, 2013, to March 18, 2013 and EA was posted on the park's website. An announcement appeared in the local newspaper, West Hawaii Today, on January 30, 2013, informing the public of the EA's availability for public comment. The NPS received a total of four responses. All of the responses were in support of the Cultural Center and the park's preferred alternative, locating the Cultural Center at a previously disturbed location south of the Kaloko Fishpond.

One respondent recommended the use of more Hawaiian language to "flavor" the EA. Where it seemed appropriate, Hawaiian words were used in the EA and English words were subordinated in parenthetic clauses. To the extent it can, the NPS will strive to use more Hawaiian language in future planning documents for this and other projects.

It was recommended that UTVs necessary to transport visitors to the site should park a respectful distance from the *kauhale* (homestead). The NPS, in consultation with representatives of *Makani Hou o Kaloko-Honokōhau* and other native Hawaiians and community members, will work to balance the needs of participants with disabilities (and compliance with any applicable law) with appropriate respect for the *kauhale* in deciding where UTVs may be parked.

A request was received asking the National Park Service to be more flexible regarding the construction and operation of the Cultural Center. Within applicable laws, regulations and policies, the NPS will strive to work closely with partners when making construction and operational decisions for the Cultural Center, so that Center participants will be able to better understand and appreciate the Hawaiian way of life as it was lived by ancient Hawaiians at Kaloko-Honokōhau while ensuring that participants are safe and the construction and operation of the Cultural Center has the least amount of adverse impact on the surrounding resources.

A comment was received asking the National Park Service to refer to the Cultural Center as the Cultural Live-In Center, as it is described in the 1974, Honokōhau Study Advisory Commission's report (Spirit of Kaloko Honokōhau). The report called for a Live-In Education and Cultural Center. The term "Cultural Center" is a broad term that includes the live-in component of the Cultural Center. The EA clearly states there will be overnight events and participants would be allowed to stay for up to seven days at the site; this guiding principle will continue to be communicated as project implementation gets underway.

CONCLUSION

Based on information contained in the Environmental Assessment as summarized above, the minimal nature of public response during the scoping and public review periods, and the capability of the mitigation measures to avoid or reduce potential impacts, it is the determination

of the NPS that constructing and operating a Cultural Center at Kaloko-Honokōhau NHP is not a major federal action that will significantly affect the human environment. Therefore, in compliance with the National Environmental Policy Act regulations, an Environmental Impact Statement is not required, and undertaking the construction and operation of a Cultural Center at Kaloko-Honokōhau NHP will be implemented as soon as practical.

Recommended:

5/7/13

Rhonda Loh, Acting Superintendent
Kaloko-Honokōhau National Historical Park

Date

Approved:

5/15/2013

Christine S. Lehnertz, Regional Director
National Park Service, Pacific West Region

Date

ATTACHMENT A: DETERMINATION OF NON-IMPAIRMENT

NPS *Management Policies 2006* (§1.4) requires analysis of potential effects to determine whether or not proposed actions would impair a park's resources and values. The fundamental purpose of the national park system, established by the *Organic Act* and reaffirmed by the *General Authorities Act*, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the NPS the management discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of the park. That discretion is limited by the statutory requirement that the NPS must leave resources and values unimpaired unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values (NPS *Management Policies 2006*). Whether an impact meets this definition depends on the particular resources that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

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

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

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated. Impairment may result from visitor activities; NPS administrative activities; or activities undertaken by concessioners, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park. The description of the parks' purpose and significance is found below and is subject to the no-impairment standard.

Description of Park Purpose and Significance

Kaloko-Honokōhau National Historical Park (Kaloko-Honokōhau NHP or the park) was authorized in 1978 by Public Law 95-625.

> *In order to provide a center for the preservation, interpretation, and perpetuation of traditional native Hawaiian activities and culture, and to demonstrate historic land use patterns as well as to provide a needed resource for the education, enjoyment, and*

> *appreciation of such traditional native Hawaiian activities and culture by local residents and visitors, there is established the Kaloko-Honokōhau National Historical Park….*

The legislation further stated that "The Secretary shall administer the park… and generally in accordance with the guidelines provided in the study report entitled "Kaloko-Honokōhau" prepared by the Honokōhau Study Advisory Commission and the National Park Service, May 1974, GPO 690-514."

The Kaloko-Honokōhau report states:

> *An educational program would be established within the park to teach the values and traditions of the Hawaiian culture. An important segment of this educational program would involve a facility designed primarily for native Hawaiians and removed from any major public use area, where the dignity and integrity of the culture would be maintained. It would be an intimate personal experience extending over a period of one day or more, rather than being part of an exhibit open to the regular visitor.*
>
> *Classes would be conducted outdoors or in a* halau *(open shed). The* halau *would be necessary to provide work space for canoe-building, hula instruction, and other activities which require work space under a protective shelter.*
>
> *Instruction would be provided in basket weaving,* lau hala *plaiting, wood carving, feather work, musical instruments, nut crafts, and the making of fishing materials such as nets, hooks, ropes, lines, and sinkers.*

Kaloko-Honokōhau National Historical Park's General Management Plan (GMP) (NPS 1994) states:

> *Kaloko-Honokōhau National Historical Park was established to set aside a place to preserve, interpret, and perpetuate the native Hawaiian culture. The place, Kaloko-Kaloko-Honokōhau, is particularly appropriate for that purpose, having once been a thriving Hawaiian settlement. Within the park are numerous and significant remnants of that settlement. For many, particularly Hawaiians, Kaloko-Honokōhau is also a spiritual place, a place for renewal. The park is to be a place where people will be able to engage in ancient Hawaiian activities and recreate traditional Hawaiian crafts. This renewal and recreating should be carried out in a setting that evokes an image of traditional Hawai'i.*
>
> *...the proposed action would make major portions of the park available to native Hawaiians and others who wish to pursue, in depth, activities associated with traditional Hawaiian culture. The proposed action also calls for the development of a live-in facility, in the traditional Hawaiian style, where a limited number of people can come to participate in and to recreate the old Hawaiian ways.*

Impairment Determinations for the Selected Alternative

Impairment determinations are not necessary for visitor experience, socioeconomics, public health and safety, environmental justice, land use, and park operations, etc., because impairment findings relate back to park resources and values. These impact topics are not generally considered to be park resources or values according to the *Organic Act*, and cannot be impaired the same way that an action can impair park resources and values. After dismissing the above topics, the topics evaluated in the EA remaining to be evaluated for impairment include geology and soils, vegetation, water resources and wetlands, cultural resources, wildlife, and special status species.

