



Kalaupapa National Historical Park Revised General Management Plan and Environmental Assessment

Kalaupapa National Historical Park, Kalawao County, Hawai'i

August 2021

Front cover: View of the Kalaupapa Settlement from the Overlook.
NPS photo.

Kalaupapa National Historical Park Revised General Management Plan and Environmental Assessment

**Kalaupapa National Historical Park
7 Puahi Street
Kalaupapa, HI 96742
(808) 567-6802**

**Prepared by:
United States Department of the Interior
National Park Service, Interior Regions 8, 9, 10, 12
Park Planning and Environmental Compliance**

Aloha Friends,

We are pleased to present this final General Management Plan for Kalaupapa National Historical Park.

The plan provides broad guidance for NPS operations at Kalaupapa National Historical Park for the next 15 to 20 years while Kalaupapa National Historical Park experiences a major transition. The plan offers a vision for Kalaupapa National Historical Park that emphasizes stewardship in collaboration with our many partners. As the conditions change at Kalaupapa, the general management plan is a framework to guide more detailed implementation planning and decision-making.

We are especially grateful that this long term planning was able to be accomplished with mana'o from the patient residents. It is their legacy and the legacy of those who lived before them at Kalaupapa that is at the core of Kalaupapa National Historical Park.

During the course of the planning process, we heard a lot from you. We heard about how special Kalaupapa is to you in an individual way, how you're reconnecting to this special place with your 'ohana, and to the importance of Kalaupapa's stories on a global scale. We have heard your wishes, desires, and hopes for Kalaupapa as it reaches its inevitable place in the future when there is no longer a living patient population. While we heard wide-ranging, and sometimes conflicting, ideas about what Kalaupapa should look like in the future, one thing that was a universal theme is the uniqueness of Kalaupapa as a wahi pana.

An unintended, but positive, outcome from these series of meetings and discussions, is that the planning for this general management plan has acted as a forum for people to share and discuss their thoughts on Kalaupapa, when there previously was no place for this type of engagement.

Please visit the project website at <https://parkplanning.nps.gov/kalagmp> for information about the project and to download or obtain a copy of the document.

The National Park Service remains committed to ensuring that Kalaupapa is protected and cared for into the future, while offering meaningful opportunities to learn about and experience this exceptional place.

Mahalo for your support and engagement on the long-term management of this sacred place,

Kalaupapa National Historical Park Management Team

Ho'okāhi ka `ilau like ana. *Wield the paddles together.* Work together. O.N. #1068

ACRONYMS

ACHP	Advisory Council on Historic Preservation
BLNR	State of Hawai'i, Board of Land and Natural Resources
DHHL	State of Hawai'i, Department of Hawaiian Home Lands
DLNR	State of Hawai'i, Department of Land and Natural Resources
DOH	State of Hawai'i, Department of Health
DOT	State of Hawai'i, Department of Transportation
DPS	Distinct Population Segments
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
GMP	General Management Plan
MIS	Molokai Irrigation System
NAR	Natural Area Reserve
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHP	National Historical Park
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NNL	National Natural Landmark
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
SHPD	State of Hawai'i, State Historic Preservation Division
SHPO	State Historic Preservation Office
USDOI	U.S. Department of the Interior
USFWS	U.S. Fish and Wildlife Service
WSR	Wild and Scenic River

CONTENTS

Chapter 1: Introduction and Purpose and Need for the Plan.....	1
Park Description.....	1
General Management Plans.....	4
Purpose of the Plan.....	4
Need for the Plan.....	4
Issues and Impact Topics from NPS, Stakeholder, and Public Scoping.....	5
Federal, State, Local Permits and Compliance and Consultation Requirements.....	6
Chapter 2: Alternatives.....	9
Actions Common to Both Alternatives.....	9
Alternative 1: No Action (A-1).....	19
Alternative 2: NPS Preferred Alternative (A-2).....	20
Alternatives and Actions Dismissed.....	32
Chapter 3: Affected Environment.....	37
Cultural Resources.....	37
Natural Resources.....	42
Contemporary Resource Use.....	48
Visitor Use and Experience.....	48
Socioeconomics.....	50
Chapter 4: Environmental Consequences.....	55
Cultural Resources.....	56
Natural Resources.....	61
Visitor Use and Experience.....	72
Socioeconomics.....	77
Chapter 5: Consultation and Coordination.....	83
List of Entities Consulted.....	83
Public Scoping and Review of the Preliminary Alternatives.....	83
Public Review of the Draft GMP/EIS.....	83
Public Review of the GMP/EA.....	84
Consultation.....	84
Appendix A: Management Zones.....	91
Appendix B: Desired Conditions from Law and policy.....	97
Cultural Resources.....	97
Natural Resources.....	103
Social Resources.....	111
Appendix C: User Capacity with Indicators and Standards.....	117
Appendix D: Special Status Species.....	121
Appendix E: Floodplains Statement of Findings.....	127

Appendix F: Wild and Scenic River Analysis	137
Cited Sources.....	153
Preparers and Consultants	159
Glossary	163

Figures

Figure 1: Kalaupapa NHP Boundary and Landownership	3
Figure A: Management Zones (Alternative 2).....	93
Figure E: Areas of Potential Inundation by Water Due to Flood or Tsunami	129
Figure F: Aquatic Ecosystems.....	138

Chapter 1

Introduction and Purpose and Need for the Plan



Three women at Bishop Home with musical instruments, date unknown.
Photo courtesy of Damien Museum.

CHAPTER 1: INTRODUCTION AND PURPOSE AND NEED FOR THE PLAN

Kalaupapa National Historical Park (Kalaupapa NHP or park) was established on December 22, 1980 (P.L. 96-565). It is administered by the National Park Service (NPS) through cooperative agreements and a lease with State of Hawai'i agencies and others. This Kalaupapa NHP General Management Plan and Environmental Assessment (GMP/EA) provides broad direction and guidance for resource management, visitor use and access, and an operational shift from co-management with the State of Hawai'i Department of Health to primary management by the NPS.

The GMP/EA is derived from the information and analysis in the previously developed Kalaupapa NHP Draft General Management Plan and Environmental Impact Statement (GMP/EIS) released in April 2015. The NPS started the GMP project as an EIS but determined in 2018 that an EA was more appropriate based on the removal of the proposed boundary expansion, the continued determination that no significant impacts would result in the implementation of the alternatives (including the preferred alternative in this EA), and on current Department of the Interior guidance on the National Environmental Policy Act (NEPA) process. In 2018, the GMP/EA was distributed and comments were solicited. This revised GMP/EA clarifies the preferred alternative and analysis in light of the comments received and the intervening development of a programmatic agreement to address potential adverse effects to historic resources identified earlier in the GMP/EA process.

The GMP/EA examines two alternatives, Alternative 1: no action (A-1) and Alternative 2: NPS preferred (A-2), which were included in the prior draft GMP/EIS and have been modified to address public comments received. Two other alternatives from the draft GMP/EIS, which were considered but dismissed from further consideration, are discussed.

Under A-1, programming, facilities, staffing, and funding would continue at their current levels to protect the values of Kalaupapa NHP. Cooperative agreements with agencies and organizations and the lease agreement with Department of Hawaiian Home Lands would continue. Alternative 1 provides no new direction to NPS managers after the DOH departs Kalaupapa.

A-2, the NPS preferred alternative, emphasizes stewardship of Kalaupapa NHP's lands and resources in collaboration with the park's many partners. Kalaupapa NHP's diverse resources would be managed from uka to kai (mountain to sea) to protect and maintain their character and historical significance. Through hands-on stewardship activities, service and volunteer work groups would have meaningful learning experiences, while contributing to the long-term preservation of Kalaupapa NHP's resources. Visitation by the general public would be supported and integrated into park management and would change, including by allowing children to visit Kalaupapa with adult supervision and removing the 100 persons per day visitor cap, while continuing to limit the number of visitors in order to protect the resources within the park and the purpose of the park.

PARK DESCRIPTION

Kalaupapa NHP was established to preserve and interpret Kalaupapa for the education and inspiration of present and future generations and to research and maintain the historic structures, traditional Hawaiian sites, cultural values, natural features, and character of the community. It was also established to provide a well-maintained community in which the Hansen's disease (leprosy) patients were guaranteed life tenancies to protect their current lifestyle and privacy, and to provide for limited visitation by the general public. The primary story shared at Kalaupapa is the forced isolation from 1866 to 1969 of people from Hawai'i afflicted with Hansen's disease to the remote northern Kalaupapa peninsula. The establishment of an isolation settlement for people afflicted with Hansen's disease at Kalaupapa tore apart Hawaiian society. The impacts of broken connections

with the 'āina (land and waters) and of family members “lost” to Kalaupapa are still felt in Hawai'i today.

Kalaupapa NHP is on the north coast of the island of Molokai and includes 8,720 acres of land and 2,060 acres of submerged and offshore lands within a ¼-mile offshore area.

Within its boundaries are the historic Hansen's disease settlements of Kalaupapa and Kalawao. The community of Kalaupapa is home to roughly a dozen surviving Hansen's disease patients. Saint Philomena Church at Kalawao is associated with Saint Damien.

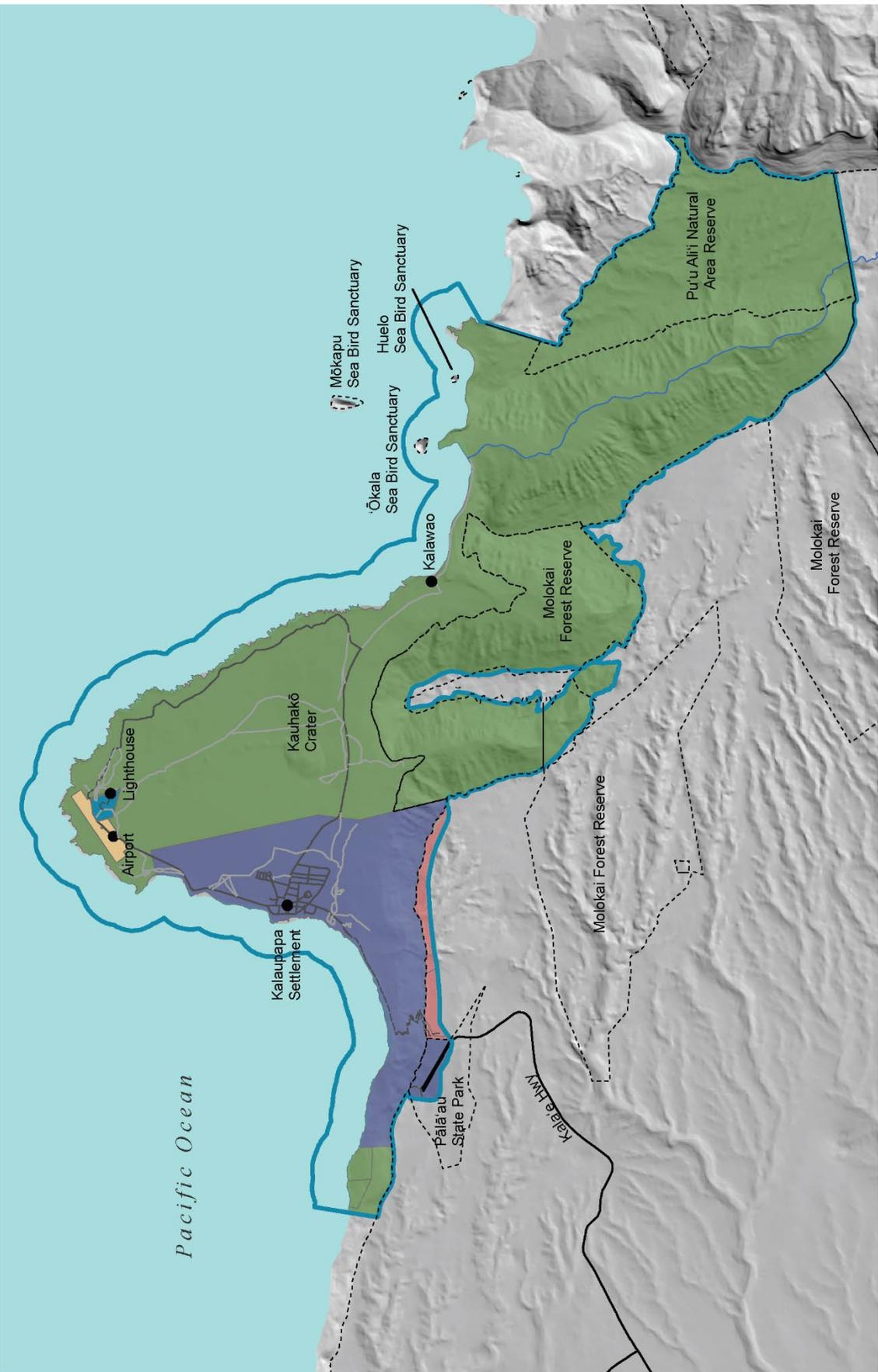
For more than 900 years before the establishment of the Kalaupapa Hansen's disease settlement, Kalaupapa was home to Native Hawaiians. Structural remnants built and used over centuries are everywhere, and the park's rich and varied archeological resources make it one of the richest and most valuable archeological complexes in Hawai'i. Hawaiian culture continues to be a core value of Kalaupapa NHP's living community.

Areas of the historic, terrestrial, and marine environments of the park are specially designated under national and state programs designed to recognize and protect treasured resources. The park is designated as a National Historic Landmark; the cliffs (pali) are designated as the North Shore Cliffs National Natural Landmark. State designations include the Natural Area Reserve, Forest Reserve, and Hawai'i State Seabird Sanctuary.

This park differs from most other national parks because almost all of the area within the boundaries is state-owned but is managed by the NPS. The NPS owns 23 acres, including the Molokai Light Station. Most of the land and facilities are owned by State of Hawai'i departments; a small private holding is at the top of the cliffs. The park is in Kalawao County, a unique jurisdiction designed specifically for the management of the settlement area as a residential medical facility (Figure 1: Kalaupapa NHP Boundary and Land Ownership).

There is no road access to the peninsula from “topside” Molokai. Land access is via a steep trail, and a commuter class aircraft provides air access to Kalaupapa.

To view historic and contemporary photographs of Kalaupapa NHP, refer to the Kalaupapa National Historical Park Draft GMP/EIS.



Landownership

- Kalaupapa National Historical Park Reserve Boundaries
- Reserve Boundaries
- National Park Service
- State Dept. of Hawaiian Home Lands
- State Dept. of Land and Natural Resources
- State Dept. of Transportation
- Private land within park boundary

0 1 Miles
0 1 Kilometers

Projection: UTM, NAD83

PWR, San Francisco - GIS
Date Saved: 11/19/2013

GENERAL MANAGEMENT PLANS

The revised GMP identifies planning alternatives, and the EA identifies and evaluates the environmental effects (or impacts) of these alternative approaches to the management of Kalaupapa NHP.

The GMP is the primary document that frames the park's planning portfolio, summarizing the park's planning and broad management direction. Additionally, the park unit's foundation document identifies purpose, significance, fundamental and other resources and values, interpretive themes, special mandates and administrative commitments, and an assessment of the unit's planning and data needs. Key elements of the foundation document are available on the park website, providing important context and basic direction for planning and management decisions, along with the park's enabling and more recent legislation.

PURPOSE OF THE PLAN

The purposes of this GMP/EA are:

- to articulate a vision and overall management direction for Kalaupapa NHP that will guide near- and long-term decision-making by current and future NPS managers;
- to provide direction on how to best protect Kalaupapa NHP's resources, how to manage visitor use, how to provide quality visitor experiences, and identify what kinds of facilities are needed for management of the park;
- to ensure that this plan has been developed in consultation with the public and interested stakeholders and adopted by NPS leadership after adequate analyses of the benefits and impacts of alternative courses of action; and
- to fulfill the four statutory requirements for a GMP set out in 54 USC 100502.

The GMP provides broad direction and guidance for Kalaupapa NHP's near-term and long-term futures. Near-term is defined as the time period while Hansen's disease patients are still living at the park and supported by the State of Hawai'i Department of Health (DOH) operations. Long-term is defined as a time period when there are no patients living at Kalaupapa NHP and the DOH ceases operations within the park.

The GMP is a programmatic document that provides broad direction to NPS managers. Subsequent activities and implementation plans will focus on how to implement a specific action or project and include more extensive details and analyses that this GMP does not address.

NEED FOR THE PLAN

Although Congress established the park in 1980, the NPS has not completed a GMP for it. Management guidance has come from the enabling law creating the park (P.L. 96-565 – "park's enabling law"), the NPS Organic Act (54 USC 100100 et seq.), laws and policies applicable to the national park system, and NPS *Management Policies 2006*, as well as other guidance from cooperative agreements with state agencies, lease agreements, resources management documents, and from the Kalaupapa NHP Advisory Commission and Kalaupapa Patient Advisory Council. A GMP is necessary to comply with the park's enabling law and to address the changing conditions at the park and the full range of resource management, visitor use, and operational issues.

In the near future, a fundamental transition in the operation of the park will occur. While Hansen's disease patients remain at Kalaupapa NHP, park operations are subservient to services and health

care for the patients, patient privacy, and maintaining patients' lifestyles, substantially managed by the DOH. Once the park is no longer a home for the Hansen's disease community, the fundamental management direction of the park will have to change.

The GMP provides guidance for the management of the park's cultural and natural resources necessary to determine program goals and desired future conditions and address future visitor use at Kalaupapa NHP. When there is no longer a living patient community at Kalaupapa NHP, the GMP will be critical to addressing visitor use issues related to access and transportation to and within the park, as well as visitor facilities and services.