Geology and Soils

The geology of Kaloko-Honokōhau National Historical Park comprises prehistoric lava flows from Hualalai Volcano. These prehistoric flows range in age from 1,000 to 10,000 years old. The lava is mostly *pāhoehoe* (smooth basaltic lava), with several large areas of *ʻaʻā* (rough, broken basaltic lava), and is characterized as alkaline olivine basalt. These flows are highly permeable and contain lava tubes.

The park area is classified by the USDA Natural Resources Conservation Service**,** as Soil Map Unit rPYD- Punaluu extremely rocky peat, with 6 to 20 percent slopes. This map unit covers about 70 ac, approximately 11.6% of the park. The soils in this area are organic soils (not mineral) and have a unique behavior to them. The Punaluu soil is classified as a Euic, isohyperthermic, micro Lithic Ustifolists. The soils are also very shallow (0 to 10 in to basalt bedrock) (Pete Biggam, NPS Geological Resources Division, pers. comm. 2010). This well-drained organic soil overlies *pahoehoe* lava bedrock. It occurs on gently sloping to moderately steep uplands. Rocky outcrops occupy about 30% of the surface area. The soil texture is peat, with organic matter content about 65%. This soil is moderately acid. The available water holding capacity is very low. Although this organic soil is rapidly permeable, the underlying *pahoehoe* lava is very slowly permeable, except where water moves rapidly through cracks. Runoff is slow, and the erosion hazard by water and wind is slight.

The Kaloko-Honokōhau shoreline is predominantly rough lava and rocky in appearance, owing to the geologic recency of the volcanic activity. There is a coral sand beach fronting Honokōhau Bay, the only large natural sand beach in the vicinity. The topography of the park is flat, rising in elevation from sea level to approximately 90 feet (ft) along the *mauka* portion. Although the general slope is relatively smooth, the actual surface is very rough as a result of past lava flows.

Impacts from the construction and operation of the Cultural Center to topography and geology would be beneficial. The original geologic features of this location were significantly altered in the 1970s when the area was bulldozed by the Huʻehuʻe Ranch to create a basin in the ʻaʻā flow to deposit dredge spoils from Kaloko Fishpond. The substrate of this area is composed of the non-native deposit of the dredge spoils (sandy silt, shell, etc.) from the pond, pumped into the area. During construction of the hale for the Center, concrete piers would be installed in this deposit but not deep enough to disturb the original substrate or bedrock. If digging were required for any footing, an archeologist would conduct test excavations prior to work and would monitor all ground disturbances. Any removed deposits would remain on-site within the project area.

Given that the geologic features in this area were previously disturbed, no impacts to the underlying native soil or other geologic resources are anticipated.

Site preparation and hale construction may necessitate use of rock materials that bulldozers pushed into a berm around the site in the 1970s. The berm is approximately 10 to 13 ft higher than surrounding native topography, creating an artificial topographical feature not representative of the original ʻaʻā lava flow. Removal of this artificial berm would result in a beneficial impact to the current (1970s era) topography by somewhat restoring the original landscape.

Because the project will occur on previously disturbed areas and because of the beneficial impacts, the selected alternative will not result in impairment to geology and soils.

Vegetation

The vascular plants of Kaloko-Honokōhau NHP have been well documented. In total, 130 plant species have been recorded through surveys and incidental encounters within Kaloko-Honokōhau NHP since 1987, though not all species are currently present. Canfield (1990) identified 69 flowering plants species, 39 (59%) of which were alien (introduced since 1778), and five (7%) were Polynesian introductions. Pratt and Abbott (1996) found 116 vascular plant species, 80 (69%) of which were alien, and four (3%) were Polynesian introductions. Pratt and Abbot (1996) added 56 species (46 alien, nine indigenous, and one endemic) to the Canfield (1990) survey. Of the alien species, 11 are especially invasive and likely to have a "serious negative impact on park vegetation" (Pratt and Abbott 1996:10). Of these, fountain grass (*Pennisetum setaceum*) and ivy gourd (*Coccinia grandis*) are on the state Noxious Weeds list (HDOA 2003).

Vegetation within the park has been significantly altered since the arrival of humans and is now dominated by alien species including the non-native fountain grass (*Pennisetum setaceum*), *koa haole* or *ekoa* (*Leucaena leucocephala*) and *klu* (*Acacia farnesiana*) shrubs, and *kiawe* (*Prosopis pallida*) trees. Only the coastal low strand and strand scrub communities are not dominated by alien species (Canfield 1990, Pratt and Abbot 1996).

Many of the plants found within the park are also cultural resources and are significant as food sources, medicine, tools, and as materials for thatching, weaving, cordage, and traditional Hawaiian crafts. The park's GMP (NPS 1994) and vegetation management plan (Pratt 1998) guides management actions for alien vegetation control, fuel reduction, and native plant restoration. The NPS has restored 17.2 acres (ac) of coastal dryland shrub forest in Kaloko-Honōkohau NHP through clearing invasive species followed by outplanting native species and encouraging the native seed bank. Additionally, approximately 18.5 ac of lands surrounding archeological sites have been cleared and are maintained.