These decisions will affect the amount of visitor use and the types of visitor experiences, NPS operations, and land uses within the park. The exact amount and the conditions for particular uses will be determined in future implementation plans.

ISSUES AND IMPACT TOPICS FROM NPS, STAKEHOLDER, AND PUBLIC SCOPING

Issues and impact topics are the resources of concern that may be affected by the two alternatives considered in this EA. Impact topics are used to analyze changes from the current conditions within the project area in Chapter 5: Environmental Consequences.

Impact topics were retained if they are directly related to the proposal; if analysis of environmental impacts is important to make a choice between the alternatives; if the environmental impacts were raised as a concern by the public and/or other agencies; or if there are potentially significant impacts associated with the issue.

The following resource topics are considered in this Environmental Assessment (EA): cultural resources (including values, traditions, and practices of traditionally associated people and historic structures and cultural landscapes); natural resources including water resources (hydrologic processes and floodplains), vegetation, marine and terrestrial wildlife, and special status species; and social resources (including visitor experience, visitor use, interpretation and education, and access, transportation, and socioeconomics).

Impact Topics Dismissed from Further Consideration

Issues and impact topics are dismissed from further evaluation if they do not exist in the analysis area; they would not be affected by the proposal; impacts are not reasonably expected; or through the application of mitigation measures, there would be no measurable impacts from the proposal.

The following topics were eliminated from detailed study because there would be minimal or no potential impacts: museum collections, air quality, soundscapes, lightscares (dark night sky), soils and geology, water quality, fishing, hunting and gathering, wild and scenic rivers, scenic resources, sustainable practices and responses to climate change, park operations, land use, and safety and security. A brief justification for dismissal of some of these is below.

Environmental Justice:

Through active public participation, the NPS gave equal consideration to all input from persons regardless of age, race, income status, or other socioeconomic or demographic factors. Through the planning process, it was determined that the alternatives would not result in identifiable adverse human health effects that would disproportionately affect any minority or low-income population. The NPS also recognized the interrelated cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the proposed action, and these issues are discussed in Chapter 4: Environmental Consequences,

under the socioeconomic environment. As a result, environmental justice was dismissed from consideration.

Other Applicable Mitigation Measures: Although there would be no or negligible impacts on air quality, soundscapes, and lightscares (night sky), the NPS identified measures to ensure that actions from the GMP would minimize any potential for impacts:

- **Air Quality:** Implement a dust abatement program including the following potential actions: water or otherwise stabilize soils, cover haul trucks, employ speed limits on unpaved roads, minimize vegetation clearing, and revegetate with native species; minimize vehicle emissions by using the best available automotive technology whenever possible. Encourage commercial tour companies to employ methods that reduce emissions. Employ sustainable designs for facilities and historic structures that reduce energy demands, thus reducing pollutant production. Strive for carbon-neutral status at Kalaupapa NHP by reducing greenhouse gas emissions while increasing appropriate carbon sequestration.
- **Soundscapes:** Implement standard noise abatement measures during NPS operations, including scheduling to minimize impacts in noise-sensitive areas, using the best available noise control techniques wherever feasible, using alternatively (i.e., hydraulically or electrically) powered mechanized tools when feasible, and locating stationary noise sources as far from noise-sensitive areas as possible. Locate and design facilities to minimize noise. Minimize idling of motors when power tools, equipment, and vehicles are not in use. Muffle or dampen sounds that are above ambient levels whenever possible to reduce noise impacts.
- **Lightscares:** Install adaptive and on-demand lighting equipped with timers, dimmers, or motion detectors to provide light when specifically needed. Use fully sustainable, low-impact lighting, including but not limited to diffused light bulbs and shielded and aimed outdoor fixtures to prevent light spill.

FEDERAL, STATE, LOCAL PERMITS AND COMPLIANCE AND CONSULTATION REQUIREMENTS

The proposed action would require the following agency consultation:

- Compliance with federal laws, including NEPA and National Historic Preservation Act (NHPA)
- Consultation with the State Historic Preservation Division on the intent of the GMP
- Consultation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service regarding effects on listed species

Although permits and consultation may be required for implementation of the individual actions considered by this GMP, no details about these actions have been developed.

Chapter 2

Alternatives



View of Siloama Church along Damien Road. NPS photo.

CHAPTER 2: ALTERNATIVES

This chapter describes the alternatives and other actions and alternatives considered but dismissed. In some cases, guidance in this GMP/EA is “map-based.” The reader should use both text and maps taken together to fully understand the alternatives.

Two alternatives, Alternative 1: no action (A-1) and Alternative 2: NPS preferred (A-2), are being considered. Each alternative is structured around a concept or vision for the future and identifies desired conditions for resources and visitor use as a whole and for specific areas within the park. For each alternative, near-term and long-term guidance is identified where necessary.

Note that implementation of the approved plan would depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan would be forthcoming. Full implementation of the actions in the approved GMP would likely take many years. Additionally, some of the future long-term funding needed to implement the various actions called for in the plan could come from non-federal partners.

ACTIONS COMMON TO BOTH ALTERNATIVES

In addition to the guidance and actions in this section, desired conditions from law and policy in Appendix B would apply to both alternatives.

In the near term, the ongoing transfer of DOH responsibilities (unrelated to health care) to NPS would continue. In the long term, the NPS would assume management of visitor access, activities, and resources in consultation with partners.

Throughout the planning process for this GMP, patient residents, ‘ohana (family, relative, kin group) of patient residents, kama‘āina (native-born Hawaiians and long-time residents) of Kalaupapa, Hawaiians, Molokai residents, and other members of the public have expressed concern about potential changes to Kalaupapa that could detrimentally affect Kalaupapa as a wahi pana (sacred place). Core to the future of Kalaupapa NHP is honoring the legacy of the Hansen’s disease community and the long history of Native Hawaiians who called Kalaupapa their home. The need to mālama i ka ‘āina (care for the land) in a manner that shows respect for the peninsula’s people, stories, and way of life would be at the core of present and future NPS management of Kalaupapa NHP.

Hansen’s Disease Patients and Department of Health Operations

The NPS is committed to fulfilling its responsibilities under Public Law 96-565 with respect to the patient community. The experiences of the living and deceased Hansen’s disease patients are the primary reason for which the park was established and exists today. As long as patients live at Kalaupapa NHP, the NPS would manage the park in cooperation with DOH and other partners to maintain and preserve the present character of the community.

Management of Specific Areas within Kalaupapa NHP

The following management strategies and uses for specific areas in Kalaupapa NHP would be common to both alternatives.

Kalawao

Now and into the future, Kalawao would be preserved for its historic values as the first settlement on the peninsula for individuals with Hansen’s disease, who were forcibly removed

from their homes to live in isolation. The character of Kalawao with its iconic churches, cemeteries, and quiet and spiritual ambiance is a contrast to Kalaupapa Settlement. Kalawao offers an opportunity for visitors to contemplate the early experiences of thousands of people afflicted with Hansen's disease. The association of Saint Damien with Kalawao as embodied in St. Philomena Church and his nearby gravesite would be preserved. Siloama Church would continue to be co-managed with the Hawai'i Conference Foundation. The churches would continue to be actively used by the Roman Catholic Church and the Hawai'i Conference Foundation for services and special events.

The Kalaupapa Memorial, a new development in Kalawao, will provide recognition and honor for the thousands of individuals afflicted with Hansen's disease at Kalaupapa peninsula, whose names and identities have been lost to time. The memorial will be located within the boundaries of the former Baldwin Home for Boys site at Kalawao and constructed as set out in the memorial EA—Construct and Build the Memorial, Finding of No Significant Impact (NPS 2011). The NPS, the State of Hawai'i Department of Land and Natural Resources (DLNR), and Ka 'Ohana O Kalaupapa are collaboratively working to identify roles and responsibilities related to the long-term management of the memorial.

Judd Park visitor facilities and overlook would continue to be maintained to provide visitors with a place to relax, reflect, and view the rugged coastline of the North Shore Cliffs and offshore islands.

Above all, Kalawao would continue to be a place of contemplation and compassion, where the ethereal qualities of Kalawao's history of forced isolation can be illuminated for all visitors.

Kalaupapa Settlement

In the near term, Kalaupapa Settlement would continue to function much as it does today. The DOH would continue to maintain patient homes, the care facility, and operational functions related to the care and treatment of the remaining patients. Patients would continue to reside in their houses, maintain beach houses on the outskirts of the settlement, and be cared for by the DOH at the care facility. The NPS would continue its role in maintaining the historic fabric of the community. Permitted visitors could continue to visit key locations within the settlement including the staging area near the base of the pali (cliff) trail, bookstore, the churches, the pier area, and other locations.

In the long term, the NPS would strive to maintain buildings, structures, and cultural landscape features within Kalaupapa Settlement that are eligible for listing in the National Register and/or contribute to the NHL. Many of the structures and associated areas within the settlement provide specific functions for the operation of the community. Based on design, use, and location within the settlement, the NPS would continue to maintain these buildings for their existing functions where appropriate. In the long term, houses and other structures may be adaptively reused and could be managed by other entities, such as agency partners, organizations, and concession operations, pursuant to appropriate agreements or contracts. Buildings, structures, and associated areas within the settlement owned by religious institutions and co-managed with the NPS through cooperative agreements would continue to be used for religious purposes and serve their congregations.

Molokai Light Station

The Molokai Light Station would be preserved and could be adaptively used for other functions. Cultural and archeological sites in the immediate area of the Molokai Light Station would be inventoried, monitored, and undergo preservation treatments.

Peninsula and Kauhakō Crater

Terrestrial, geologic, and marine resources and archeological or historical resources related to the Hansen’s disease era and history of Native Hawaiian habitation and use would be preserved on the peninsula in the Kalaupapa, Makanalua, and Kalawao ahupua’a (a major Hawaiian land division usually extending from the uplands to the sea). Access to the peninsula and Kauhakō Crater would be focused on research and monitoring activities. In the near term, visitation by the general public would be prohibited, and all sponsored visitors would be escorted in the area.

Pālā’au State Park

The NPS does not administer this land within the park boundary. Visitor access to Pālā’au State Park within the boundary of Kalaupapa NHP would be governed by DLNR regulations. The NPS would maintain the Kalaupapa Overlook in Pālā’au State Park in cooperation with DLNR including the wayside facilities, trailhead, and assisting with vegetation management to maintain views to Kalaupapa.

Seabird Sanctuaries on ‘Ōkala and Huelo Islands

DLNR would continue to manage these islands. Access to the islands would continue to be limited to scientific and resource management activities, and public entry and landings would continue to be prohibited per state regulations in order to protect indigenous wildlife in sanctuaries.

Waikolu Valley and Pu’u Ali’i Natural Area Reserve

These areas would continue to be managed cooperatively by NPS and DLNR primarily for their outstanding resource values. Access would continue to be limited.

Molokai Forest Reserve

This area is managed by DLNR and includes a public hunting area. The NPS does not administer the Molokai Forest Reserve but cooperates with DLNR for resource protection and monitoring, and this would continue.

Management Structure, Partnerships, and Agreements

The NPS would establish and maintain partnerships and projects with state and local agencies, adjacent landowners, and organizations for resource management, interpretation, and visitor use. Partnerships could include schools and universities, historical institutions, Hawaiian cultural groups, environmental organizations, and neighboring landowners. Cooperative agreements with state agencies—DOH, Board of Land and Natural Resources (BLNR), Department of Transportation (DOT)—and the lease with the Department of Hawaiian Home Lands (DHHL) would continue. More information about partnerships can be found on the park’s website.

Governance of Kalawao County

In the near term, the DOH would continue to govern Kalawao County under Hawai’i Revised Statute Chapter 326. However, once the DOH no longer provides any services to patients in Kalaupapa NHP, the State of Hawai’i may change how Kalawao County is governed. The NPS will work collaboratively with the State of Hawai’i to manage the park when such a change occurs.

Department of Health Partnership

In the near term, the existing structure of shared DOH and NPS management would continue under the current cooperative agreement through 2024. Once the DOH no longer provides services to patients in Kalaupapa NHP and DOH departs Kalaupapa, ownership of their buildings transfers to DHHL. Continued maintenance and management of the structures

transferred by the DOH to DHHL will remain the responsibility of the NPS under their lease with DHHL.

The DOH would continue to manage operations related to the care of the patient community and DOH staff support including continued operation of the care facility, general store, and gas station for patient residents and DOH staff. The DOH would also continue to oversee and operate the visitor permit and sponsorship system and some visitor facilities, including the Visitors' Quarters, continue to maintain patient homes and yards, and manage the state-mandated closure of Kalaupapa Landfills.

The NPS would continue to manage visitor protection, education and interpretation, natural resources, cultural resources, historic buildings and structures, and infrastructure, including roads and trails. The NPS would continue to assume management and operational responsibilities and facilities as the DOH transitions out of management responsibilities at Kalaupapa.

Department of Hawaiian Home Lands Partnership

The NPS would continue the 50-year lease agreement with DHHL (through 2041) and work collaboratively with DHHL to define and plan for long-term management of DHHL lands.

Department of Land and Natural Resources, Department of Transportation, and R. W. Meyer, Ltd. Partnerships and Churches

In the near term, the NPS would continue to work collaboratively with DLNR and DOT for management of the lands, resources, facilities, and operations within the Kalaupapa NHP boundary.

The NPS would work collaboratively with R. W. Meyer, Ltd. for management of these lands, resources, facilities, and operations within Kalaupapa NHP boundary.

Ka 'Ohana O Kalaupapa

The NPS would continue to collaborate with Ka 'Ohana O Kalaupapa as a partner and would support their public education and outreach programs, patients, and descendants of patients. The organization has done extensive and important work, and a formal partnership would benefit both organizations and their shared missions.

East Molokai Watershed Partnership

The NPS would continue to participate in the East Molokai Watershed Partnership by partnering with landowners and agencies to protect native forest watershed areas, engage the local community, and support building the capacity of the partnership.

Cultural Resources

The NPS would continue to consult, conduct cultural resource projects, monitoring, inventories, and interpretation related to cultural resources. NPS actions include continuing to stabilize and perform preservation treatments on historic buildings and structures, archeological sites, , and landscape features that contribute to the NHL designation.

Values, Traditions, and Practices of Traditionally Associated People (also referred to as ethnographic resources)

The NPS would continue the anthropology program in which NPS staff, partners, and researchers engage patients, lineal descendants, and other subject matter experts in ethnographic research through oral histories and participant observation in the form of informal discussions or open-ended interviews.

Archeological Resources

To the extent possible, National Register eligible and potentially eligible archeological sites would be protected, and managed for their cultural, interpretive, and research values. With appropriate consultation, ongoing efforts to monitor and conduct condition assessments of archeological sites and perform archeological inventory surveys would continue. Baseline documentation would be prepared including a site-specific research design, updated archeological overview and assessments, and standard operating procedure documents.

Historic Structures

The NPS would continue to conduct condition assessments and employ historic preservation treatments to protect historic structures that were constructed during the NHL's period of significance (1866-1969). With appropriate consultation, the NPS would continue to evaluate structures that were constructed after 1969 to determine whether they are historic and/or contribute to the NHL.

Cultural Landscapes

The NPS would continue to document, research and preserve Kalaupapa NHP's cultural landscape features, and manage historic vegetation within the settlement.

The NPS would consult with community and descendants and continue stabilization, preservation, and active management of known and discovered cemeteries and gravesites.

Museum Collections

Museum collections items would continue to be documented and preserved as part of the archives and manuscript collections, which provide source materials for potential research projects. The NPS would continue to consult with patients and 'ohana to better understand objects in collections. Management of the museum collections would be guided by the current museum management plan, the museum collections plan and the museum emergency operations plan.

Natural Resources

The NPS would continue to implement natural resource management priorities including research, inventory, monitoring, feral animal control, fencing, rare species stabilization, and invasive nonnative plant removal. The NPS would continue active participation and pursuit of East Molokai Watershed Partnership goals. The NPS would continue to monitor and inventory marine resources within the ¼ mile offshore park boundary. In consultation with the USFWS and/or National Marine Fisheries Service (NMFS), active management of sensitive, threatened, and endangered species and associated habitats may occur to perpetuate these species.

Water Resources

The NPS would continue water resources monitoring and research of water resources to characterize water quality in the ocean, streams, Kauhakō Crater Lake, and wetlands.

Soils and Geologic Resources

The NPS would continue to inventory soils and monitor geological resources.

Vegetation

The NPS would continue to restore native vegetation in demonstration restoration areas by removing nonnative species and planting native species. In the native forests within the park, the NPS would continue feral animal capture to reduce destruction of native vegetation. The NPS would continue preservation of areas with native vegetation such as the coastal strand and Pu'u Ali'i Natural Area Reserve (NAR). The NPS would also continue nursery activities supporting rare and threatened native plant propagation.

Wildlife

A focus on the reduction and management of nonnative wildlife species within the park would continue, including animal control, fencing out feral ungulates in selected management units, and managing feral animals, such as mongoose, within the settlement.

Scenic Resources

The NPS would continue current management efforts for the preservation of scenic resources, such as removal of nonnative vegetation to maintain historic viewsheds.

Contemporary Resource Use

The park's enabling law provides that "patients shall continue to have the right to take and utilize fish and wildlife resources without regard to Federal fish and game laws and regulations... [and] Patients shall continue to have the right to take and utilize plant and other natural resources for traditional purposes in accordance with applicable State and Federal laws" (16 USC 410jj-5). NPS laws and regulations apply within the marine area of the park and on lands administered by the NPS pursuant to the lease with DHHL and the cooperative agreement with BLNR.

In addition to NPS laws and regulations, applicable DOH rules for fishing and gathering would also continue until the DOH departs, and DLNR regulations would continue to apply to areas under the jurisdiction of DLNR.

No hunting would be allowed in areas administered by the NPS, but DLNR's Division of Forestry and Wildlife would continue to manage public hunting in the Molokai Forest Reserve that is within the park's boundary (the NPS does not administer this area) and where hunting is allowed.

Wild and Scenic River

Waikolu Stream and its immediate environs would be protected. The NPS would not undertake any actions that would diminish its free-flowing conditions within Kalaupapa NHP. The NPS would work with the Molokai Irrigation System (MIS) to prevent additional extraction of water to maintain the integrity of Waikolu Stream.

Based on findings of the eligibility analysis for Waikolu Stream included Appendix F: Wild and Scenic River Analysis for Kalaupapa NHP, the NPS would recommend amending the national rivers inventory to add culture and history to Waikolu Stream's outstandingly remarkable values related to scenery, fish, and wildlife based on new information.

The NPS would evaluate and/or complete a suitability analysis related to wild and scenic river designation of Waikolu Stream. Additional analyses for wild and scenic river eligibility and suitability of Waihānau, Wai'ale'ia, and other streams could also be conducted.

Interpretation and Education

In the near term, the park's website and interpretive media would be maintained as ways to share the park's history with the public and orient visitors to Kalaupapa NHP. The NPS would continue to expand its interpretation and education division, developing limited interpretive programs and activities, such as a self-guided walking tour of the settlement.

Most onsite interpretation and education would continue to be provided by private patient-run tour companies and by allied organizations and institutions. Limited and occasional outreach programs on topside Molokai would be continued and expanded.

Visitor Use and Experience

The structure of shared DOH and NPS management of visitor use would continue via a cooperative agreement to provide a well-maintained community for the patient residents and to protect their privacy. The NPS would continue to manage visitor protection and facilities that support visitation.

In the near term, general public visitation would be limited to 100 people per day as specified in the park's enabling law and desired by the patients. Visitation would continue to be day-use only, and visitors would continue to be escorted while visiting the park. Organized tours for the general public would be provided. The NPS would provide interpretive and safety information and training to support tour operators and visitor services entities. There would be no entrance fees; however, fees for services such as the mule ride and tours would continue. Children under the age of 16 would not be allowed while there are still patients at Kalaupapa. Patient residents and DOH and NPS staff would continue to sponsor family, friends, and nonresident staff for day and overnight stays. The DOH would continue to manage its visitor permit and sponsorship system.

In the near and long terms, specific recreational uses that are not compatible with the purpose of the park would continue to be prohibited.

In the near and long term, public camping would not be allowed within the boundary of Kalaupapa NHP, including Waikolu Valley, because of potential damage to resource protection and to protect the safety of visitors and staff.

Currently all visitors, including lineal descendants of kama'āina and patient descendants, can access the park through day use, private sponsorship by a Kalaupapa resident, or sponsorship through the NPS, including the Volunteers-In-Parks (VIP) program.

Lineal Descendants of Kama'āina

The NPS is committed to sharing all stories associated with Kalaupapa, including those of Native Hawaiians and kama'āina. The NPS recognizes the importance of involving descendants of kama'āina in the long-term preservation and management of Kalaupapa NHP. The park would continue to identify, engage, and consult with kama'āina

The term "visitors" is meant to encompass the wide variety of people who do not reside or work at Kalaupapa. Visitors could be general visitors who do not have a personal connection to the park, people who come to Kalaupapa to participate in specialized activities, such as school group programs and stewardship activities, and could also include people who have personal connections to Kalaupapa, including family members and descendants of patients and kama'āina. Everybody would be welcome to visit Kalaupapa.

Native Hawaiian: The term Native Hawaiian is used to define all people of Hawaiian ancestry. The Department of Hawaiian Home Lands uses a lower case "n" (native Hawaiian) for people who are legally defined as "any descendant of not less than one-half part of the blood of the races inhabiting the Hawaiian Islands previous to 1778" for the purposes of the Hawaiian Homes Commission Act and related laws. People who are 50% or more Hawaiian are also defined as "beneficiaries" by DHHL. This document uses both terms in specific contexts.

descendants and to include them as park partners. Several outreach attempts have been made to identify descendants of kama'āina, but it has been challenging to find information regarding ancestors at Kalaupapa.

The NPS would include opportunities for kama'āina descendants to reconnect with their ancestral lands at Kalaupapa NHP. Lineal descendants of kama'āina would have opportunities to conduct research about their families and be involved in interpretation, education, and stewardship. Opportunities for research are available by contacting the park directly. Kalaupapa NHP's curatorial staff would be available to facilitate access to the park

archives and collections with advanced notice. Descendants would also participate in developing and conducting outreach programs and activities within and beyond the park.

The NPS would reach out to Native Hawaiian communities and others to provide opportunities for participation in cultural practices, resource stewardship activities, and interpretation and education. This could occur through partnerships, commercial services, and NPS employment. Partners could include DHHL, Office of Hawaiian Affairs, other state and local agencies and institutions, and nonprofit organizations focused on promoting Hawaiian culture and improving the lives of Native Hawaiians.

Lineal Descendants of Patients

The NPS recognizes that Hansen's disease patients were separated from their families and banished to Kalaupapa against their will. The peninsula became their home, and there are roughly 8,000 patients buried throughout the peninsula. The NPS understands that patient descendants have an important connection to the Makanalua peninsula and, as descendants, have the intent and kuleana to mālama (care for or preserve) their ancestral gravesites through visitation and stewardship of the 'āina. The NPS would seek to establish and strengthen relationships with patient descendants and engage and consult with them.

There are many ways that patient descendants could be involved at the park in operations, staffing, and management. They could also share their family stories as part of interpretation and education for visitors to the park, conduct educational outreach about Kalaupapa's history to schools and their local communities, and participate in consultations about park projects.

The park's curatorial facility is also available to visit. With advanced notice, the curatorial staff would be available to assist families doing research and to make the archives and collections available to families.

Commercial Visitor Services

In the near term, commercial activities operated by patient residents would continue. The NPS would continue to partner with Pacific Historic Parks Association to operate the bookstore for educational and merchandise sales.

NPS management of concessions and commercial services would be governed by Public Law 96-565, which provides patients a first right of refusal for revenue-producing visitor services, including such services as providing food, accommodations, transportation, tours, and guides.

In its lease with the NPS, DHHL has reserved the authority to give native Hawaiians a "second right of refusal," after patient residents have exercised their first right of refusal, to provide revenue-producing visitor services for the areas of the park covered by the lease. The NPS would coordinate with DHHL in the selection of applicants to operate concessions and commercial services at Kalaupapa NHP.

Sustainable Practices and Responses to Climate Change

The NPS would strive to make the park energy independent by reducing energy consumption, reducing reliance on outside sources of energy, and instituting sustainable practices. Consistent with the NPS's Climate Change Response Strategy, the park's goals and objectives would guide the protection of park resources through four integrated components: science, adaptation, mitigation, and communication.

Existing efforts to achieve these goals would continue, including bicycle use, the community recycling program, monitoring possible climate change effects, and engaging in the NPS Climate Friendly Parks program and Climate Action Plan. The NPS would seek to minimize motor vehicle use by staff, volunteers, and visitors to reduce gas consumption and carbon emissions. The NPS would encourage a "pack-in, pack-out" policy for all visitors.

The park would continue to install photovoltaic panels in selected areas on a limited basis to minimize visual impacts to the cultural landscape and consider the feasibility of a comprehensive energy conservation strategy, including the consolidation of renewable energy generation equipment in one or more locations.

Access and Transportation Facilities

The current ways to enter the park would continue. No new transportation routes or methods to access to Kalaupapa NHP would be allowed or constructed.

The NPS would continue to maintain the historic pali trail for foot and mule traffic. The NPS would offer to assist the local community with trail planning adjacent to Kalaupapa NHP on topside Molokai.

The Kalaupapa Airport is managed by the State of Hawai'i Department of Transportation (DOT) and would continue to serve the transportation needs of the community and visitors. Air access to the Kalaupapa Airport would continue for planes and helicopters by commercial carrier and private planes from Honolulu, Ho'olehua Airport, and other island airports. The NPS would encourage the DOT and Federal Aviation Administration (FAA) to 1) provide safe and adequate access without increasing pressure on Kalaupapa's way of life, and 2) work with commercial tour flight operators to continue avoiding flight paths in airspace over the settlement. FAA common procedures direct air tour aircraft to maintain an altitude of at least 1,500 feet above the ground, which also helps minimize the impact of aircraft noise on Kalaupapa NHP, and all aircraft in flight over the Kalaupapa peninsula are subject to FAA regulations. The NPS would seek to be a consulting party for any changes to the airport that have the potential to impact resources, including military activities.

Water access to the park would continue to be limited to the annual barge that provides general supplies and project materials to Kalaupapa and official NPS boat access. In the near term, visitors would not be permitted within the marine area of the park unless they have been sponsored and have the required permits from the DOH and NPS

Safe sea access to the park is limited by the location and configuration of the Kalaupapa pier and seasonality of ocean conditions. Other water access and special events within the ¼ mile ocean boundary would require a special use permit and would be determined on a case-by-case basis. General visitors would not be allowed to anchor within the offshore ¼ mile ocean boundary without a special use permit.

In the long term, visitor access to Kalaupapa by boat, including boat landings on the east side of the park, would need further evaluation and consultation with state agencies. Any access to

the land portion of the park following arrival by boat would also be subject to the same visitor limits (numbers and use) and entry passes as apply to access by land and air. The NPS would not support a ferry service to Kalaupapa because of safety concerns at the harbor.

Transportation by motor vehicles within Kalaupapa would be reduced. Whenever possible, the NPS would use fuel efficient or electric vehicles, bicycles, and pedestrian transport for both visitors and operations, and wherever possible, historic roads and trails would be adaptively reused.

Operations

Types and General Intensities of Development

The management and use of historic structures and facilities by patient residents, DOH, NPS, and partners within Kalaupapa NHP would continue in the near term. The NPS would continue to manage infrastructure, including the water, sewage, electrical, and trail systems. Ongoing projects, such as repairs to the electrical system, improving water conservation measures, and addressing the park's fuel storage needs would continue.

Communication facilities would be maintained to provide phone, radio, and internet connectivity. The alternatives do not call for new development for public enjoyment and use of the area, so associated cost estimates as required by the National Parks and Recreation Act of 1978 are not included.

If adaptive re-use of structures is clearly not feasible for future required functions, new facilities may be deemed necessary. If so, in consultation with the Hawai'i SHPO and in compliance with Section 106, future new construction, including communications facilities, would incorporate sustainable energy systems; be appropriately sited and designed to be compatible with the settlement's historic structures and character; avoid archeological resources; minimize impacts on the soundscape, night sky, and viewsheds; and consider sea level rise. See the "Historic Structures" section in A-2 for related guidance.

Safety and Security

Safety and security would continue to be a high priority for the NPS in its management of Kalaupapa NHP. Operational leadership concepts and strategies would be integrated into all aspects of park management. The NPS would continue current partnerships with emergency management agencies, including the Maui County Police and Fire Departments and the U.S. Coast Guard for search and rescue operations, air medical transport, and law enforcement. Emergency medical services would include first responder capability by NPS or others. NPS would continue to facilitate getting individuals to the next level of care.

The NPS would adapt and modify the current DOH emergency management plan to meet the needs of the changing Kalaupapa community.

The NPS would also continue to implement the fire management plan, including establishing and maintaining fire breaks around the settlement, maintaining fire suppression systems, and adding new fire suppression systems to historic buildings as feasible.

Staffing

The park would continue to maintain NPS staff and volunteers at Kalaupapa to support the purpose of the park. NPS staff administer the park, manage resources, provide visitor protection and law enforcement, and maintain Kalaupapa NHP's historic structures and facilities, including roads, grounds, cemeteries, and infrastructure systems.

In the near term, the hiring preference and provision for training opportunities for patient residents and native Hawaiians under Public Law 96-565 would continue. In the long term, the preferences and opportunities would continue for native Hawaiians.

Boundaries and Land Protection

Lands within the Kalaupapa NHP Boundary

The NPS would continue to follow Public Law 96-565, which authorizes the US Department of the Interior (USDOI) to acquire lands within the park boundary with the consent of the owner. Should the state or private landowner express an interest, the NPS could explore acquisition options via legislatively authorized means.

Lands Adjacent and Close to Kalaupapa NHP

No boundary modifications are recommended.

The findings of the Hawai'i Area Studies that fulfilled the direction of Public Law 105-355, Sec. 511 continue to be valid, and Congress could decide to act on the study's findings. The two pertinent sections of the Hawai'i Area Studies were the "Kalaupapa Settlement Boundary Study Along the North Shore to Hālawā Valley, Molokai" and the "Study of Alternatives—Hālawā Valley, Molokai" completed in 2000. Both studies surveyed and analyzed the area's natural and cultural resources and determined that they are of national significance and that designation of the areas would support the park's legislative purpose and provide effective long-term protection and public use opportunities. In 2000, the position of the local community favored local community management over any management by non-Molokai entities and state and federal agencies.

ALTERNATIVE 1: NO ACTION (A-1)

The no-action alternative (A-1) is required by the NEPA and serves as a baseline for comparing the changes and impacts of the NPS preferred alternative.

A-1 would direct NPS management to continue programming, facilities, staffing, and funding at their current levels, providing protection of the park values without increasing park operations. Resource preservation and protection would continue to be a high priority for NPS management of Kalaupapa NHP but would be based only on the park's enabling law, the NPS Organic Act, NPS regulations and policies, and agreements with state agencies. A-1 predominantly focuses on near-term guidance while the DOH and patient community exists at Kalaupapa. Upon the departure of DOH from Kalaupapa, this alternative provides no additional long-term direction for the administration of the park.

The following management guidance is specific to A-1 and is in addition to the "Actions Common to Both Alternatives."

Management Zones

There would be no management zones under A-1 since the park does not have an existing management zoning scheme.

Visitor Use and Experience

Number of Visitors

In the long term, general public visitation would continue to be limited to 100 people per day at any one time—unchanged from current levels—and there would be no direction or plan

about how to provide commercial services to visitors once there are no patients living at the park.

Age Limit

In the long term, children under the age of 16 would continue to be unable to visit Kalaupapa NHP.

ALTERNATIVE 2: NPS PREFERRED ALTERNATIVE (A-2)

In the spirit of mālama i ka ‘āina, the preferred alternative (A-2) emphasizes stewardship of Kalaupapa NHP’s land and waters to ensure the long-term preservation of Kalaupapa stories. The diverse resources would be managed from uka to kai to protect and maintain their character and historical significance.

A-2 would cultivate, establish, enhance, and maintain a wide range of partnerships with varied entities throughout Hawai‘i, nationally, and abroad for the long-term stewardship of Kalaupapa.

As long as patients live at Kalaupapa NHP, the NPS would manage it in cooperation with DOH and its other partners to maintain and preserve the character of the community. Current management of visitation and use by DOH will not change, as per HRS 326. In addition, “so long as the patient [sic] may direct, the Secretary shall not permit public visitation to the settlement in excess of one hundred persons in any one day,” as stated in the park enabling law.

Through hands-on stewardship activities, service and volunteer work groups would have meaningful learning experiences focused on Kalaupapa’s history and significance, while contributing to the long-term preservation of the ‘āina. Volunteers engaged in NPS-managed resource management activities would be trained and/or supervised by qualified practitioners and professionals and would follow resource management protocols and goals. Engaging youth would be a key component to elevating awareness about Kalaupapa in Hawai‘i and nationally. Select historic buildings and neighborhoods would be reserved to provide lodging and administrative space for partners or volunteer service groups. The NPS would direct staff time, funding, and facilities to maintaining and enhancing partnerships. Partnership entities could include state and local agencies, schools and universities, historical institutions, Hawaiian cultural groups, environmental organizations, neighboring landowners, patient and kama‘āina families, and other nonprofit organizations such as Ka ‘Ohana O Kalaupapa. Agreements with partners would be updated to reflect the intent and actions of this alternative as necessary.

Visitation by the general public would be supported and integrated into park management. Visitor regulations would change, including allowing children under adult supervision to visit Kalaupapa. The 100 person per day visitor cap would be removed, and the park would use new management strategies to control visitation. A day-use entry pass system would be instituted as a free option for visiting the park, allowing independent access to select areas for personal reflection and learning. A nonprofit organization or concessioner could provide for visitor services such as lodging, meal service, tours, and merchandise sales. The NPS would explore a variety of ways to fund the cost of rehabilitating historic structures for these services.

In consultation with federal, state, and local agencies and partners, the NPS would recommend recognition for highly significant resources to further highlight their regional, national, and potential international significance to the general public. New designations and changes to existing designations could include expanding the current National Natural Landmark, establishment of a local marine managed area, a National Register of Historic Places designation for an archeological district, a traditional cultural property, Wild and Scenic River designation for Waikolu Stream, and World Heritage designation.

Resource management actions would maintain and enhance the integrity of resources through active management and stewardship opportunities with partners, visitors, and service groups.

The following management direction, desired conditions, and actions are specific to the NPS preferred alternative and are in addition to “Actions Common to Both Alternatives.”

Management of Specific Areas within Kalaupapa NHP

Kalawao

In the long term, the NPS would allow visitors with entry passes who have taken the required park orientation to have unescorted public access to Kalawao along Damien Road.