Aquatic plants and algae in the marine waters and brackish water fishponds and anchialine pools in the park include varieties of seaweed (*limu*) and a native seagrass (*Ruppia maritima).* Many of these seaweeds are edible and were a staple in the Native Hawaiian diet (Abbott 1992). Edible *limu* in the park include *limu kohu* (*Asparagopsis taxiformis*), *limu ʻeleʻele* (*Ulva sp.*) and *limu palahalaha* (*Ulva fasciata*). An inventory of marine algae for Kaloko-Honokōhau is in preparation by the University of Hawaii. One non-native marine alga, *Acanthophora spicifera,*

has invaded Kaloko Fishpond and the NPS conducted a removal and plant control study in 2007 with mixed results (Weijerman et al. 2008). This species is still present in Kaloko Fishpond and has been documented in Honokōhau Harbor (Smith et al. 2002) and as a minor component of intertidal turf algae (McDermid et al. 2007), but has been not been found outside of the fishpond in NPS surveys for the past five years.

The majority of the vegetation at the selected alternative location for the Cultural Center, and the foot trail leading to, it is comprised of alien species: fountain grass, pickleweed (*Batis maritima*), sourbush (*Pluchea carolinensis*), kiawe (*P. pallida*), and klu (*Acacia farnesiana*). Few native species exist at the selected alternative location for the Cultural Center with the exception of several individual naupaka (*Scaevola sericea*) and pa‘u o hi‘iaka (*Jacquemontia ovalifolia*) at the site, and milo (*Thespesia. populnea*) along the foot trail. Construction and operation of the Cultural Center would include removal of invasive species in the project area and restoration of appropriate endemic, indigenous, and Polynesian-introduced species resulting in long-term, local beneficial impacts to native plant communities. Existing native vegetation at the selected alternative site may need to be pruned in some cases to allow for construction activities, however, pruning would not adversely affect native vegetation.

Because non-native vegetation will be removed and native plants will be established, the selected alternative would not result in impairment to vegetation in the park.

Water Resources and Wetlands

Kaloko-Honokōhau NHP contains a variety of water resources fed by groundwater from the Keahou Aquifer. The coastal groundwater system within the park is composed of brackish water overlying saltwater in a highly permeable volcanic-rock aquifer (Oki et al. 1999). The brackish water is formed by seaward-flowing fresh groundwater mixing with underlying saltwater from the ocean. Brackish water flowing through the park ultimately discharges to the coastal Hawaiian fishponds and anchialine pools in the park, and to the ocean, establishing estuarine-like conditions in the coastal nearshore waters (Juvik and Juvik 1998). Groundwater occurs a few feet above sea level within the park, and is affected strongly by ocean tides and ocean level (Oki et al. 1999). Groundwater recharge is mainly from places of higher rainfall on the slopes of Hualalai (Engott 2011). The park is a located at the coastal foot of the watershed. No surface water streams or intermittent streams exist within the park or in the area immediately surrounding the park. Park waters are in relatively good condition (Hoover and Gold 2005). However, they are at risk of degradation from nonpoint source pollution (e.g., Oki et al. 1999, Parsons et al. 2008, Knee et al. 2008, Grossman et al. 2010) and groundwater development (e.g., Oki et al. 1999, Grossman et al. 2010) associated with urban development and human activities upslope of and adjacent to the park. Within the park, pollutants from paved-parking lot runoff at the Visitor Contact station are captured in a drainage filtration device. Other parking areas within (Kaloko Fishpond) or adjacent to (Honokōhau Harbor) the park are unpaved and oils and other fluids may drip from vehicles and adhere to the gravel.

The park’s unique water resources include two large ancient Hawaiian fishponds and their associated wetlands: ‘Aimakapā Fishpond (approximately 30.5 ac), and Kaloko Fishpond (approximately 17.4 ac). ‘Aimakapā Fishpond is brackish, with no direct connection to the sea. It is fed by groundwater mixing with underlying saltwater and its salinity averages 12 parts per

thousand (ppt). ʻAimakapā contains the highest proportion of groundwater, making it the most vulnerable to changes in groundwater quantity and quality (Hoover and Gold 2005). Kaloko Fishpond is also supplied by groundwater but has an open connection to the sea through two *mākāhā* (sluice gate) in the *kuapā* (seawall) and has higher salinities, around 22 ppt. (NPS unpublished data). ʻAiʻōpio Fishtrap is a small, 1.7-ac marine fishtrap (salinity 35 ppt) at the southern end of Honokōhau Bay whose stone walls are constructed from the shoreline across a small bay forming an artificial enclosure around the naturally curving shoreline. The fishtrap wall has a large opening to the sea and its walls are submerged at high tide. ʻAiʻōpio is the park's most utilized area by visitors and cultural practitioners.

The park's wetlands comprise about 3% of the park (not including submerged lands) and the major wetlands areas are associated with Kaloko and ʻAimakapā Fishponds and a small area inland of ʻAiʻōpio Fishtrap; smaller wetlands areas are associated with a few anchialine pools (Hoover and Gold 2005, Kikuchi and Belshe 1971, Canfield 1990, Pratt 1998, Cogan et al. 2011). Using the Cowardin classification system (Cowardin et al. 1979), the park's wetlands are considered "Estuarine." The Estuarine System consists of "deepwater tidal habitats and adjacent tidal wetlands that are usually semi-enclosed by land but have open, partly obstructed, or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land" (Cowardin et al. 1979). Alien invasive vegetation dominates these wetlands; however, native species are mixed with aliens at ʻAimakapā Fishpond.

In addition to the two fishponds, more than 180 anchialine pools have been identified within the park. Anchialine pools are small brackish coastal pools that lack a surface connection to the ocean but are hydrologically connected to groundwater and the ocean through a permeable aquifer (Holthuis 1973). The park encompasses approximately 25% of the state's estimated (Mitchell et al. 2005) anchialine pool resources. These anchialine pools are significant biological and cultural resources within the park, and are home to unique, endemic flora and fauna including three invertebrates, which are candidates for listing as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS).

The waters of anchialine pools have a strong cultural significance. The only source of potable water along this area of the West Hawaiʻi shoreline, the pools were a significant factor in enabling Native Hawaiian settlement of the area, and continued to be important through historical times for a variety of uses including bathing, washing, and cooking (e.g., *see* Honokōhau Study Advisory Commission 1974). Many of the park pools were modified for specific use by ancient Hawaiians with stone walls, platforms and other features.

The 600 ac of marine waters within the legislative boundary of Kaloko-Honokōhau NHP are under the jurisdiction of the United States (36 CFR 1.2(3)), and the submerged lands within in the legislated boundary are owned by the State of Hawaiʻi and are under the jurisdiction of the State Department of Land and Natural Resources (DLNR). The park waters are classified by the state as Class AA, which are "*waters to remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions.*" (HAR Section11-54-3(c)(1)). Hawaiʻi Administrative Rules also require that "*where high quality waters constitute an outstanding national resource, such as waters of national and state parks and wildlife refuges and waters of exceptional recreational or*

ecological significance, that water quality shall be maintained and protected." (HAR Section11-54-1.1(c)).

No wetlands, or water resources exist at the selected alternative location for the Cultural Center; however, groundwater at this elevation is close to the surface. Physical construction of the Center would not affect park water quality and "zero discharge" composting toilets would be installed to keep human waste from entering natural water systems. Natural water resources within the park would not be pumped for use. During operation of the Center, participating groups would be required to carry in drinking water and non-potable water would be pumped to a holding tank for irrigation via waterline from the Kaloko Road. Showering and bathing would not be permitted at the Cultural Center site; therefore, no on-site water runoff would occur. Participants may bathe in the ocean without the use of soaps, shampoos, and personal hygiene products. Waste wash-water from food preparation and dish and utensil cleaning would be collected, contained, removed from the site, and disposed of in appropriate wastewater systems. Short-term automotive fluid drips would continue to occur from ongoing public use of the Kaloko Parking Area.

Based on the above mentioned avoidance and minimization measures, the selected alternative would not result in impairment to water resources and wetlands in the park.

Cultural Resources

Within the boundaries of Kaloko-Honokōhau National Historical Park, evidence of the ancient Hawaiian culture that once thrived here is abundant. Archeological sites and ethnographic resources within the park represent a wide range of the different aspects of that culture including societal organization and leadership, agriculture, aquaculture, religion, recreation, housing, and burial practices. These sites represent not only pre-contact Hawaiian culture, but also the changes that took place in that culture over time during post-contact.

To date, 461 archeological sites have been recorded in the park (18% of the park's total land and water area has been intensively inventoried). Undoubtedly, other terrestrial and submerged sites remain unrecorded. These sites substantiate significant prehistoric and historic Hawaiian occupation of this area. The area was used by *maka'āinana* (common people), and *ali'i* (chiefs, nobles) until the late nineteenth century (Tomonari-Tuggle and Tuggle 2006a, 2006b).

Some of the most significant and unique sites in the park are the Kaloko and 'Aimakapā Fishponds, and the 'Ai'ōpio Fishtrap. The Kaloko Fishpond is a *loko kuap*ā-type pond, a natural embayment separated from the sea by a massive, 800-ft long constructed seawall (*kuapā*). The *kuapā* is an excellent example of the engineering skill of the ancient Hawaiians. Approximately 11 ac in size, Kaloko Fishpond also has secondary walls within the pond forming five discrete areas (Renger 1974). Kaloko is an area of spiritual importance and has been documented in oral histories as home to a spirit guardian of the pond (*mo'o*) and other supernatural beings. Many archeological sites surrounding the pond indicate significant human occupation and include habitation sites, burial grounds, and petroglyph fields. Kaloko Fishpond is one of only two *loko kuapā* left on the island that has not been overtaken by lava flows (Kikuchi and Belshe 1971). The Kaloko Fishpond was managed as a functioning aquaculture fishpond until the late 1950s but by 1961, it was in disrepair (Bond and Gmirkin 2003).

‘Aimakapā fishpond, a *loko pu‘uone* (large pond formed behind a barrier beach), is the largest of the park’s fishponds and comprises approximately 12 ac of water. The pond has secondary walls forming at least six compartments for separating fish. A partially buried, stone-lined channel (*mākāhā*) cut through the north end of the barrier beach once formed the sluice gate by which seawater entered the pond. Numerous archeological sites indicate intensive human activity in the area, particularly use by *ali‘i* for recreational and ceremonial purposes (NPS 1994).

The ‘Ai‘ōpio Fishtrap is a 1.7-ac pond, consisting of a stone and coral wall forming an artificial enclosure along a naturally curving shoreline. The only fishtrap on Hawai‘i Island; it had a variety of uses well into recent history. ‘Ai‘ōpio is referred to as a fishtrap, rather than fishpond, because there is no *mākāhā* or sluice gate, and the trap contains four rectangular walled enclosures that may have been used as holding pens for netted fish (Kikuchi and Belshe 1971). ‘Ai‘ōpio is a *loko kuapā*-type fishtrap, meaning the builders created a wall as an artificial means for trapping fish as opposed to using natural shoreline features or an inland pond (Apple and Kikuchi 1975).

At the south side of the ‘Ai‘ōpio Fishtrap is the *Pu‘uoina Heiau*, probably the finest example of a platform type in Kona. To the west of *Pu‘uoina Heiau* at Ala‘ula Cove (Alula Bay) is a *heiau* known as *Maka‘opio*. The striking feature of this *heiau* is two great upright stone slabs. Several other *heiau* are present in the Honokōhau and Kealakehe *ahupua‘a*.

The park also contains numerous Hawaiian burial sites. These sites are important to Native Hawaiians, and most especially to descendants of the area. In Hawaiian culture, burial sites are considered especially sacred grounds with *mana* (supernatural or divine power).

Numerous other sites of significance are located throughout the park, including: *kahua hale* (house platforms); *ko‘a* (fishing shrine); *ahu* (stone mounds); a concentration of more than 50 stone enclosures (believed to be agricultural planters); lava tube shelters; canoe landings and shelters; salt pans; and important concentrations of petroglyphs. These concentrations include *papamu* (grids of pecked holes used for the Hawaiian game *konane* and most likely other uses (Ed Stasack, pers. comm. 2010) and *poho piko* (pecked cups in the lava used for ceremonial placement of a baby’s umbilical cords) (Stasack and Stasack 2007, Durst and Glidden 1999, Emory et al. 1959); and battered processing areas. One of the petroglyph sites is the only known commemoration of the *Makahiki*, an annual event beginning with the *Lono* ceremony and ending with the *Ku* ceremony (E. Stasack pers. comm. 2010).