Kalaupapa Settlement

In the long term, while the overall character of the settlement would be protected, the function and uses of some of the neighborhoods and many of the historic structures in the settlement could change. The goal and long-term vision are to concentrate similar uses into specific neighborhoods and localized areas within the settlement to improve operational efficiencies and promote safety and security for staff, partners, and visitors. A building use and infrastructure plan could be developed to define further NPS responsibilities and goals for the settlement. Also, see the “Historic Structures” section for additional information.

Peninsula and Kauhakō Crater

In the long term, public and stewardship-focused access to the peninsula would require an official escort to protect the area from potential adverse uses and activities. Considering health and life safety, unescorted public access to the rim of Kauhakō Crater from Damien Road could be allowed to visitors who have an entry pass obtained at the NPS orientation facility.

Pālā’au State Park

Visitor facilities at the Kalaupapa Overlook could be improved to include information about how to visit the park. In collaboration with DHHL, DLNR, and R. W. Meyer, Ltd., the NPS may consider establishing a kiosk on Pālā’au State Park lands or near the trailhead to provide interpretive and orientation information for visitors seeking to learn about Kalaupapa and for those who descend the pali trail to Kalaupapa.

Waikolu Valley and Pu’u Ali’i Natural Area Reserve

The NPS and DLNR could develop a joint Waikolu ahupua’a plan to define agency roles and responsibilities, engage the public and community, and address resource management and use, including restoration projects in the watershed and protection of Waikolu Stream’s outstandingly remarkable values (ORVs), which make it eligible for designation as a wild and scenic river.

Management Structure, Partnerships, and Agreements

Transition planning between the NPS and state agencies and other partners would develop a strategy to improve the effectiveness of existing and future partnerships by prioritizing actions to meet the goals of the various parties.

Department of Health Partnership

In the near term, the existing structure of shared DOH and NPS management would continue under the current cooperative agreement through 2024. Once the DOH no longer provides services to patients in Kalaupapa NHP, DOH departs Kalaupapa, and ownership of their buildings transfers to DHHL. Continued maintenance and management of the structures

transferred by the DOH to DHHL would remain the responsibility of the NPS under their lease with DHHL

The DOH would continue to manage operations related to the care of the patient community and DOH staff support, including continued operation of the care facility, general store, and gas station for patient residents and DOH staff. The DOH would also continue to oversee and operate the visitor permit and sponsorship system and some visitor facilities, including the Visitors' Quarters, continue to maintain patient homes and yards, and manage the state-mandated closure of Kalaupapa Landfills.

The NPS would continue to manage visitor protection, education and interpretation, natural resources, cultural resources, historic buildings and structures, and infrastructure, including roads and trails. The NPS would continue to assume management and operational responsibilities and facilities as the DOH transitions out of management responsibilities at Kalaupapa.

The NPS and DOH would collaborate for more explicit transition planning to guide the turnover of management responsibilities for visitor use, historic structures and facilities, and operational responsibilities. Once DOH no longer provides services to patients and ownership of its buildings transfers to DHHL, the NPS would manage them under the lease with DHHL.

Department of Hawaiian Home Lands Partnership

The NPS would continue the 50-year lease agreement with DHHL (through 2041) and work collaboratively with DHHL to define and plan for long-term management of DHHL lands. NPS does not have the authority to regulate homesteading.

The issue of homesteading on the DHHL lands within the park has been raised in multiple venues. Any decision to allow homesteading within the park would be for DHHL to make and would require a change to the existing lease between DHHL and the NPS, and DHHL would be responsible for compliance with state laws as well as NHPA (Section 106). The NPS would also need to evaluate such a change in use (or any other change in use) to ensure that it meets the requirements of the park's enabling law and the NPS Organic Act.

The NPS and DHHL could develop an agreement consistent with the lease to define roles and responsibilities for the long-term care and use of the settlement and DHHL lands within the park boundary, including community use areas identified in DHHL's plan for Kalaupapa. Such an agreement with DHHL could be effective upon DOH's departure.

To further DHHL and NPS goals at Kalaupapa, the NPS would recommend partnering with DHHL to develop agreements for facilities and lands to support future programs and activities for native Hawaiians related to the purpose of the park. In particular, stewardship programs could include archeological and historical site rehabilitation and preservation of structures and cultural landscapes within DHHL lands to further shared place-based stories and traditions

Department of Land and Natural Resources, Department of Transportation, and R. W. Meyer, Ltd. Partnerships and Churches

In the near term, the NPS would continue to work collaboratively with DLNR and DOT for management of these lands, resources, facilities, and operations within Kalaupapa NHP boundary.

The NPS would work collaboratively with R. W. Meyer, Ltd., and religious institutions under existing or new agreements for long-term management of Kalaupapa NHP to meet the goals described in the preferred alternative.

Kalaupapa NHP Community-based Group

The NPS would encourage that a community-based group be established to provide their mana'o (thoughts, ideas, knowledge, or opinions) during and after the transition and once there is no longer a living patient community at Kalaupapa. The NPS is committed to partnerships for the long-term care and management of Kalaupapa NHP.

Research

The NPS would encourage and foster research about Kalaupapa, its history, and resources. NPS staff would facilitate research in park collections and on-site within the park's boundaries.

Cultural Resources

The NPS would manage cultural resources through engagement with partners, visitors, and service groups for visitor learning and enjoyment.

The NPS recognizes the dynamic nature of planning for and managing Kalaupapa's cultural resources. Under the 2021 programmatic agreement, the NPS would continue to consult on projects and programs to develop, inform and maintain an adaptive management philosophy and strategy that may include adaptive management plans for specific areas and/or historic property types; indicator measures, and collaboration with other partners to incorporate partner goals. The NPS would also consider new opportunities and risks as they arise and reprioritize historic preservation projects as needed.

Many of Kalaupapa NHP's cultural resources are in vulnerable locations along the ocean shore within the 100-year floodplain and are at-risk from tsunamis, hurricanes, sneaker waves, storm surges, flooding, and sea level rise. Continued documentation, monitoring, and planning would help determine responses to catastrophic losses and appropriate actions and future management of impacted resources.

Values, Traditions, and Practices of Traditionally Associated People

The NPS would enhance the ethnography program with additional staff and collaboration with partners focused on patients, their 'ohana, kōkua (helpers), and kama'āina, including Ka 'Ohana O Kalaupapa. The NPS would foster connections with lineal descendants of kama'āina and patients for healing and cultural practices. The NPS would conduct formal and informal oral histories, documentation, and research of existing and past cultural traditions and peoples associated with Kalaupapa. Given the complexity of occupation and displacement of people in Kalaupapa, further studies would be needed to further research the traditionally associated people of Kalaupapa. Opportunities for interpretation, cooperation, and collaboration with traditionally associated people would be developed in support of cultural and resource management activities. The NPS would support a nomination for a traditional cultural property designation.

Archeological Resources

The NPS would increase preservation and research of archeological sites and prepare a National Register of Historic Places nomination for a potential Kalaupapa peninsula archeological district. The NPS would manage and increase hands-on learning, research, stabilization, and other preservation treatments of archeological resources through stewardship activities

including community engagement, integrated training opportunities, monitoring and consultation.

Native Hawaiian sites and features from the pre-settlement period would receive preservation treatments, including stabilization, rehabilitation, and restoration. The NPS would collaborate with practitioners and partners to ensure community engagement and appropriate project consultation and the long-term management of archeological features and sites that contribute to the NHL and cultural landscape. The opportunities for rehabilitation and restoration projects are numerous and could include work on heiau (Hawaiian temple platforms), agricultural rock walls, holua slides, native plant restoration, and invasive vegetation clearing.

Historic Structures

Historic structures would be managed through adherence to NPS cultural resource, facility, and asset management programs, laws, and policies, including the *Secretary of the Interior's Standards for Treatment of Historic Properties (Secretary's Standards)*. In consultation with the SHPO and 106 compliance processes, NHL-contributing historic structures could be stabilized, preserved, and rehabilitated for compatible current and future uses, including visitor facilities, partner uses, park operations, and as interpretive exhibits.

In the long term, and with appropriate community consultation regarding specific projects and undertakings, the NPS could develop a building and infrastructure plan that would help the NPS meet preservation goals and would include an adaptive management component. The plan would provide implementation-level guidance for preservation, maintenance, housing, and potential adaptive reuse of buildings and infrastructure consistent with the preferred alternative. Historic structures would be stabilized, preserved, and rehabilitated for compatible current and future uses, including visitor facilities, partner uses, park operations, and as interpretive exhibits.

Key components of the preferred alternative, which would be reflected in the plan, are that the NPS would strive to meet preservation goals while working with the park's state, religious, and other partners. In addition, the NPS would involve community and other stewardship groups in appropriate historic preservation projects through consultation for projects that could include stewardship activities which provide hands-on community engagement with projects and might help offset NPS costs.

Cultural Landscapes

The NPS would improve the overall condition of Kalaupapa's documented cultural landscapes within the park boundary, including the Kalaupapa and Kalawao settlements and the Molokai Light Station. A cultural landscape report to provide guidance and to identify long-term strategies that reduce fragmentation and incremental loss of cultural landscape features and to prescribe preservation treatments for landscape characteristics and features has been developed including research on cultural traditions expressed in the landscape and stabilization. The cultural landscape report includes patient residential gardens, compatible adaptive reuse of selected areas for public use and education, and reintroduction of native plants. It also identifies viewsheds that the NPS would maintain to enhance understanding of the larger landscape, particularly from overlooks and viewpoints.

The NPS would expand an already active cemetery preservation program that may include conducting formal investigations to identify and quantify additional gravesites, marking cemeteries, and marking gravesites and continuation of stabilization efforts as well as community consultation and the potential for the integration of training programs to engage

community in knowledge transfer and sharing of maintenance and management responsibilities for the sites.

A key component of the long-term preservation of Kalaupapa NHP's cultural landscapes is collaboration with a variety of partnership entities that will engage to steward (malama), stabilize, preserve, and rehabilitate landscape features and characteristics within the 'āina.

Museum Collections

To better understand and manage the full range of collections related to Kalaupapa, held by the NPS or other entities, the NPS would collaborate with partners in managing, documenting, and conducting research related to the collections and further partner with repositories to house Kalaupapa museum collections as well as identify Kalaupapa-related collections housed in offsite repositories. The NPS and its partners would develop digital tools, finding aids, and media products that support research and offer creative ways for visitors to interact with the collections both on-site and off-site. Museum collection items could be displayed in exhibits within historic structures and at visitor facilities as appropriate, and the NPS would work with appropriate partners for long-term arrangements for the conservation of these items.

Natural Resources

Research and monitoring programs would expand to improve understanding of ecosystem processes using both traditional and contemporary methods. The NPS would involve partners and stewardship groups in natural resource management activities.

Air Quality

The NPS would work with national, state, and local entities to better understand air quality at Kalaupapa and implement Molokai and NPS initiatives that improve air quality.

Soundscapes

The NPS would conduct baseline acoustic monitoring through the NPS Natural Sounds and Night Skies Division. The NPS would work to restore the natural soundscapes by reducing the number of feral animals and increasing the number of native species in the park, quantifying soundscape levels in developed areas, identifying noise level management, and assessing levels compatible with the historic, cultural, and contemplative character of the park.

Lightsapes

Baseline night sky and lightsapes monitoring would identify ways in which the NPS would work to improve natural dark night sky conditions, protect the park from light pollution, and reduce electrical power usage by using sustainable design and technologies in the park.

Water Resources

High water quality areas would be protected and preserved, and poor water quality areas would be improved where possible. The NPS would work with partners outside the park that utilize and manage water resources to improve water quality and flows.

Marine Resources

In consultation with DLNR and community partners, the NPS would explore establishing a managed area of important resources within the marine portions of the park as well as management strategies for invasive species.

Soils and Geologic Resources

The NPS would manage geologic resources as a component of natural systems and viewsheds, mitigate for soil erosion and landslides, and take preventive measures to stabilize sensitive and erodible areas, as feasible.

Vegetation

The NPS would expand the vegetation monitoring program to track status and trends of plant species in the park, expand the plant nursery program, manage invasive nonnative vegetation, implement an integrated pest management plan, and manage culturally important vegetation in coordination with cultural resources staff.

Wildlife

Management of wildlife would focus on reducing nonnative wildlife species within the park and improving native habitat for native birds and other native wildlife. Management methods would include fencing and removing feral ungulates in management units of the park and increasing efforts to reduce nonnative small mammals (such as mongoose) from the settlement. The NPS would also establish a monitoring program to track wildlife status and trends.

Scenic Resources

The NPS would partner with stewardship groups to remove invasive nonnative vegetation that obscures or impacts views and features.

Contemporary Resource Use

The NPS would work cooperatively with the State of Hawai'i, in consultation with community groups, including through formalized rulemaking as necessary, to manage marine resource use and also to ensure the sustainability of the resources for future generations. The NPS would look to cooperative models for fishing best practices, such as those at Ha'ena, 'Āhihi Kīna'u, and Kaho'olawe.

The NPS would also engage partners and service groups in preservation activities that support traditional cultural uses consistent with NPS laws and regulations, and other federal laws

Visitor Use and Experience

To preserve Kalaupapa NHP's serenity, sacredness, and sense of isolation in the long term, visitor regulations would be designed to provide a variety of high-quality visitor experiences focused on learning about Kalaupapa's history and stewardship. Structured and unstructured visitor use activities would accommodate a range of visitor needs and desires compatible with the park purpose. A visitor use management plan would be developed to help the NPS emphasize personal reflection, contemplation, culture, and history through opportunities for hands-on stewardship activities that contribute to the preservation, rehabilitation, and restoration of resources.

Additional planning could address all aspects of visitor use, including number of visitors, orientation and access, overnight use, and user capacity and infrastructure carrying capacity. The quantity and breadth of visitation affect multiple areas of park management, and more detailed planning would be necessary for structuring visitation at Kalaupapa in the future. Changes to visitor use would be designed, implemented, and monitored so that use does not exceed facility capacity or alter the character of Kalaupapa NHP.

Interpretation and Education

The NPS would greatly expand the growing interpretation and education division over time, including hiring staff to support a range of interpretive opportunities, such as on-site interpretation, hands-on stewardship and learning, and educational and outreach programs to reach people who may not be able to visit the park. The NPS would collaborate with Ka 'Ohana O Kalaupapa in the development of interpretation and education programs. In addition, the

NPS would involve patient residents, 'ohana, and kama'āina as cultural interpreters to tell the story of Kalaupapa. NPS staff, commercial guides, docents, and partners would be trained to convey accurate information about Kalaupapa's history, patient community, and Hawaiian culture.

Through activity, experience, and service, park visitors would be engaged in the long-term care of Kalaupapa's history and 'āina. A focus on youth groups would help to share Kalaupapa's unique history with future generations and promote a stewardship ethic for the long-term care of Kalaupapa NHP. Stewardship groups would be engaged in a wide variety of park projects.

In the long term, the NPS and its partners would provide facility-based interpretive programs, interpretive media (publications, exhibits, and films), digital experiences (computer and web-based programs, apps), on-site demonstrations, and opportunities for people to interact with NPS interpretive staff and partners at the park. A variety of demonstrations and interpretive tours by NPS staff, partners, and experts would provide visitors with a greater understanding of Kalaupapa's resources.

Paschoal Hall, or another compatible building, would function as the primary interpretive and orientation center and multipurpose space. It would be a hub for orienting visitors when they first arrive at the settlement. It would house interpretive exhibits and could be used for film screenings, presentations, and other group functions. All visitors would be required to complete an orientation and before travelling to other areas of the park.

Interpretive information, such as wayside panels, would be sited at key locations throughout the park. Signs and interpretive waysides would be improved to provide clear and accurate information to visitors. A parkwide wayfinding and site identification plan would guide the development of signage and wayside panels for visitor enjoyment and learning. Select patient homesites and buildings, historic and natural features, and scenic viewing areas would provide visitors with a varied and in-depth understanding about Kalaupapa's cultural and natural history. Museum collections items could be displayed as exhibits for interpreting Kalaupapa's Hansen's disease community and Hawaiian history and traditions.

Youth and communities on Molokai and throughout Hawai'i could be targeted through curriculum-based educational programs and materials, such as lesson plans and traveling educational exhibits. This could be done in partnership with educational institutions.

A long-range interpretive plan would be developed to plan for the park's interpretive and educational goals including visitor experience, themes and sub-themes, and detailed planning for specific sites and recommendations about interpretive media, facilities, personal services, and direction for interpretive and educational programs and partnerships.

Number of Visitors

In the long term, the number of visitors allowed per day would change. The number of visitors allowed would be determined and managed by: 1) the capacity of facilities to provide high-quality visitor experiences, 2) limits on numbers of visitors through concessions contracts and commercial use authorizations, 3) an entry pass system, and 4) user capacity guidance contained in this GMP; see Appendix C, "User Capacity." The NPS would manage visitation to ensure the preservation of Kalaupapa's qualities that are most valued: the special spirit of the people and their stories, the sacred mana (spiritual power), the cultural landscape and historic surroundings, the peace and quiet, and the feeling of isolation and solitude.

The capacity of historic building, facilities, and infrastructure at Kalaupapa is finite and would not substantially increase. When facilities and systems need replacement or improvements, the

capacity would generally be maintained at current levels. The NPS would have the priority for occupying and using facilities for park operations followed by park partners.