More than 180 anchialine (brackish) pools have been identified in the park, many of which were modified with rock walls, platforms and other features for access. Specific uses of pools included bathing, washing, and cooking (e.g., *see* Honokōhau Study Advisory Commission 1974). The coastal pools were a shoreline source of potable water in this area of West Hawai‘i, and enabled human settlement of the area. The pools continued to be important through historical times for a variety of uses.

The construction footprint for the selected alternative was surveyed, including the proposed foot trail and proposed waterline corridors to the site (Johnson-Campbell 2011). The survey revealed areas of natural, undisturbed ground within the larger bulldozed area of the selected alternative,

the re-identification of a known historic trail segment, and identification of one previously unrecorded archeological feature within the selected alternative. The existing trail segment is a small portion of a mauka-makai (mountain-to-sea) trail that passed through the area. The majority of the historic trail within the selected alternative area was destroyed by bulldozing in the 1970s prior to park establishment. The proposed foot trail leading from the Ala Kahakai Trail would route participants from the coastal trail to the previously bulldozed corridor to the Center. No historic properties were found within the proposed foot trail or the bulldozed corridors. However, a previously recorded archeological site and several archeological features were found adjacent to the corridor. In total, ten previously undocumented archeological features were identified nearby, outside of the footprint of the proposed Cultural Center.

The selected location was bulldozed prior to park establishment and sediments dredged from Kaloko Fishpond were pumped to the area and deposited over the disturbed ground surface. Therefore, little natural ground surface remains and any historic properties previously present in the area were destroyed or buried by dredge spoils. There are no known archeological deposits in the selected location and the bulldozing of the area make it unlikely that buried deposits exist. Constructing the Center at this site would involve minor ground disturbance. It may be necessary to move dredge materials or areas of previously bulldozed rock for placement of structure footings, and the possibility exists that buried deposits may be discovered when conducting ground-disturbing work. Archeological test-excavations would be conducted to determine presence of archeological sites or features in the substrate below the dredge spoils.

During construction and operation of the Center at the selected location, the historic trail segment and rock cairn identified within the proposed project area footprint would be flagged and avoided. The placement of an aboveground waterline from the Kaloko Parking Area to the selected location would skirt a previously identified early to mid-20th century walled habitation complex and continue south along the previously bulldozed dredge-pipeline corridor and the above-mentioned bulldozed trail (proposed foot trail). Because the waterline would be placed on the surface along the bulldozed dredge-line trail, the installation and maintenance of this waterline would not cause physical impacts to archeological features. However, the waterline would be somewhat visible from outside the site where it would extend along a portion of the site boundary wall. The waterline could have a direct, long-term negligible visual impact on a small portion of the site at the boundary wall. No additional adverse impacts to cultural resources will occur. Several previously unrecorded features were found within 15 ft of the foot trail corridor, but would not be affected by regular use of the trail. No impacts are expected to occur to these features because the access path would be used for foot access only, and the Cultural Center participants would be required to stay on the trail.

Based on the above mentioned avoidance and minimization measures, the selected alternative would not result in impairment to cultural resources in the park.

<u>Wildlife</u>

The only remaining native, resident birds in Kaloko-Honokōhau are the waterbirds, the endemic *ae‘o* (Hawaiian stilt, *H. mexicanus knudseni*) and the *‘alae ke‘oke‘o* (Hawaiian coot; *F. alai*), and the indigenous *‘auku‘u* (black-crowned night heron; *N. nycticorax hoactli*) (Morin 1996). These species along with protected migratory waterbirds, Hawaiian hoary bat, marine turtles,

candidate anchialine-pool invertebrates, and marine mammals are covered in the *Special Status Species* section.

The native *pueo* (Hawaiian short-eared owl; *Asio flammeus sandwichensis*) and alien barn owl (*Tyto alba*) are uncommon in the park. Common non-native terrestrial bird species at Kaloko-Honokōhau include the Japanese white-eye (*Zosterops japonicas*), house finch (*Carpodacus mexicanus*), nutmeg mannikin (*Lonchura punctulata*), common myna (*Acridotheres tristis*), yellow-billed cardinal (*Paroaria capitata*), northern cardinal (*Cardinalis cardinalis*), warbling silverbill (*Lonchura malabarica*), zebra dove (*Geopelia striata*), spotted dove (*Streptopelia chinensis*), yellow-fronted canary (*Serinus mozambicus*), saffron finch (*Sicalis flaveola*), red-masked parakeet (*Aratinga erythrogenys*) and francolins (*Francolinus pondicerianus* and *Francolinus francolinus*). Another non-native species regularly seen in the park is the cattle egret (*Bubulcus ibis)* (Morin 1998, Waddington 2002-2010).

The most noticeable terrestrial mammal in the park is the Indian mongoose (*Herpestes javanicus*), an introduction to the islands in the 1800s that has played a part in upsetting the fragile terrestrial ecosystem of Hawai‘i. In addition to the mongoose, feral cats (*Felis catus*) are in the park. Mongoose and feral cats are significant predators of native wildlife and prey on the eggs and young of waterbirds. Mice (*mus musculus*) and rats (*Rattus* spp.) are in the park, and rats may prey on waterbird eggs or chicks.

A 2007 herpetological inventory of the park identified seven species of herpetofauna from three different families. Green anole (*Anolis carolinensis*), honu (*Chelonia mydas mydas)* snake-eyed skink (*Cryptoblepharus peocilopleurus*), stump-toed gecko (*Gehyra mutilate*), house gecko (*Hemidactylus frenatus*), tree gecko (*Hemiphyllodactylus typus*), metallic skink (*Lampropholis delicate*), mourning gecko (*Lepidodactylus lugubris*), gold dust day gecko (*Phelsuma laticauda laticauda*), blind snake (*Ramphotyphlops braminus*), and other undidentified geckos, lizards and skinks were found (Bazzano 2007).