The NPS would set limits in concessions contracts and commercial use authorizations on the number of visitors who purchase commercial services as part of their visit to Kalaupapa NHP. For example, limits of users would be instituted to manage the number of people who enter the park by mule, who use concession-led tours within the park, and who could stay overnight (once that is allowed). In the event that such services are not financially viable for a private company, the NPS could approve a nonprofit entity to offer these services under the same limits. An entry pass system would be established to provide structured access to portions of Kalaupapa NHP, which would provide greater opportunities for more people to learn about, see, and experience Kalaupapa. Foot access from the top of the pali would be allowed to the settlement for day use by Molokai residents and general visitors. This would allow Molokai residents and visitors the opportunity to regularly visit the park and would seek to strengthen the connection between topside Molokai and Kalaupapa's people and 'āina. Air access to Kalaupapa would also be allowed, and people not associated with a commercial tour or lodging could visit the park for day use. Certain days per year could also be designated by the NPS for special events, such as "Ohana Days," based on availability of staff and user capacity standards.

Orientation and Entry Pass

Orientation and visitor information would be provided on the internet, phone, apps, at off-site locations, and at key entrance points within the park boundary. Visitor information on the internet and at off-site locations would prepare visitors for their trip to Kalaupapa.

Orientation and Interpretive exhibits could be at the Ho'olehua and Kalaupapa Airports. The NPS would consider establishing an NPS presence for visitor orientation in Kaunakakai and in partnership with other state agencies or entities. Orientation information could be located at a kiosk at Pālā'au State Park and topside trailhead and at the bottom of the pali trail upon entering the settlement.

An entry pass system would be established for all visitors to the settlement and other areas of the park. The purpose of an entry pass system would be to protect resources, to orient visitors, and to monitor and evaluate visitor use. The entry pass would describe the conditions for visitation and regulations for use at Kalaupapa NHP.

All visitors wishing to enter the settlement and other areas of the park would be directed to Paschoal Hall or another facility to receive a required entry pass and orientation to the park. The orientation would include introducing visitors to the purpose and significance of Kalaupapa and conveying rules and regulations so that visitors are respectful, especially in sensitive areas such as cemeteries and archeological sites, and safe during their visit. Provisions for repeat visitors could be established. Visitors using the free day-use option would need to ensure they leave the park by dusk, unless they have previous arrangements for overnight accommodations within the park.

Access within Kalaupapa

In the long term, the NPS would manage visitor access within Kalaupapa in order to protect resources, provide high-quality visitor experiences, and promote visitor safety within the park. Escorted and unescorted access within the park would be allowed after visitors are oriented to the park and receive an entry pass.

The NPS would move toward allowing unescorted access to select areas within the park to provide self-guided opportunities for those seeking to learn about Kalaupapa on their own. After receiving an entry pass, visitors would be allowed unescorted access within the Kalaupapa Settlement and from the settlement to the airport and Molokai Light Station. Visitors would

have unescorted access within the Engagement Zone (see Appendix A: Management Zones) along travel corridors from Pālā'au State Park to Kalaupapa Settlement and to Kalawao. After receiving an entry pass, visitors could walk or travel unescorted on Damien Road to Kalawao, including Saint Philomena Church and Judd Park. Allowing visitors to travel to Kalawao would provide access for family members to visit the memorial on their own.

Access will be ranger-led to Kauhakō Crater initially. Considering health and life safety, future unescorted access could be allowed to provide visitors with an opportunity to hike to the high point on the peninsula, see the crater lake, and learn about the geology and cultural resources related to the crater. Increased ranger patrols along Damien Road and Kalawao would be necessary.

Visitors would need an NPS, partner, or commercial guide to access all other locations within the park below 500 feet, including the peninsula and Waikolu Valley.

A transportation plan would be developed to address visitor transportation, such as considering a commercially operated shuttle service, the types of appropriate vehicles, circulation routes, universal accessibility, and costs, as well as addressing Kalaupapa NHP's roads and trails and appropriate historic preservation treatments.

Areas above the 500-foot elevation are steep and largely inaccessible. Access to Kalaupapa through the upland areas would be discouraged and could be prohibited to ensure safety and compliance with the entry pass system.

Age Limit

In the near term, the NPS would honor the wishes of the patients to maintain the age limit. The NPS would work with the Kalaupapa Patients Advisory Council if they desire a change to the age limit.

When there is no longer a patient community at Kalaupapa NHP, allowing youth to visit as part of group activities would share Kalaupapa's history and significance with children. The intent of the preferred alternative is to create future stewards of Kalaupapa, and instilling in youth a genuine understanding and experience of Kalaupapa is the first step to developing a conservation ethic and continuing cultural traditions at Kalaupapa NHP. In the long term, the age restriction would be lifted to allow visitation by children, though this policy would be periodically evaluated and could be changed. Children under the age 16 would be required to have an adult escort in the park. This requirement would be established for children's safety within the park and to ensure that children follow visitor regulations.

Overnight Use

Limited overnight use would be offered for organized groups and park partners; select historic buildings and facilities would be identified for overnight use, where appropriate.

Organized groups would be engaged in stewardship and learning activities, and park partners would include those with pre-existing associations and ancestral connections to Kalaupapa. The NPS would manage overnight use and could have other entities, including agencies, concessions, and nonprofit organizations, conduct the operations.

Overnight use by the general public would be explored to provide a more in-depth experience of Kalaupapa NHP and to serve those seeking a multiple-day visit. Visitor accommodations would need to meet safety codes and would provide a more in-depth experience of Kalaupapa. The rehabilitation of historic buildings for public overnight use may require securing nonfederal partner contributions.

Recreational Activities

Visitor activities would be focused on learning and experiencing the history of Kalaupapa NHP as a settlement for Hansen's disease patients, as a home to Native Hawaiians, and a place rich in geological and ecological resources. Recreational activities that detract from the park's special character and are not compatible with the park's purpose, such as scuba diving, geocaching, and skateboarding, would be prohibited. Appropriate recreational uses would be set under the authority of the superintendent pursuant to 36 CFR 1.5 and 1.6.

Commercial Visitor Services

The goal for commercial operations at Kalaupapa NHP would be to provide for visitors' basic needs and appropriate visitor services that enrich their experiences through services that are safe, suitable, and compatible with the park's purpose.

In the long term, concessioners or nonprofit organizations may assist the NPS in providing a range of visitor services. NPS management of commercial services would be governed by Public Law 96-565, federal laws, regulations, and policies for concessions and commercial uses, and the lease with DHHL. The NPS would provide guidance to potential concessionaires and nonprofit entities who seek to provide services in the park that are consistent with the purposes of the park.

Commercial services could include tours, mule rides, shuttle services, merchandise sales, the general store, gas station, food and beverage service, and overnight lodging. In the event that these services are not profitable, a nonprofit entity could assist the park with providing visitor services.

The NPS would work collaboratively with DHHL to establish appropriate revenue-producing visitor services in the areas of the park covered by the lease, which could allow native Hawaiians opportunities to be involved in Kalaupapa NHP's visitor services.

Access and Transportation Facilities

Land Access and Pali Trail

The NPS will complete additional trail planning to support access and enhance the visitor experience. The NPS will develop a Kalaupapa (pali) trail management plan to identify management objectives and strategies to guide the protection, management, maintenance, and use of the trail. In addition, NPS will enhance the pali trail by clearing vistas, establishing rest stops, and defining places for mules to pass along the trail. The NPS could partner with others for trail maintenance. The NPS would offer to assist the local community with trail planning adjacent to Kalaupapa NHP on topside Molokai.

Air Access and Kalaupapa Airport

The Kalaupapa Airport would be open for public access to Kalaupapa. Upon arrival, visitors would be directed to Paschoal Hall or another facility where they would receive an orientation and obtain an entry pass.

Kalaupapa Roads and Trails

The NPS would develop a transportation plan for visitor and operational transportation that would address universal accessibility and identify areas where access could be restricted for resource protection. The plan would address the historical integrity of the road and trail network and preservation treatments and could be completed in conjunction with a cultural landscape report.

The character of roads throughout the settlement would be maintained, including road width, shoulder treatments, materials, and alignments to assure compatibility with the historic

character. Deteriorated unpaved roads could be improved and stabilized with techniques that maintain the unpaved character but improve driving conditions, such as surfacing aggregate instead of asphalt or gravel. The NPS would replace and/or establish directional signs necessary for safety and orientation.

Sustainable Practices and Responses to Climate Change

The preferred alternative would increase documentation and monitoring efforts by the NPS, partners, and stewardship groups to understand the effects of climate change, including assessing the vulnerability of resources.

The NPS would conduct scenario planning and explore adaptation strategies for resources with partners and subject matter experts including increasing resilience and protection, physical relocation, pre-loss documentation, and interpretation of climate change consequences. Potential climate change adaptation actions may affect decisions about visitor use and facilities management. Decisions would be made on a case-by-case basis depending on the significance, condition, and vulnerability of the resource(s), with the overarching goal of sustainable practices.

The park would formally study the feasibility of consolidating energy generation in one or more locations such as topside Molokai, building roofs, or other non-sensitive visually screened areas and would implement a variety of energy conservation practices. Through value analysis, the park would determine the most advantageous renewable source(s).

The implementation of water conservation policies and actions could include monitoring and restricting potable water usage and gray water recycling options.

The NPS fleet would be reduced to the minimum number of vehicles required to support park maintenance operations. To the extent possible, vehicles that do not use fossil fuels would be procured.

Operations

Safety and Security

In the long term, the NPS would increase ranger patrols along Damien Road and to Kalawao. Ranger patrols on the pali trail would focus on general visitor safety and resource protection.

Staffing

The NPS would formalize a training program that provides a range of training opportunities for Native Hawaiians and Molokai residents to learn skills that would better enable them to qualify for NPS positions at the park in all divisions, programs, and leadership levels. The investment in training and succession planning of the next generations of park stewards will implement and develop long-range management and operations, which will eventually be led by the community to benefit the community, with the NPS facilitating support.

The NPS would evaluate facility capacities, update the housing plan, and consider allowing family members of NPS staff, concessions, and partners if there is available housing space and infrastructure to accommodate them at the park. Based on this analysis and planning, the NPS would develop rules related to staff, concessions, and partner family members residing at Kalaupapa. The NPS would not build additional housing or substantially increase the capacity of infrastructure to support family members in the park.

Action Plans, Studies, and Agreements

A number of action plans, studies, and agreements would be developed to implement the preferred alternative. Some of these items would require additional special project funding or increases to the operating base funding. Plans for actions with potential to affect the environment would require formal analyses of alternatives in compliance with the NEPA, NHPA, and related laws. Such documents would reference and be tiered to the preferred alternative.

The following plans and studies would support the implementation of the preferred alternative: accessibility transition plan; administrative history; archeological survey, site recording and documentation, including NRHP nominations, and determinations of eligibility, if applicable; building systems data; building use and infrastructure plan; climate change vulnerability assessment; comprehensive energy conservation plan; cooperative management agreement with Department of Hawaiian Home Lands; cultural landscape report; ethnographic overview and assessment; ethnographic research and oral histories; Geographic Information System (GIS) database with a public web-based interface for interactive interpretation; Historic American Buildings Survey, Historic American Engineering Record, Historic American Landscapes Survey documentation of coastal historic buildings; historic resources study; historic structure report(s); invasive species management plan; Kalaupapa (pali) trail management plan; long-range interpretive plan; outreach plan; partnership stewardship strategy; renewable energy feasibility study; resource stewardship strategy; resource management record survey; scenario and adaptation planning related to climate change; soundscape management plan; staffing plan; strategic plan; transition planning; transportation plan; vegetation management plan; visitor use management plan; visitor use study; visual resource management plan; Waikolu ahupua'a plan; wildlife and ecosystem status and trends monitoring; and wild and scenic river designation assessment of Waikolu Stream and other streams.

Management Zones

Alternative 2 (A-2), the NPS preferred alternative, includes management zones that are applied to the landscape to identify an area's predominant use and desired future conditions. The specific boundaries and guidance provided is in Appendix A: Management Zones. It is important to note that some actions in the management zones, particularly related to visitation and use, would only be implemented after the DOH no longer manages visitation at Kalaupapa NHP.

ALTERNATIVES AND ACTIONS DISMISSED

The following alternatives were considered but were rejected because they were deemed unreasonable and/or met one or more criteria for dismissal under NEPA [40 CFR 1504.14 (a)].

Termination of NPS Management of Kalaupapa NHP

During public meetings, the NPS was asked to consider terminating NPS management. This action was dismissed from further consideration because such an approach would not meet the Congressional mandate set forth in the park's enabling law to preserve the story of Hansen's disease patients and the resources within the park. The NPS is committed to continuing management of Kalaupapa NHP as guided in the long-term lease with DHHL and cooperative agreements with the state agencies and other landowners regardless of the long-term tenancy of state-owned lands. In the long term, any changes regarding NPS management would be determined by legislation or changes to the lease and agreements. The NPS will

continue to reevaluate management as the GMP is implemented and during the lifetime of the existing cooperative agreements and the 50-year lease with DHHL. Additionally, the NPS considered comments on this topic from patients, the public, and partners who largely support NPS's management role at Kalaupapa NHP.

Camping

Individuals expressed a desire for camping in Kalaupapa Settlement, Waikolu Valley, and other locations as a less expensive option to stay overnight in the park. Camping was initially included in the draft alternatives; however, public comments did not support the idea of camping. Many patients and other individuals expressed the view that camping is a recreational activity that is incompatible with the purpose of the park and that establishing designated camping areas and building support facilities, including restrooms, would require new construction and introduce new land uses. Protecting and preserving the character of Kalaupapa NHP is a primary purpose of the park. For these reasons, camping was dismissed from further consideration.

New Access to Kalaupapa

New forms of access, including a tram and road from topside Molokai, were proposed to provide easier access and transport of goods and materials to Kalaupapa NHP. These ideas were dismissed from further consideration because they would dramatically alter the historic character of Kalaupapa NHP, would introduce new uses and challenges to managing a small isolated community, and be costly to construct and maintain over the long term.

Boundary Modification

The draft proposal to recommend external boundary modifications along the North Shore to include 5,259 acres of Pelekunu Preserve and 7,323 acres of Pu'u O Hoku Ranch was included in the draft GMP/EIS. Due to numerous opposing public comments and the NPS's priorities to focus on Kalaupapa NHP operations during and after the transition, the boundary proposal was removed from the plan.

Other Alternatives in the Draft GMP/EIS

The draft GMP/EIS included four alternatives, two of which were considered and dismissed for consideration in the EA after public review of the GMP/EIS. "Alternative B" was very similar to the no-action alternative and focused more on external and outreach programs. Based on consultation and public comments, alternative B was dismissed because of the need to focus on the resources within Kalaupapa NHP. "Alternative D" offered a wide range of visitor experiences and more opportunities for unescorted public access within the park. Alternative D was dismissed because the high level of visitor use was not supported by public comments and because a high level of visitor use could result in negative impacts to resources. This page intentionally left blank.

Chapter 3

Affected Environment



St. Philomena Church in 1905. Photo courtesy of Hawai'i State Archives.

CHAPTER 3: AFFECTED ENVIRONMENT

The purpose of this chapter is to describe the physical, biological, cultural, and social environments of the park, including human uses that could be affected from implementing the alternatives described in the preceding chapter. Information within provides a reference for understanding the changes that would occur if the alternatives were implemented.

CULTURAL RESOURCES

Values, Traditions, and Practices of Traditionally Associated People (Ethnographic and Biocultural Resources)

Biocultural resources are defined as any physical, biological, and human elements that strengthen a people's evolving relationship with a defined place and maintain their unique set of customs, beliefs, language, traditional knowledge, objects, and built environment (Pacific Island Climate Change Cooperative Culture and Communities Working Group, 2016).

Kalaupapa has many layers of human history. They include the landscapes and resources associated with the pre-1866 native Hawaiian community and displaced Hawaiians, relocated to other areas of the peninsula until the late 1890s. The central ethnographic resources are associated with the patient population at Kalawao and Kalaupapa from 1866–1969.

Kalaupapa connects people through traditional Hawaiian stories from the kama'āina (native-born Hawaiians and long-time residents) and the stories of the patients' connections to the 'āina. It is a place with a compelling story to tell the world.

Traditionally Associated People

In 2009 the park started a formal ethnography program to gather information about resources and historic properties and to conduct individual and group consultation to aid in park planning and management. The NPS consults with the patient community in general, as well as with the Kalaupapa Patients Advisory Council, who represent the broader patient community.

Description of the Patient Community at Kalaupapa

There are fewer than 12 patients at Kalaupapa as of this writing. Current patients were admitted to Kalaupapa, many of them as children, between 1936 and 1969. All patients are assigned a residence, although several live on other islands and only stay in their homes at Kalaupapa occasionally. Most are retired, though some continue to work part-time. Almost all are mobile, and many are able to drive around the settlement. Due to health reasons, several patients live at Hale Mōhalu, the Hansen's disease ward at Leahi Hospital in Honolulu, and rarely visit Kalaupapa.

Resource Use by the Patient Community

When the patients were young, they were taught to fish and gather resources by the older patients in the community: a pattern that repeated itself at Kalawao and Kalaupapa. They explored the beaches, ocean, and mountain valleys and streams for sustenance and recreation. The foods harvested supplemented meals at the group homes: for the predominantly Hawaiian or part-Hawaiian patients, fish and other ocean delicacies were ties to their cultural identity. Plants, wildlife, and items were also collected for cultural purposes, medicine, and healing. Hunting with guns was a later tradition that began in the early 1950s. In earlier years, patients hunted pigs and goats; axis deer arrived in the park in 1984, and kōkua take them today via a DLNR animal control permit, administered by the DOH. The tradition of giving fish, salt, and other resources to widows, the elderly, and others in need is rooted in Hawaiian culture and is still practiced today among kōkua and patients. Current resource use by the patients is

limited by their age and physical ability. The one gathering practice that is still accessible to most patients is the collection of salt along the rocky northern coast. The patients no longer fish or hunt.

Pre-settlement Native Hawaiian Community

The displacement and removal of the pre-settlement Hawaiian community between 1865 and 1895 contributed to a loss of ancestral connections, cultural knowledge, and traditions relating to the landscape. The disruption of the oral tradition by the removal of the Hawaiian community resulted in a fragmented history with incomplete information about earlier cultural resources and significant sites.

At the very heart of Hawaiian culture lies a sense of place and connection to the ‘āina woven together through wind and rain names, stories, chants, songs, cultural sites, and the resting places of the kupuna (elders). Across the peninsula, from Papaloa to Kauhakō to Kalawao and Waikolu, an important part of the Kalaupapa narrative is about reconnecting to the ‘āina once again.

The NPS is learning more about the Hawaiian communities who lived on the peninsula prior to 1866. The NPS continues to work to identify descendants of the displaced Hawaiian community who once were associated with the park’s biocultural resources. In the future, the NPS hopes to engage more fully with these descendants and include their input in decisions that will be made about park resources and future management.

Archeological Resources

The Kalaupapa region is a layered complex of archeological sites, diverse in type and representative of the full historical continuum from pre-contact to the present day. Due to its physical isolation and lack of modern development, it is regarded as one of the most intact archeological complexes in Hawai‘i. In 1976, several individual archeological sites and structures within Kalawao County were designated a National Historic Landmark and listed in the National Register of Historic Places. The archeological sites have also been recognized in the park’s enabling law.

Within Kalaupapa NHP, 669 acres have been surveyed for archeological resources. To date, researchers have documented 567 archeological sites. Of the documented sites, all are eligible for or listed in the National Register of Historic Places. Resource types include both pre-contact sites and complexes—agricultural sites such as lo‘i (pond fields) and kula (dryland) field systems and ritual sites such as ko‘a (shrines dedicated to fishing) and heiau (temples). Historic sites and complexes include features at Kalawao, Kalaupapa Settlement, and throughout the park. Also, artifacts such as glass, household sites, and historic building remains are documented.

For more detailed information about the archeological features and associated history and culture of Waikolu Valley, see Appendix F: Wild and Scenic River Analysis for Kalaupapa NHP.

Historic Buildings and Structures

There were more than 400 buildings identified as part of the Kalaupapa Leprosy Settlement Historic District when it was designated a National Historical Landmark (NHL) in 1976. Some of these buildings have since been lost due to weather-related deterioration and termite infestation. When the park was established in 1980, an inventory of historic buildings identified approximately 200 for preservation. A small number of others were also identified that were not listed in 1980, but which contribute to the historic district’s character and setting.

There are four major types of historic buildings in the park: state-constructed residential, administration/industrial, religious, and patient-built structures. Most buildings share an architectural cohesion that is the result of a consistent handling of form, material, and style. Similarly, the 26 marked cemeteries in the park display relatively consistent use of materials, construction styles, and techniques.

A small number of residential buildings date to the late 19th century or early 20th century. Some of these may predate the movement of the settlement from Kalawao to Kalaupapa, while others were built in the early 1900s out of materials taken from buildings abandoned in Kalawao. Their form is distinctive and was once much more prominent in the settlement. They are similar to the early housing built by Hawai'i sugar planters for immigrant laborers during the expansion of the industry in the late 1890s and early 1900s. Mid-period buildings were constructed between 1919 and the 1930s and also reflect many features of standard plans produced by the Hawai'i Sugar Planters Association. After World War II, residences at Kalaupapa were typically built in the style known as "Hicks Homes," a standardized, pre-fabricated housing type popular in Hawai'i at the time. This style is named for Hicks Construction, which offered many of these homes in a catalog of floor plans. Hicks provided necessary documents to expedite financing and would even assist in obtaining a building permit. Hicks Homes were also attractive because they were marketed aggressively, resulting in a large number of homes that held their value.

Residential Buildings

Residential buildings include individual homes and group homes. Both are typically single-story, wood-frame buildings sitting above grade on post foundations with rock or concrete footings. Residential buildings are mostly detached single-family dwellings, but seven residential buildings are group homes. There are two remaining Quonset buildings (steel frame, corrugated half-cylinder structure) left at Kalaupapa by the Navy after World War II; these are currently used as a dormitory and lumber storehouse, respectively.

Patient-Built Buildings and Structures

Most of the historic buildings at Kalaupapa were built by the State of Hawai'i DOH. Patients constructed simple, small buildings for their own use using their own funds and labor. These wood-framed vernacular buildings included garages, sheds, animal shelters, and beach houses. Some of these, such as cottages on the beach, offered rest and recreation away from their institution-provided facilities. The historic buildings and structures stand as visible testaments to the needs and strengths of the Hansen's disease patients. It is important to preserve and maintain these small but significant patient-built elements, which are emblematic of how patients shaped their lives on the peninsula.

Administrative/Industrial Buildings

Kalaupapa Settlement's fame as a Hansen's disease treatment facility was due in part to the Hawaiian and territorial governments' efforts to build facilities that met the social and functional needs of patients. These included social gathering places as well as commercial services.

There are several social halls at Kalaupapa. Paschoal Hall (1916) is the most important community building, standing prominently at the center of the settlement. Another social hall, the Women's Social Club, was converted to the bakery in the mid-1930s and is now known as the Craft Shop. Other gathering places built between 1900 and 1930 were the Americans of Japanese Ancestry (AJA) Benevolent Society Hall, the Chinese Clubhouse, and the Filipino Meeting House. AJA Hall is the only building that remains from this group.

Other remaining civic buildings are the U.S. Post Office, Kalaupapa Store, Mother Marianne Library, gas station, and DOH administrative office. Buildings that were used to maintain the

settlement are located in the industrial area, including the maintenance and repair storage, the wood fabrication shop, automotive and equipment repair shops, and garages for vehicles and grounds maintenance equipment. With exterior walls of concrete or unit masonry, they are large and rectilinear, with flat or simple gable roofs of corrugated metal and few if any distinctive elements.

Religious Buildings

Places of worship played an important historical role at both Kalawao and Kalaupapa Settlements and continue to be important to the remaining patients and community. The religious buildings include the Old Stone Church, Siloama “Church of the Healing Spring,” St. Philomena Church, Kana’ana Hou Church, St. Francis Church, and the Church of Jesus Christ of Latter Day Saints.

Cultural Landscapes

There are three cultural landscape units in the park: 1) the Kalaupapa and Kalawao Settlements, 2) the Molokai Light Station and 3) the Peninsula.

Kalaupapa and Kalawao Settlements

The Kalaupapa Leprosy Settlement Historic District was designated a National Historical Landmark (NHL) in 1976. Kalaupapa and Kalawao settlements are managed as a single cultural landscape with both designed and vernacular characteristics. The cultural landscape is historically significant because it retains many of the physical resources and landscape characteristics associated with the establishment, development, and operation of the settlement for the treatment of individuals with Hansen’s disease between 1866 and 1969.

Characteristics and features of the overall spatial organization of the settlement reflect both historic vernacular elements and historic design components; planting and use of vegetation; circulation systems that reflect historic patterns of movement across the peninsula and within the settlement; the arrangement of buildings and structures in residential neighborhoods and functional areas; and small-scale features that add character and meaning to the landscape.

Natural Systems and Features: The physiographic features and natural systems that influenced establishment of the settlement at Kalawao and the relocation to Kalaupapa after 1900 are still prevalent today. The cliffs continue to invoke feelings of drama and awe and contribute to the sense of profound isolation that dominates the settlement. Other natural features were important in the lives of the patients at Kalaupapa and carry strong cultural associations for people today. They include the range of pre-contact remnants and structures throughout the entire peninsula; Kauhakō Crater and the associated lake, lava tubes, and caves; marine areas for fishing and salt collection; the navigable shoreline; Waikolu Stream as a source of water; the upper valleys that historically provided materials and natural resources for building and sustaining a settlement; natural sounds; dark night skies; and the open areas that were used for agricultural production.

Spatial Organization: *Kalawao* – Initially, with no facilities, many exiles adaptively sought shelter in existing structures. As the early Hansen’s disease settlement took form and new facilities were constructed, the settlement concentrated new development along the road that provided access to the other side of the peninsula. Today the spatial organization at Kalawao is defined by Damien Road, the two churches and associated yard areas, gravesites, and the remnant structures associated with two major historic complexes: the Federal Hospital and the Baldwin Home for Boys.

Kalaupapa – As Kalaupapa Settlement grew, the underlying pattern of development followed the orthogonal grid common to many towns. Buildings were sited along streets in an orderly

appearance typical of an American small town. The exception to this pattern is the Bishop Home, which has a 45-degree orientation to the grid, and the new Baldwin Home, which was located away from the grid to the south.

Land uses were clustered to consolidate functions and services for the patients and settlement operations.

A core area of community services was close to the industrial area and featured a store, provision room, post office, court room, poi shop, churches, and visitors' quarters for family members and friends. Individual cottages and patient residences were in the eastern portion of the settlement and had enclosed yards and garden spaces.

A number of distinct residential clusters within the settlement were established to care for the patients and members of the community.

Today, despite changes such as the loss of historic plantings, rock walls, and individual structures and outbuildings, Kalaupapa Settlement exhibits its historic spatial organization and broad patterns of development. Despite changes, many key elements that define the spatial organization persist.

Circulation: Access to the peninsula and historic patterns of circulation within the settlement are largely intact and used today. Damien Road remains the primary route between Kalawao and Kalaupapa Settlements. Circulation within the settlement is structured by an irregular road grid that provides access to all developed areas. Additionally, there are numerous circulation systems and features with historical significance that linked key neighborhoods, the lighthouse, and the pali trail.

Vegetation: Historically, vegetation served a variety of purposes. Certain plants were cultivated for cultural reasons, including crops that held ethnic value or those grown for food and/or raw materials. Hedges were established for privacy and "independence" by patients healthy enough to live autonomously, and trees and shrubs sheltered homes from seasonal winds and created variable microclimates. While there has been loss of historic vegetation—such as the disappearance of uniform plantings between building complexes—other original plantings such as fruit trees and ornamental vegetation remain, revealing aspects of daily life, community values, and cultural preferences

Small-scale Features: Numerous small-scale features remain throughout the landscape. Structures such as statuary, cisterns, monuments, and memorials lend detail and character to the physical landscape and possess utilitarian, decorative, and spiritual importance.

Cemeteries: There are 26 cemeteries within the cultural landscape. They are the final resting place for thousands of Hansen's disease victims and the kōkua who assisted them. The known cemeteries are in each of the ahupua'a on the peninsula: Kalawao, Makanalua, and Kalaupapa. At least 1,180 grave markers are present, varying in size, style, material, and condition. Marked cemeteries are cared for by clearing vegetation and maintaining the ground cover, enabling easier access. Grave markers are restored by repairing broken markers, restacking stone rubble masonry, resetting tilted markers, leveling settled grave slabs, clearing overgrown vegetation from tombs, and repairing damage from roots.

Molokai Light Station

The Molokai Light Station Historic District (listed NRHP 1982) is on the extreme northern tip of Kalaupapa peninsula. The district surrounds a majestic 138-foot lighthouse, which guides mariners sailing from the west through the narrow and dangerous Kaiwi Channel that separates

the islands of Molokai and O'ahu; light from the station can be seen up to 28 miles away and was automated in 1966.

Cultural landscape characteristics and features that convey the significance of the historical Molokai Light Station include natural systems and features, spatial organization, land use, vegetation, buildings and structures, circulation, and archeological sites. The period of significance for the Molokai Light Station is from 1908, when construction of the lighthouse began, through 1955 when the last addition was made to the wash house.

Peninsula

The Kalaupapa Peninsula cultural landscape covers the entire park outside of the Kalaupapa and Kalawao Settlements and Light Station cultural landscape units. The cultural landscape property boundary follows the park boundary and includes the entire peninsula including its coastal waters within a quarter of a mile, three deep valleys (Waikolu, Waihānau and Wai'ale'ia), and the adjoining cliffs ranging from 1,600 feet to 3,000 feet within the park's boundaries. Much of the peninsula cultural landscape dates to the period prior to the Hansen's disease period of significance and includes archeological resources. However, it is important to note that there are additional features beyond the heavily developed areas that date to the settlements' period of significance, such as the two pali trails and the water system (historically connecting Waikolu Valley to Kalawao and Kalaupapa Settlements).

NATURAL RESOURCES

The park's natural environment consists of local weather patterns, air quality, sound, and light, as well as geological, terrestrial, aquatic, and marine resources which are influenced by human activities. Threats and stressors such as invasive species, diseases and pathogens, pollutants, fire, habitat degradation, cyclic variation, and changes in weather and climate impact park ecosystems

The terrestrial environment at Kalaupapa NHP is divided into general terrestrial habitat areas: the Pu'u Ali'i plateau; the North shore valleys of Waikolu, Waihānau, and Wai'ale'ia; the north shore cliffs; Kauhakō Crater; the coastal lowland; the coastal spray area; and the offshore islets of Huelo and 'Ōkala. The plateau, valley, cliff, and islet areas are specially designated by the state and/or federal government for their resource value.

Resource management encompasses inventory and monitoring of resource conditions, preservation of native ecosystems and native species that inhabit them, and controlling nonnative species in cooperation with the State of Hawai'i and other adjacent landowners and community groups.

Water Resources, including Hydrology and Floodplains

Hydrology

Eight named streams or their headwaters ('Awahua, Pūwāhi/Keōlewa, Waihānau, Wai'ale'ia, Waikolu, Wainēnē, Anapuhi, Waioho'okalo) plus two unnamed streams occur within the boundaries of Kalaupapa NHP and provide important aquatic habitat. Most of Waihānau, Wai'ale'ia, and Waikolu watersheds and streams are in the park, except for the headwaters. Waikolu Stream is the only perennial stream within the park boundaries. The Waikolu watershed is a major source of water for the island of Molokai and is included in the National Rivers Inventory as well as being eligible for other federal and state designations. Waihānau watershed drains the western half of the peninsula including Kalaupapa Settlement, and the Nihoa area on the far western side of the park. A single well in Waihānau Valley supplies water

to the residents of Kalaupapa. Wai‘ale‘ia watershed drains the eastern half of the peninsula, including Kalawao.

Floodplains

Many of the park’s historic structures are in vulnerable locations along the ocean shore within the 100-year floodplain. These structures are at-risk from tsunamis, hurricanes, sneaker waves, storm surges, flooding, and sea level rise (see Appendix E: Floodplains Statement of Findings). The structures are of major historical significance, and the NPS acknowledges that many facilities with the settlement of Kalaupapa are subject to damage or destruction from seismic events and tsunamis.

Vegetation

Pu‘u Ali‘i Plateau: State of Hawai‘i Natural Area Reserve (NAR), 1,329 acres. The Pu‘u Ali‘i plateau is in the southeast corner of the park at an elevation of 2,500 to 4,222 feet. It supports one of the best examples of Hawaiian montane wet forest or ‘ōhi‘a rainforest in Hawai‘i and is an essential habitat for rare and endangered native forest birds, including the Molokai creeper (*Paroreomyza flammea*).

The Pu‘u Ali‘i region is considered one of the Special Ecological Areas of Kalaupapa NHP. It contains 160 plant species and eight natural vegetation communities, including ‘ōhi‘a/mixed shrub montane wet forest, ‘ōhi‘a/montane wet shrubland, mixed fern/mixed shrub montane wet cliffs, ‘ōhi‘a/‘ōlapa montane wet forest, ‘ōhi‘a/uluhe lowland wet forest; uluhe lowland wet shrubland; Hawaiian intermittent stream; and ‘ōhi‘a/uluhe montane wet forest (Hawai‘i Heritage Program 1989).

North Shore Valleys: The 1,562-acre Hawai‘i Molokai Forest Reserve is dominated by nonnative plant species, particularly in the lower and middle elevation areas (Hawai‘i, Division of Forestry and Wildlife [DOFAW] 2009). Vegetation within the upper elevation areas (1,500+ feet) of Wai‘ale‘ia Valley includes scattered native species reported along the upper eastern ridge of the valley (DOFAW 2009). The upper elevation area of Waihānau Valley, just outside the park boundary, has high species richness (Hughes et al. 2007). The Forest Reserve Area is managed by the Hawai‘i DLNR, DOFAW as a public hunting unit for pigs, goats, deer, and game birds.

North Shore Cliffs National Natural Landmark (NNL) is 27,100 total acres with 5,085 acres in the park above the 500-foot contour line. The 2,000- to 3,000-foot cliffs separate the peninsula from the rest of the island of Molokai. Native plants survive due to the steepness of the cliffs and the inaccessibility to goats, deer, and pigs. In the western NNL, from Nihoa to the western boundary of Waihānau Valley, vegetation is composed of nonnative forest, dominated by Christmas berry and java plum. Lantana and other nonnative shrubs and grasses are also common in this area.

Kauhakō Crater/Pu‘u ‘Ua‘u (141 acres): Historically, botanists described the crater as “one of the finer examples of dryland forest remaining on Molokai or elsewhere in the Hawaiian Islands” (Medeiros et al. 1996) containing an area of “pristine native lowland forest” that is “unexcelled elsewhere in Hawai‘i” (Linney 1987). Previous studies and inventories in Kauhakō Crater and the surrounding environs have documented a total of 134 vascular plant species.

Coastal Lowland (2,701 acres): Most lowland coastal vegetation is composed of nonnative species. Guava, Christmas berry, lantana, and java plum are common. The highest percentage of coastal lowland native vegetation (76 plant taxa) is found at Kūka‘iwa‘a Peninsula. The Kūka‘iwa‘a Peninsula vegetation community is a relic coastal forest.