Culturally important native fish are found in both ‘Aimakapā and Kaloko Fishponds. Among others, *‘ama‘ama* (striped mullet; *Mugill cephalus*), *aholehole* (zebra-head flagtail; *Kuhlia sandvicensis*), *‘O‘opu akupa* (*Eleotris sandwicensis*) and *awa* (milkfish; *Chanos chanos*) are found in Kaloko are. Kaloko is open to the sea through two *mākāhā* (sluice gates). An assemblage of common nearshore reef fish as well as the predatory barracuda (*kaku*; *Sphyraena barracuda*) enters the pond through these openings. ‘Aimakapā also contains *awa* and *‘ama‘ama*. The native feeble shrimp, *Palaemon debilis,* is found in both fishponds (MacKenzie and Bruland 2012). Invasive species in fishponds include mosquito fish (*Gambusia affinis*), tilapia (*Oreochromis mossambicus*) and guppies (*Poecilia reticulata*).

Native *opae‘ula*, (red shrimp; *Halocaridina rubra*), grapsid crabs, amphipods, snails (*Nerita* spp.) and undescribed invertebrate species inhabit the anchialine pools. Anchialine ecosystems are vulnerable to nonpoint source pollution and long-term reductions in groundwater flow, loss of habitat from coastal development, degradation of habitat, invasive species (alien fish, prawns, insects, and vegetation) and possibly nighttime light pollution (USGS 2005, Hoover and Gold 2005). Over collection of *‘ōpae‘ula* for the aquarium trade is an emerging issue that may be a threat to these shrimp in the future.

Kaloko-Honokōhau NHP marine waters are one of several West Hawai‘i Fisheries Management Areas designated by the State of Hawai‘i, and are part of the National System of Marine Protected Areas (75 FR 29317, May 25, 2010). The National Park's 600 ac of marine habitat support a variety of wildlife; many of these are culturally significant species. The shoreline and intertidal (between high and low tides) habitat consists of sandy beach, lava benches with tide pools, lava cliffs, and rocky shore and contains an abundance of marine invertebrates (crustaceans, cnidarians, mollusks, echinoderms) and fish (see Parrish et al. 1990 for species lists). Common species in the intertidal and shallow subtidal zones include *‘a‘ama* (crabs; *Grapus tenuicrustatus)*, *‘opihi* (limpets; *Cellana* spp.), *wana* (sea urchins; *Echinothrix* spp, *Echinometra* spp.),and *leho* (cowries, *Cypraea* spp.)

The subtidal marine habitat contains well-developed stony coral (*ko‘a*) communities (dominated by *Porites* spp., *Pocillopora* spp., and others) interspersed among areas of hardbottom habitats that have very low coral cover and low spatial complexity (Beets et al. 2010, Gibbs et al. 2007). The soft octocoral, *Sarcothelia edmonsoni,* is common in the park, particularly in areas of high submarine groundwater discharge (Grossman et al. 2008). These corals provide habitat and refuge for a diverse assemblage of reef fish, and invertebrates, many of which are culturally important fisheries species including *akule* (bigeye scad; *Selar crumenophthalmus*), *opelu* (mackerel scad, *Decapterus macarellus*) *he‘e* (octopus, *Octopus* spp.), *ula* (spiny lobsters, *Panulirus* spp.), see Parrish et al. (1990) and Beets et al. (2010) for detailed species lists. Two non-native fish species, the peacock grouper (roi, *Cephalopholus argus*) and bluestripe snapper (ta‘ape, *Lutjanus kasmira*), were introduced to the Hawaiian Islands from the South Pacific in the 1950s, and are common within the park (Randall 1996, Beets et al. 2010). Effects of fishing pressure is evident at Kaloko-Honokōhau NHP where fish abundance, biomass, and diversity were lower than at the more remote Kalaupapa NHP which has lower visitor use (Beets et al. 2010). Major threats to park marine wildlife include over harvesting, and degradation of habitat from nonpoint source pollution, marine debris, boat groundings, and oil spills.

Construction of the Center and subsequent human presence at the selected location during Center operation may cause some bird species to avoid the area. Wildlife in the selected location primarily consists of exotic species including invasive mongoose, rodents, and various alien birds. Exotic gray francolins (*Francolinus pondicerianus*) are frequently seen ground foraging near the selected alternative location. In fact, human activity and long-term presence in the area may result in localized, long-term, direct, minor negative impacts from increased populations of some pest species such as mongoose, feral cats, and rodents that are detrimental to native species. Negligible short-term adverse impacts to lizards (anole, skinks, and geckos) may result from habitat displacement during alien vegetation removal associated with Center construction activities at both Alternative locations. However, new habitat will be provided through native plant restoration. Geckos and others may also inhabit *halau* structures once they are constructed.

Construction of the Cultural Center would include removal of invasive plant species at the selected site. However, Center operations and activities would also include restoration of appropriate native and Polynesian-introduced plant species to the Center's landscape, resulting in improved habitat for terrestrial wildlife.

Center-related marine fishing and shoreline gathering activities would be subject to State of Hawai‘i fishing regulations and would focus on traditional methods of resource protection, and on education of participants to prevent overharvesting of resources. Negligible to minor negative impacts on marine wildlife species are anticipated from operation of the Cultural Center at this location. Anchialine pools remain closed to all activities including bathing, gathering, and modification; therefore, no negative impacts to anchialine pool wildlife will occur. Aimakapā Fishpond is closed to fishing and swimming; however, Kaloko Fishpond will be used as a traditional aquaculture for culturally significant fish. Negative impacts to fish populations (overharvesting) in fishponds will be prevented through traditional methods of resource management and protection, and through education of participants.

Based on the facts that essentially there is no native wildlife at the location for the selected alternative, native habitat will be restored, and traditional methods of resource management and protection will be practiced and taught, the selected alternative would not result in impairment of wildlife in the park.