Coastal Spray Area (766 acres): Because the coastal spray area supports a more diverse and extensive native coastal vegetation community, it is designated a Special Ecological Area. This area is relatively intact because the major invasive species cannot tolerate the salt spray. The area is affected by grazing, cultivation, nonnative species, and other human activities that have altered historic vegetation.

Offshore Islets (9.1 acres): The offshore islets (Huelo and 'Ōkala) are “the last strongholds where some of the rarest lowland and coastal plant species in the archipelago occur in natural populations” (Wood 2008). Both islets support relict vegetation and rich native species diversity; however, these are threatened by nonnative plants, landslides, rat predation ('Ōkala), and loss of reproductive vigor.

Huelo is considered one of the most pristine natural areas in Hawai'i because it never had permanent human occupants (NPS 1990) and the “most botanically significant islet in the Hawaiian chain” (Wood 2008) because it contains one of the two remaining loulu coastal forests in Hawai'i.

'Ōkala has the highest native plant diversity of all the Hawaiian islets (33 native plant taxa, of which 15 are endemic and 18 are state indigenous, and 26 nonnative species) (Hughes et al. 2007; Swenson 2008; Wood 2008). 'Ōkala is primarily composed of mixed native shrubland of low-stature species and also is the only islet with the indigenous tree species keahi (*Nesoluma polynesianum*) or any member of the genus *Tetramolopium*. The endangered dwarf naupaka (*Scaevola coriacea*) also occurs on the islet.

Marine and Terrestrial Wildlife

Marine Wildlife: Kalaupapa NHP's seaward boundary extends ¼ mile offshore. Three distinct marine habitats, the intertidal zone, sandy regions, and the coastal reefs, lie inside the boundary. Park waters shelter the endangered Hawaiian monk seal and humpback whale, the threatened green sea turtle, protected marine mammals such as the Hawaiian spinner dolphin, and well-preserved reef communities of coral, fish, and invertebrates. The two islets, 'Ōkala and Huelo, serve as seabird sanctuaries, and there is one rocky pinnacle, Nāmoku, on the northwestern section of the peninsula.

Terrestrial Wildlife: The only terrestrial mammal native to Hawai'i is the Hawaiian hoary bat (*Lasiurus cinereus semotus*), which is found throughout the park (Poland and Hosten 2018).

Native birds, including kākāwahie, oloma'ō, crested honeycreeper, and the black mamo, are all thought to be extinct—or in the case of the crested honeycreeper, extirpated—from Molokai and the park. 'I'iwi is rarely seen on Molokai; however, it was sighted at Pu'u Ali'i in 2004 during the Hawai'i Forest Bird Survey. Three native bird species ('apapane, maui 'amakihi, and 'i'iwi) and 12 nonnative bird species were detected during the surveys in 2005.

Three common migratory shorebirds—the Pacific golden plover, ruddy turnstone, and wandering tattler—are regularly observed at Kalaupapa, and occasionally sanderlings and bristle-thighed curlews are found foraging on the beaches. Seabirds typically found on the cliffs and offshore islets include black noddies, great frigatebirds, red-tailed tropicbirds, wedge-tailed shearwaters, and white-tailed tropicbirds. The rare Hawaiian petrel was spotted several times in recent years flying around the park at night, but no nesting areas have been documented.

Few surveys have examined the distribution of reptiles and amphibians at Kalaupapa NHP. Kraus (2005) found only stump-toed gecko (*Gehyra mutilate*) in the crater.

Introduced mammals include the feral ungulates (axis deer [*Axis axis*], goats [*Capra hircus*], and pigs [*Sus scrofa*]), as well as mongoose (*Herpestes javanicus*), black rats (*Rattus rattus*), domestic cats, and domestic dogs. Feral ungulates, especially axis deer, are a major threat to the natural resources at Kalaupapa NHP. Throughout the Hawaiian Islands ungulates cause erosion; stream and reef siltation; spread of invasive plants and diseases; loss of native, threatened, and endangered plant and animal species; and degradation of native species' habitat.

Both the NPS and the DOH carry a special animal control permit, given by DLNR, for controlling problem pigs, goats, and deer within the park. The cooperative agreement between the NPS and DLNR includes guidance for managing feral animals within the park boundary. The NPS undertakes animal control activities to regulate feral animal control populations, especially within fenced management units containing sensitive cultural or natural resources.

Aquatic Wildlife

Waikolu Stream contains five native diadromous fish species, native snails, and shrimp that spend part of their early life cycle in the ocean before returning to the stream as juveniles. Water diversion from Waikolu Stream for western Molokai affects surface and groundwater and therefore native fauna (Brasher 2003).

The isolated plants and animals in Lake Kauhakō appear restricted to its shallow surface layer; nutrients in the upper 10 feet support a dense and highly productive phytoplankton community (Maciolek 1982; Donachie et al. 1999; Halliday 2001). Invertebrates in the lake include the native paleomonid shrimp (*Palaemon debilis*), which is exceedingly abundant and is common in anchialine pools throughout Hawai'i (Mitchell et al. 2005). Maciolek (1982) noted that the endemic 'ōpae 'ula or red anchialine shrimp (*Halocaridina rubra*) were historically observed but have not been recently seen.

Invertebrates

Excluding the cave inventories, only incidental surveys of insects and other invertebrates have been conducted. The most extensive list was created for the native forests of the Pu'u Ali'i area.

The indigenous isopod *Australophiloscia societatis* was collected in a forested area of Waihānau Stream (Rivera et al. 2002). No other surveys have been conducted in Molokai Forest Reserve, although rare species are known to occur nearby. Informal surveys have shown Hawaiian yellow-faced bees occur commonly in the coastal salt spray zone, while three rare bee species are known from the nearby Mo'omomi Preserve. These may also be present in park coastal areas.

Opportunistic surveys on Huelo Islet collected three endemic moths from three different families.

Organisms in the coastal wetland and riverine habitats at Kalaupapa NHP include insects such as the North American net-spinning caddisfly (*Cheumatopsyche pettiti*), which has become an important part of the diet of native stream fish (Kondratieff et al. 1997). These habitats also support an introduced dragonfly (*Orthemis ferruginea*) and an introduced aquatic backswimmer (*Anisops kuroiwae*) (Evenhuis and Eldredge 1999).

Other invertebrates, including some endemic species, are known from the nearly 20 known lava tubes and caves. The caves and lava tubes are remnants of larger caves plugged by siltation, breakdown, or subsequent lava flow. Most are part of three lava tube systems. An inventory of the cave flora, fauna, and cultural resources has been conducted.

Rare, Threatened and Endangered Species

Over 580 species of terrestrial plant taxa have been recorded in the park. Approximately 282 species are native to the Hawaiian Islands. Of these, there are 35 plant species listed as federally endangered or threatened. At least one is also state-endangered. There are also four federally listed threatened or endangered mammals, six birds, and seven insects.

The park has been designated critical habitat for specific species. The park and most of the main Hawaiian Islands are designated critical habitat for monk seals. Critical habitat has been designated for 10 plant species in the park and is proposed for another 10 plant species. Another 15 listed plants do not have designated or proposed critical habitat in the park.

Appendix D lists special status species, including plants, birds, mammals, and invertebrates, within Kalaupapa NHP.

Hawaiian hoary bat (*Lasiurus cinereus semotus*): The federally endangered Hawaiian hoary bat is the only extant native terrestrial mammal from the Hawaiian archipelago (USFWS 1998). It is listed as endangered throughout its range. It occurs across a broad range of habitats in the state (on Hawai'i, Oahu, Maui, Kauai, and Molokai) and roosts in native and nonnative woody vegetation. Based on current trends, the hoary bat is likely to remain stable in the short term but spread of disease may result in future declines.

Surveys within the park from 2007 through 2009 reported only a few Hawaiian hoary bat detections at locations including the Old Damien Road, the pali trail, and along the cliff's edge. Recent monitoring (Poland and Hosten 2018) using more modern acoustic detectors found bats throughout the park, most commonly along roadways and at lower elevations along the cliff's edge and less commonly in coastal windswept sites or at cooler mesic higher elevations. Threats to the bats include habitat loss, roosting site disruption, pesticides, and both the decrease in availability and alteration of prey (due to an increase in nonnative insects) (USFWS 1998).

Humpback Whales (*Megaptera novaeangliae*): Endangered humpback whales transit through the park boundaries from December to May each year. The Hawaiian Islands Humpback Whale National Marine Sanctuary was designated by Congress to protect humpback whales and their breeding habitat around the Hawaiian Islands, but it does not include the park waters and north shore of Molokai.

Hawaiian Monk Seal (*Neomonachus schauinslandi*): Monk seals are endemic to Hawai'i and are one of the most endangered mammals in the world. Monk seals may live 25 to 30 years but do not reach sexual maturity until they are 4 to 5 years old. They forage on the sea floor and frequent the same beaches. Unlike sea lions and elephant seals, they are not colonial and do not defend territories; however, they sometimes occur in small groups (NOAA 2018).

Prior to 1997, long-time residents in Kalaupapa indicated that monk seals rarely used the beaches and that no births had been observed since at least 1941 (NPS 2018). Yet monk seals currently use the intertidal habitat at the park for pupping, resting, and feeding, and their presence is closely monitored (SWCA 2010: xix). Between 1997 and 2008, 38 pups were born in the park. By 2008, a total of 40 monk seals (22 males and 18 females) were using the intertidal zone in the park and up to seven pups are born annually on the peninsula (Brown et al. 2008, NPS unpublished).

Green Sea Turtle (*Chelonia mydas*) (FWS 2018): Green sea turtles occur worldwide. Within the US, green turtles nest in small numbers in the U.S. Virgin Islands, Puerto Rico, Guam, American

Samoa, the Northern Mariana Islands, Georgia, South Carolina, and North Carolina, and in larger numbers in Florida and Hawai'i, including on Kalaupapa (SWCA 2010: xix).

In the park, green sea turtles are frequently seen, and they occasionally haul out on Kalaupapa beaches (the turtles demonstrate this basking behavior only in Hawai'i, the Galapagos, and Australia). The park conducts monitoring of sea turtle nests and habitat surveys, including law enforcement patrols to preclude human harassment and predation both at sea and on area beaches and installation of shielded lamps to protect nesting. The park also conducts feral animal control to reduce the threat of predation from a range of nonnative species, including mongooses. Green sea turtles are also occasionally hooked during subsistence or recreational fishing activities.

Hawksbill Sea Turtle (*Eretmochelys imbricate*): Only four regional Pacific populations remain with more than 1,000 females nesting annually (one in Indonesia and three in Australia). Hawksbills are not known to nest in the park; however, they occur in the vicinity. There have been three documented sightings of hawksbill turtles since 2010 (pers. comm. P. Hosten).

Seabirds: The endangered Hawaiian petrel (*Pterodroma sandwichensis* or ua'u) and threatened Newell's shearwater (*Puffinus auricularis newelli* or 'a'o) and other seabirds (other shearwaters and tropicbirds) are routinely present on the offshore islets ('Ökala and Huela).

High-elevation terrestrial birds: The Molokai thrush or oloma'o (*Myadestes lanaiensis*), Molokai creeper or kākāwahie (*Paroreomyza flammea*), and 'i'iwi (*Vestiaria coccinea*) are currently adversely affected by avian malaria. Only a small number of 'i'iwi are present on Molokai (Mitchell et al. 2005 in SWCA 2010: 41), documented from Pu'u Ali'i in 2004 during the Hawai'i Forest Bird Survey.

Pacific Hawaiian Damselfly (*Megalagrion pacificum*): Historically, *M. pacificum* was the most common and widespread of the native damselfly species (Gagne and Howarth 1982). Current populations are known to occur on Maui, Molokai, and Hawai'i. It has been recorded from Waikolu Stream and Wai'ale'ia Stream.

Orangeblack Hawaiian Damselfly (*Megalagrion xanthomelas*): This species is known to occur on 'Oahu, Maui, Molokai, and Hawai'i. It was historically abundant throughout all the main Hawaiian Islands and has been translocated from 'Oahu elsewhere. It has been recorded from Waikolu Stream and Waihānau Stream. In 1995, a single orangeblack damselfly larva was seen along the margins of Lake Kauhakō, but no adults have been observed or collected since.

Blackburn's sphinx moth (*Manduca blackburni*): These moths are one of Hawai'i's largest insects. Thought extinct in 1970, a small population was found on Maui in 1984. They are hornworms and feed on relatives of the nightshade family. Since the native larval host species, 'aiea (*Nothocestrum* spp.), has declined, the moths have shifted to feed on invasive nonnative tree tobacco (*Nicotiana glauca*), which is spreading across arid landscapes.

Yellow-faced Bee (*Hylaeus anthracinus*, *H. facilis*, *H. hilaris*, and *H. longiceps*): Hawaiian yellow-faced bees are threatened by development (especially in coastal areas), fire, feral ungulates such as pigs, invasive ants, and the loss of native vegetation to invasive plant species. Because remnant populations of many species of Hawaiian yellow-faced bees are small and isolated, they are especially vulnerable to habitat loss, predation, stochastic events, and other changes to their habitat.

Threatened and Endangered Plants: See specific occurrence information in Appendix D regarding listed threatened and endangered plants. The park works closely with DLNR, USFWS, the University of Hawai'i, and other partners to propagate threatened and endangered plants in suitable and critical habitat. Restoration projects undertaken by the park have

increased the prevalence or sustained the populations of some species. Others have continued to decline, despite efforts to propagate and outplant them. Many of the most sensitive low-elevation special status plants have recently received increased protection as a result of successful feral animal projects on the peninsula and the higher-elevation rainforest. Short-term stabilization has improved the short-term outlook for some other species (*Canavalia molokaiensis*, *Tetramolopium rockii*, *Scaevola coriacea*, and *Sesbania tomentosa*), and these are likely to increase over time pending additional implementation.

Other plants on Huelo and 'Ōkala islets, such as makou (*Peucedanum sandwichense*), are also likely to stabilize and improve as a consequence of rat eradication. Critical habitat for a variety of plant species has been designated along the northeastern coast of the Kalaupapa peninsula as well as upland into the Waikolu, Wai'ale'ia, and Waihānau watersheds (see Appendix D).

CONTEMPORARY RESOURCE USE

Fishing: NPS regulations apply in the marine area of the park—from the mean high-water mark to ¼ mile offshore. Pursuant to the park's enabling law, the patients are not subject to any federal fish and game law, including any NPS regulations.

Except as provided in 36 CFR 2.3, the NPS has adopted the State of Hawai'i fishing laws and regulations, which apply as a matter of state law. The superintendent may impose additional use limits or closures within the marine area of the park after consultation with the State of Hawai'i.

Pursuant to DOH regulations, patients are also exempt from state fishing laws. Community sentiment, however, opposes the sale of any fisheries catch, especially outside of the settlement. Commercial fishing is not allowed within the park under NPS regulations, and any commercial activities, such as charter dive boats, are subject to the requirements of the park's enabling law, which requires that patients have a "first right of refusal to provide revenue-producing visitor services" within the park (Public Law 96-565, Section 107).

Hunting and Gathering: Hunting is not allowed in any area administered by the NPS. DLNR manages public hunting in the Molokai Forest Preserve within the park (this area is not administered by the NPS).

NPS, DOH, and DLNR rules concerning gathering apply within the areas of the park administered by the NPS. DOH has rules for visitors gathering salt. Refer to DOH Instructions for Visitors for specific rules.

VISITOR USE AND EXPERIENCE

The easiest and most affordable way to experience Kalaupapa NHP is to view it from the Kalaupapa Overlook at Pālā'au State Park. There is no age restriction or limitation on numbers of visitors within Pālā'au State Park. The majority of visitors to Molokai drive to the Kalaupapa Overlook where there is ample parking, accessible NPS interpretive exhibits, hiking trails, and restroom facilities.

Visiting the Kalaupapa peninsula requires an entry permit submitted three working days prior from the DOH. The park's enabling law allows the patient population to limit the total number of public visitors and to make other rules about park usage. Currently the visitor limit is set at 100 persons per day. DOH instructions for visitors prohibit access by anyone under the age of 16. For the DOH permit, a visitor must fall into one of the following categories:

- Sponsored guest—Kalaupapa residents (employees or patients) can sponsor family and friends as visitors.

- Commercially guided tourist—Registered tour participants.
- Volunteer—NPS volunteers.

Because overlook viewers constitute the vast majority of park visitors, they are included in visitor counts. Other viewers included are those who stop at Waikolu Overlook in the Molokai Forest Reserve. Between 1996 and 2017, there were approximately 59,000 visitors per year to the park and 9,000 visitors annually (25 per day) to the settlement. This visitation is a small fraction of the international and domestic arrivals to Molokai of an average of 68,749 passengers per year.

Interpretation and Education: Visitors learn about Kalaupapa’s history through tours, exhibits, and publications available on-site. Topside visitors enjoy wayside exhibits at Kalaupapa Overlook and at the top of the pali trail. Elsewhere, visitors can explore Kalaupapa’s compelling story through the internet and various publications. There are a limited number of NPS staff assigned to interact with visitors and conduct outreach and education, but through presentations and formal exhibits they regularly provide interpretive programs and outreach to the public and groups about the history of Kalaupapa.

Because children under the age of 16 are not allowed within the Kalaupapa Settlement, there are no official tours for school or youth groups in the park. Numerous state and local high school volunteer groups and religious groups visit Kalaupapa to learn about the peninsula and its people and to provide community service, such as exotic plant removal and planting native plant species. Park staff participate at special youth events, such as Molokai High School’s annual career day and Earth Day events, and offer associated educational programs and materials. Park employees give outreach programs to a wide variety of organizations in Hawai‘i.