Special Status Species

Three candidate species (plants and animals for which there is sufficient information to propose as endangered or threatened under the Endangered Species Act) of invertebrates recorded within the park are associated with anchialine pool habitat; these are the pinapinau (Hawaiian orangeblack damselfly, Megalagrion xanthomelas), and two caridean shrimp, ‘ōpae‘ula, (*Metabetaeus lohena*, and *Palaemonella burnsi.* Anchialine ecosystems appear to be relatively tolerant of variations in salinity, temperature, and nutrients however, tolerance probably varies from pool to pool, and they are vulnerable to nonpoint source pollution and long-term reductions in groundwater flow (Hoover and Gold 2005). Additional threats to anchialine pools species include loss of habitat from coastal development, degradation of habitat, invasive species (alien fish, prawns, insects, and vegetation) and possibly nighttime light pollution (USGS 2005, Hoover and Gold 2005). Anchialine pools will not be impaired by the project as no pools occur in the selected alternative location and no impacts to water quality will result from the construction and operation of the Cultural Center.

The USFWS (2011a) identifies ‘Aimakapā as a “core wetland” in its recovery plan for the endangered ae‘o (Hawaiian coot) and the endangered ‘alae kea (Hawaiian stilt). Kaloko Fishpond is a foraging area for the Hawaiian stilt and ‘Aimakapā is a breeding area for both the stilt and the coot (Morin 1998, Waddington 2002-2010). A UTV would be required to shuttle material to the site and UTV access to the site is far enough away from Kaloko and ‘Aimakapā fishponds to avoid disturbance to stilts and coots. A helicopter may also be used to shuttle material to the site. The helicopter would avoid flying over fishponds where ‘alae kea and ae‘o occur. The selected alternative would not result in impairment of ‘alae kea and ae‘o.

Individual *kolea* (Pacific golden plovers) have been observed at the selected alternative location, and center activities may displace or disrupt plovers with established wintering territories in the area. Construction and subsequent operation of the Center could disrupt plover activity in the area, resulting in negligible to minor, short-term to long-term, site-specific adverse impacts to individual *kolea*. The selected alternative would not result in impairment of *kolea.*

The endangered Hawaiian monk seal, *'Īlio-holo-i-ka-uaua* (*Monachus schauinslandi*) hauls-out onto beaches for resting, molting, giving birth or nursing (Antonelis et al. 2006, NMFS 2007). Although the monk seal is much less abundant in the main Hawaiian Islands compared to the Northwestern Hawaiian Islands (Antonelis et al. 2006, NMFS 2007), they do enter National Park waters and occasionally haul out on the shoreline to rest. Pupping and nursing activity by monk seals has not been recorded within the park. Information on the use of park waters and shoreline by the monk seal is through opportunistic sightings rather than systematic surveys. Thirty opportunistic sightings have been recorded in the park since 1994 (NPS unpubl. data; T. Wurth, National Marine Fisheries Service, pers. comm. 2012). The NPS coordinates with and reports monk seal sightings to the National Marine Fisheries Service (NMFS). The NMFS has issued a proposed rule-making (76 FR 32026; June 2, 2011) stating that they propose to expand the current critical habitat for monk seals to include areas in the Main Hawaiian Islands. The park's shoreline falls within the criteria essential to monk seal conservation and will be included as critical habitat under the proposed revision. The Project location is more than 500 ft from the shoreline. To avoid potential impacts to the Hawaiian monk seal, viewing of monk seals on the shoreline must be from at least 150 ft away, and limited to one-half hour. Swimming with or touching Hawaiian monk seals are prohibited. Based on the avoidance and minimization measures described above, this project will not lead to impairment of Hawaiian monk seals.

Populations of the endangered humpback whale *koholā* (*Megaptera novaeangliae*) winter in the Hawaiian Islands. Whales may arrive in Hawaiian waters as early as November and a few may leave as late as June (NMFS 1991). During the peak abundance of the Hawaiian population, December to April, *koholā* are regularly observed within park waters. The location for the selected alternative is more than 500 ft from the shoreline. Therefore, this project will not lead to impairment of humpback whales.

The green sea turtle *honu* (*Chelonia mydas*) forages on marine algae around the main Hawaiian Islands (Hirth 1997, Arthur and Balazs 2008), and are regularly observed foraging in nearshore waters at Kaloko-Honokōhau NHP (NPS unpubl. data, NMFS unpubl. data). The NPS has collaborated with the NMFS Pacific Islands Fisheries Science Center, Marine Turtle Research Program, to conduct research and monitoring on the demographics, health, and habitat use of these turtles since 2000. One hundred and ninety-six individual juvenile turtles have been tagged or identified at the park since 2000 and the recapture rate is approximately 80% (NMFS/NPS unpubl. data) suggesting that these turtles are "resident" to some extent. Although the turtles can be found throughout the park's waters, the main areas of use by the turtles for foraging, resting, and basking on the shore are Honokōhau Bay and the Ai'ōpio Fishtrap area. However, one turtle is known to enter Kaloko Fishpond occasionally to feed on algae in the pond. Although the Northwestern Hawaiian Islands, primarily French Frigate Shoals, continue to be the main breeding area for the green turtle, nesting has occurred on some beaches in the main Hawaiian Islands (Maison et al. 2010); however, no green turtle nesting or attempted nesting has been recorded in the park. The location for the selected alternative is more than 500 ft from the shoreline. Therefore, this project will not lead to impairment of green sea turtles.

The endangered hawksbill sea turtle, *honu 'ea* has been observed in park waters by NPS and recreational divers, including repeat sightings of identified individuals. Hawksbill turtles in Hawai'i are opportunistic foragers on invertebrates and potentially algae (NMFS and USFWS

1998). The Hamakua Coast of Hawai‘i Island has been identified as an important foraging ground for hawksbill sea turtles (Ellis et al. 2000). Hawksbill turtles nest in the main Hawaiian Islands, primarily on beaches along the south-facing shores coast of Hawai‘i Island (Seitz et al. 2012). Although Hawksbill sea turtles occur in the park's offshore waters, they are not known to bask on park beaches or elsewhere in Hawai‘i as do green turtles. No historic records have been found describing past nesting by hawksbill turtles in the park. The proposed action will not affect the hawksbill sea turtle because the species does not haul-out or nest in the project area.

The endangered ‘*ōpe‘ape‘a* (Hawaiian hoary bat, *L. cinereus semotus*) is the only existing native terrestrial mammal known from Hawai‘i. The bat has been documented in the park (Fraser et al. 2007, Bonaccorso and Pinzari *in litt*. 2010). A 2005 acoustic survey detected bats on only 4 of 15 survey nights between April and July in the park (Fraser et al. 2007). All bat detections were in April, with the exception of one in late May. In the park, bats were active 40-60 minutes after sunset between April and July. Documented acoustic detections of bats in the park consisted of foraging activity opportunistically in a variety of habitats: over native and non-native shrubland, roads and trails, and coastal water bodies (including ocean and brackish water pools) (Fraser et al. 2007). The presence of bats at the selected location was recorded during a single deployment of an acoustic monitor from October 2 to 7, 2009. Bats vocalizations were recorded at the on all five nights and the majority of activity was just after sunset and the data suggest that the bat(s) were transiting the selected location rather than feeding (Bonaccorso and Pinzari *in litt*. 2010). Hawaiian hoary bats roost in both exotic and native woody vegetation higher than 15 ft (4.6 m) (Frank Bonaccorso, USGS, pers. Comm. 2011; USFWS 2011b). The breeding season for the hoary bat is generally April through August. The lack of detections in the park throughout the breeding season suggests that bats may not be breeding or have limited breeding in the park. Tree removal or tree pruning may affect roosting bats, and if during the breeding season, this activity could affect breeding bats and pups. To avoid potential impacts to the Hawaiian hoary bat, removal or thinning of woody vegetation taller than 15 ft would be limited to months outside of the April 15 to August 15 breeding season. If helicopters are used to ferry materials, they will operate outside of the April 15 to August 15 hoary bat breeding-season. Based on the avoidance measure, the selected alternative will not result in the impairment of the Hawaiian hoary bat.

The endangered Blackburn's sphinx moth (*Manduca blackburni*) is known to occur near the park (USFWS 2005); however, its status within the park is unknown. The species is found in the dry to mesic habitats between the elevations of sea level and 5,000 ft (1,525 m) (USFWS 2005). Likely food sources for the adult moth are nectar from native plants including species in the genus *Ipomoea* (e.g., *koali‘awa*), *ile‘e* (*Plumbago zeylanica*), *maiapilo* (*Capparis sandwichiana*); the larvae feed upon non-native tree tobacco (*Nicotiana glauca*) and the native *Nothocestrum breviflorum* (USFWS 2005, Black 2005). Several of these plant species occur within the park; however, *Nothocestrum* sp and *N. glauca* have not been reported (Canfield 1990, Pratt and Abbot 1996, Cogen et al. 2011). Threats to the moth include habitat loss, fragmentation, and degradation from urban and agricultural development, invasion by non-native plant species, non-native parasitoids and insect predators, over-collection (trade and personal collections), and increased wildfire frequency (USFWS 2005, Black 2005). Potential nectar plants occur at the selected location. Larval host plants do not occur at either site. Because no larval host plants occur at the site for the selected alternative, the selected alternative will not result in the impairment of the Blackburn's sphinx moth.

All currently known nesting sites for the threatened ‘*a‘o, (Puffinus auricularis newelli,* Newell’s shearwater) and the endangered ‘*ua‘u* (*Pterodroma sandwichensis,* Hawaiian petrel) are at higher elevation than the park (Simons and Hodges 1998). Occurrences of these species in the park or of flying over the park are unknown and have not been recorded. On land, these seabirds are threatened by introduced small-mammal predators, disorientation fledglings by urban lighting, and collisions with urban lights, utility lines and poles, buildings, and fencing (Simons and Hodges 1998). Because bright electric lights will not be used at the Cultural Center, and the species are not known to nest in the park, the selected alternative will not result in the impairment of Newell’s shearwater or the Hawaiian petrel.

Five endangered and one candidate species of plants have been out-planted in the park. NPS 2006 Management Policies require the NPS to manage out-planted species for their natural distribution and abundance. None of the out-planted endangered or candidate plant species also currently occur naturally in the park, although *loulu* (*Pritchardia affinis*) was found in the park’s pollen record (Athens and Ward 2006, Douglas and Hotchkiss 1998, Pratt 1998). The candidate *ko‘oko‘olau* (beggartick *Bidens micrantha* ssp. *ctenophylla*) was recorded by Pratt and Abbot (1996) and probably by Canfield (1990) as *Bidens hawaiensis* (Pratt and Abbot 1996) in their park surveys. The out-plantings of *P. affinis* and *Sesbania tomentosa* are part of a demonstration/education landscape planting and not a recovery population. No endangered or candidate plant species will be impaired as none are located at selected alternative Project site.

The *maiapilo* (Hawaiian native caper, *Capparis sandwichiana*) is an endemic shrub that grows in dry, coastal habitats within the park. *Maiapilo* distribution is widespread throughout the park (Canfield 1990, Pratt and Abbott 1996), and it is abundant in the park relative to adjacent areas outside the park boundary. The plant is characterized by night-blooming, fragrant, large white flowers that open in the evening and fade in the daytime. *Maiapilo* is listed on the IUCN Red List as “vulnerable, (Bruegmann and Caraway 2003) and is considered a species of concern by the USFWS because of habitat loss; however it is not presently a candidate for listing. It has been considered “vulnerable” since 1999 (Wagner et al. 1999). A large *maiapilo* is located in the Alternative 2 (NPS Preferred) location and several individuals are growing along the footpath leading to that site. If removal of the individual *maiapilo* is necessary, new *maiapilo* will be out-planted at the site. Because new *maiopilo* will be out-planted if the existing miaopilo is removed, this project will not result in the impairment of *maiopilo*.

The selected alternative would not result in impairment to special status species.