Commercial Visitor Services: Patient-owned companies offer guided tours for visitors around Kalaupapa and Kalawao. Visitors arrive by plane, or on foot or by mule from the trail. Tour stops include Saint Marianne’s former gravesite, St. Francis Church in Kalaupapa, the Bookstore, the heiau along Damien Road, St. Philomena’s Church in Kalawao, and Judd Pavilion at Kalawao.

A mule tour company provides mule access to the Kalaupapa Settlement; it starts and ends outside the park on topside Molokai. Once at the settlement, visitors transfer to one of the patient-owned tours. Visitors who take mules to access the park are offered informal interpretation at the mule ride briefing and on the ride itself by the muleskinners.

Overnight Use: Overnight stays at Kalaupapa are restricted to sponsored guests of residents and are limited to a total of 13 days in a three-month period as per DOH instructions for visitors. Lodging is available through the DOH Visitor Quarters. Camping is not permitted.

Visitor Facilities and Services: Because of the limited number of visitors and area restrictions on visitation, visitor facilities are limited and there are no restaurants. Most guests/visitors must provide their own food. Although a small general store serves patients, park staff, and DOH employees, the store is not available to tour participants. Sponsored visitors are only allowed to purchase snacks and beverages at the store. The park’s cooperating association, Pacific Historic Parks, operates a bookstore and its hours are coordinated with the tours. No medical services are available to visitors. In emergency situations, NPS Rangers can respond and assist in getting the visitor to the next level of care.

Accessibility: Kalaupapa Overlook has a paved accessible trail, and there is nearby parking with accessible restrooms and a campground. Accessible public restrooms are available at several locations, such as the airport and Paschoal Hall. Elsewhere within Kalaupapa NHP, accessibility

is extremely limited. Future plans call for an accessibility inventory and additional improvements to accessibility throughout the park.

Hiking Opportunities: Commercial tour visitors can hike down the pali trail on their own and wait for the tour bus at the base. Topside, a short trail at Pālā'au State Park provides hiking access to the Kalaupapa Overlook through part of the park. Sponsored visitors can take a short hike with their escort to the Molokai Light Station and up the hill to the Kauhakō Crater rim.

Visitor Use: Access and Transportation

On topside Molokai, travelers approach the upper rim of the park and the head of the pali trail via Kala'e Highway (Hwy 470). This highway also delivers visitors to the Kalaupapa Overlook, where there is a parking area at the trailhead. The state highway links Kalaupapa NHP and Pālā'au State Park to the main town of Kaunakakai, about 10 miles away. Visitors accessing the pali trail park their vehicles on the highway shoulder and access the trailhead via an unimproved road through R. W. Meyer, Ltd. land. NPS maintains the access road according to the terms of a memorandum of understanding with the landowner, R. W. Meyer, Ltd.

Upon arrival at the settlement, there are roughly 9 miles of paved roads and 40 miles of unpaved roads. Personal and government vehicles are delivered to the peninsula by barge. Paved roads link the settlement to the airport terminal. Damien Road (dirt) connects Kalaupapa to Kalawao. Another unimproved road skirts the peninsula between Kalawao and the airport and others follow fencelines.

Air: Kalaupapa is supported by the federal Essential Air Service program, which ensures that small rural communities receive a minimal level of scheduled air service at an affordable price. The Hawai'i DOT maintains the airstrip and buildings at the Kalaupapa Airport. Flights are scheduled from Honolulu, O'ahu; Kahului, Maui; and Ho'olehua, Molokai. The seven-minute flight from Ho'olehua on topside Molokai occurs one to two times per day, weather permitting, and provides the main access in and out of Kalaupapa. The FAA restricts the capacity of scheduled passenger aircraft authorized to land at Kalaupapa to nine or fewer people. An air freight company delivers to Kalaupapa throughout the week as needed. Mail is also delivered by contract air service, Monday through Saturday. There is also frequent use for military training helicopters and commercial scenic air tours. Commercial air tour overflights must comply with FAA rules to maintain a minimum altitude of 1,500 feet above ground level.

Trail: Visitors registered with a patient-owned tour company are permitted to hike or ride mules down the steep 3.5-mile pali trail that links topside Molokai to the settlement. The trail has a 1,700-foot elevation change and 26 switchbacks. It is a very strenuous hike and can also be slippery, and it is subject to frequent rockfall.

Kalaupapa Dock: Stabilization and repair of the Kalaupapa dock in 2012 has ensured that the small barge can continue to safely deliver supplies to Kalaupapa once yearly. For safety reasons, visitors are not allowed to enter the park by boat or other marine craft, unless through a special use permit.

SOCIOECONOMICS

The economic and social environment of Kalaupapa NHP is unique. The park encompasses a culturally distinct community on a physically isolated peninsula on a sparsely populated island in one of the most remote island chains on earth. This profound physical and cultural isolation means that Kalaupapa NHP's primary socioeconomic context is the island of Molokai, and more specifically Kalawao County and the Kalaupapa Settlement.

Molokai lies southeast of O‘ahu, Hawai‘i’s population center and economic hub, and northwest of Maui, a tourist mecca. Topside Molokai is part of Maui County; Kalaupapa is within Kalawao County. The land boundary of Kalawao County is contiguous with the land boundary of Kalaupapa NHP. In the specific case of Kalawao County, county governance falls to the DOH, and the services usually handled by Hawai‘i counties are shared between the DOH (settlement management) and the NPS (land management). The NPS manages the land, which is largely owned by the DHHL and DLNR. Though remarkably isolated, Kalaupapa’s socioeconomic environment exists in the broader context of topside Molokai, Maui County, and the state as a whole.

Kalawao County and Kalaupapa NHP: The socioeconomic environment of Kalawao County and Kalaupapa NHP is unique in that economic activity is almost entirely government-planned. The DOH and the NPS cooperate to ensure the effective provision of goods and services for residents and the preservation and conservation of the park. The DOH annually expends about \$4 million supporting the continued care of residents and distribution of goods, services, and monies to residents and employees. The NPS spends approximately \$5 million annually for operations.

Population, Demographics, Income, and Housing: One important factor to note is that the majority of people who live and are employed in Kalawao County throughout the work week leave on the weekends to be with their families and homes elsewhere, primarily topside Molokai. These people may consider themselves residents of Maui County, rather than residents of Kalawao County.

The population of Kalawao County fell in the 10-year period from 2000–2010 from 147 to 90, a 38.8% decrease (U.S. Census Bureau 2010a). Population declines are attributed to residents passing away and reduced DOH staff to provide adequate services to the remaining population.

The median household income for Kalawao County between 2006 and 2010 was \$41,308, and the per capita income was \$43,308 (both in 2010 dollars). Approximately 4.1% of individuals lived below the poverty level in 2010. Because all primary residences are owned by DOH, the home ownership rate was 0% (U.S. Census Bureau 2010b).

Visitor Spending: In 2017, more than 76,000 park visitors, including those who visited the Kalaupapa Overlook in Pālā‘au State Park and Kalaupapa NHP, spent an estimated \$4.4 million in local gateway regions during their visits. These expenditures supported a total of 54 jobs, \$2.1 million in labor income, \$3.6 million in value added, and \$5.7 million in economic output in local gateway economies to Kalaupapa NHP (Cullinane et al. 2018).

Chapter 4

Environmental Consequences



View of Kauhakō Crater. NPS photo.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

Adoption of one of the alternatives in this GMP would provide broad (programmatic) management direction for the park. This section therefore also analyzes the proposed management direction programmatically. If and when specific actions are proposed for implementation, additional detailed environmental impact analyses and documentation would be prepared, as appropriate. The terms “effect” and “impact” are used interchangeably to describe impacts analyzed under the National Environmental Policy Act (NEPA).

Each impact topic is presented in the following format: 1) potential impacts under each alternative are described, 2) mitigating measures applicable to either alternative are described, 3) cumulative impacts are analyzed relative to the two alternatives, and 4) conclusions are made based on the foregoing analysis.

The following projects are among those included in the cumulative impacts analysis for this plan. Please note that the anticipated departure of the Department of Health and the patient community from Kalaupapa is analyzed as a “reasonably foreseeable future action” under NEPA, rather than as a part of alternative 1. Under some impact topics, this can make the difference between alternative 1 and alternative 2 initially appear less consequential. However, when the cumulative effects analysis considers that alternative 1 contains little guidance for the park after DOH leaves, the anticipated future differences between the alternatives are more apparent.

Past Actions

- Improvements to Kalaupapa dock were completed in 2012 to ensure delivery via barge of supplies essential to operate and maintain Kalaupapa.
- Fencing of some habitat areas was initiated by the NPS through the Kūka‘iwa‘a Restoration Project to restore portions of the coastal habitat.

Present Actions

- Implementation of the fire management plan, largely addressing vegetation management.
- Development of a recycling and waste management program and implementation of the solid waste management plan.
- Closure of Kalaupapa landfills by DOH.
- Use of the airport for helicopter training exercises by the U.S. Marine Corps and the Department of Navy on behalf of Marine Corps.
- Changes to population, demographics, and development patterns on Molokai.
- Removal of unexploded ordnance on Makaanalua bombing range of the Kalaupapa peninsula by the Army Corps of Engineers.
- Removal of water from Waikolu Stream by MIS has occurred since 1960, and MIS is mandated by state statute to reserve two-thirds of the water drawn from Waikolu for Hawaiian homesteaders (Santo 2001). MIS has drilled six wells in the Waikolu area beginning in 1971 to supplement water extracted from the diversion dams on Waikolu Stream (State of Hawai‘i, Division of Water and Land Development 1994). Water diversion is known to have adverse impacts on native fauna, which have been documented at Waikolu Stream (Brasher 2003).

Reasonably Foreseeable Future Actions

- Departure of the Department of Health and patient community from Kalaupapa is

anticipated in the next 5 to 10 years.

- Construction of the Kalaupapa Memorial by the Ka 'Ohana O Kalaupapa organization as described in Chapter 2: Alternatives.
- Upgrades to the primary electrical distribution system. EA anticipated.
- Establishment of an above-ground storage tank for unleaded fuel to replace the DOH underground storage tanks.
- Documentation and guidance for management of the three cultural landscapes and pali trail will be forthcoming in cultural landscape inventories and reports.
- Reduction of feral animals from Waikolu Valley. Project submitted for funding.
- Construction of a weather station by the State of Hawai'i Department of Transportation on the Department of Transportation's land at the Kalapaupau Airport.

CULTURAL RESOURCES

Values, Traditions, and Practices of Traditionally Associated People (Ethnographic and Biocultural Resources)

Impacts from Alternative 1 (A-1)

Collecting oral histories and conducting research on native Hawaiian and patient communities would increase knowledge regarding life at Kalaupapa. This would benefit ethnographic and biocultural resources related to Kalaupapa.

Park staff would continue to engage the patient community and descendants in actively documenting and preserving their history to provide information for educational and interpretive programs. Work with other groups (such as children of patients who were taken away at birth and raised by relatives or in orphanages, families of patients, friends and long-time visitors to the park, long-time employees, and retired employees) would also be conducted.

With limited staff and the lack of a more formalized anthropology program, there would be limited opportunities to reach beyond the current patient community to document and preserve history. Materials available for education and future generations would likely continue to be limited.

Impacts from Alternative 2 (A-2)

Ethnographic research would be expanded to include additional staff and partners focused on gathering and documenting the stories of the kama 'āina, patients, their families, kōkua, and long-time visitors and friends and connecting with these associated individuals and groups. Use of volunteer service groups and partnerships with other agencies and organizations, such as Ka 'Ohana O Kalaupapa, would increase.

Collected information would be used to strengthen 'ohana and descendant place-based connections, teach and educate the volunteer service groups, and enhance off-site and experiential interpretation and education using modern media and technology. The park would encourage implementation of culturally sustainable practices to educate the public and ensure continuation of the indigenous culture. Combined, there would be long-term beneficial impacts on ethnographic and biocultural resources.

Impact Avoidance, Minimization, and Mitigation Measures

- The NPS would continue to consult with the Kalaupapa Patients Advisory Council, Kalaupapa NHP Advisory Commission, Kalaupapa NHP community-based hui, native Hawaiian organizations, and interested parties to identify any cultural or natural

resources of value to people associated with the lands and waters of Kalaupapa NHP and develop appropriate strategies to mitigate impacts on these resources (A-1, A-2).

Cumulative Impacts

Past, present, and anticipated projects include the departure of the DOH and the loss of living patients and kōkua from Kalaupapa, which would contribute to cumulative adverse impacts from accompanying loss of living history, oral history, and the traditional presence and operations at Kalaupapa. Continuing cooperative agreements between the NPS and the State of Hawai'i (BLNR) and (DOT), churches, and the lease agreement with the DHHL would continue to benefit the resources, traditions, and practices related to associated peoples of Kalaupapa to document and share Kalaupapa stories with current and future generations, a cumulative beneficial impact. There would also continue to be a small but persistent adverse impact on the feeling and association of the NHL, particularly the soundscape, from military use of the airport.

Conclusion

There would be long-term adverse and beneficial impacts on resources, traditions, and practices related to associated peoples of Kalaupapa in both alternatives. Adverse impacts would continue from the loss of living patients and the DOH, while beneficial impacts would result from documenting and expanding understanding of traditionally associated people. Identifying resources, traditions, and practices would facilitate preservation of these resources. Because there would be more systematic efforts to document these resources in A-2, overall beneficial impacts would be greater.

Archeological Resources

Impacts from Alternative 1 (A-1)

Baseline documentation, including research design and standard operating procedures for archeological monitoring, recording, and data management would be prepared. These would contribute to long-term preservation and enhanced understanding of park cultural resources.

Because visitors would also continue to follow existing DOH rules, including the need for an escort, limitations on visitors, and guided tours, there would continue to be beneficial effects on archeological resources from restricting visitor access near sensitive archeological resources.

Impacts from Alternative 2 (A-2)

Expanded hands-on learning for research, stabilization, and other preservation treatments of archeological resources would occur via stewardship activities. Qualified professionals would oversee opportunities for additional research and training in archeological inventory, monitoring, preservation treatments, and cultural resource management through partnering with universities and other entities for field training programs. Increased knowledge of individual and contributing historic properties and additional National Register nominations could result.

While increased visitation could create the potential for adverse impacts, visitors would be highly managed to protect archeological resources.

Impact Avoidance, Minimization, and Mitigation Measures

- Archeological investigations and/or surveys would precede ground disturbance activities.
- Undertakings would be identified and analysis and documentation under Section 106 of the NHPA would be conducted to avoid and/or minimize adverse effects on

archeological resources.

- Employ techniques to reduce potential impacts on archeological resources, including visitor education programs, restrictions on visitor and NPS activities, and monitoring. The required orientation for all visitors would convey the rules for visitation and protection of resources.
- The superintendent would impose closures or restrictions on activities as needed to prohibit travel in certain areas to protect archeological resources.

Cumulative Impacts

In the past, adverse impacts from natural and human forces on archeological resources at Kalaupapa have occurred. Past actions include trail maintenance, utility and infrastructure construction and maintenance, and movement of archeological features prior to the creation of the park. These adverse impacts have occurred in conjunction with natural impacts such as erosion and weathering. Combined with human impacts, it is likely that damage or loss of resources has occurred.

The impacts of the alternatives combined with past, present, and reasonably foreseeable future actions, such as removing unexploded ordnance, trail and trail bridge reconstruction, and the implementation of a fire management plan would likely result in additional cumulative adverse impacts. Anticipated future projects would also benefit archeological resources from preservation and documentation of these. However, the loss of DOH and the patient community would leave the NPS without visitation guidance under A-1, potentially resulting in adverse impacts due to a lack of visitor use planning.

Conclusion

Because any park undertaking under the alternatives would avoid archeological resources, and because there would be ongoing efforts to identify and document existing archeological resources, overall impacts would generally be beneficial. Inadvertent discoveries, however, could result in some low-level adverse impacts, prior to inventory and documentation. Regulating visitor access under both alternatives would protect sensitive sites, but alternative 2 provides visitor use management guidance after DOH leaves, a potential cumulative beneficial impact. Alternative 2 would enhance preservation work by creating more opportunities to conduct stewardship activities with staff and partners.

Cultural Landscapes and Historic Structures

Impacts from Alternative 1 (A-1)

Under this alternative, the NPS would continue to manage historic structures and buildings in accordance with the Secretary's Standards, which would include conducting condition assessments and employing historic preservation treatments. Conducting condition assessments and employing historic preservation treatments, as required by the Secretary's Standards, to protect historic buildings and structures and cultural landscapes would lead to preservation efforts with long-term beneficial effects. Because these actions have to be prioritized, however, to meet available funding, there could continue to be small short- and/or long-term adverse effects on some buildings, structures and landscapes

Implementation of the cultural landscape report, with recommendations for preservation treatments, would help to ensure, subject to implementation of recommendations, that there would be no adverse effect on the contribution of remaining natural systems and features, vegetation, spatial organization, circulation, buildings and structures, views and vistas, and small-scale features.

Condition assessments would help the NPS understand the need for stabilization, preservation and rehabilitation of historic structures and buildings. These would be used on a case-by-case basis, in accordance with the *Secretary's Standards*, as they are transferred from DOH, to identify priorities for preservation maintenance or stabilization, thereby having long-term beneficial effects on some historic structures. Deterioration of some structures not managed by NPS could result in the potential for adverse effects. Stabilizing contributing buildings, however, would offer temporary beneficial effects.

Similarly, there would be ongoing documentation of the park's cultural landscapes; stabilization and preservation of key character-defining features; and continuing management of historic vegetation within the settlement, guided by the CLR. Combined, these actions would continue to have long-term beneficial effects on park cultural landscapes.

Impacts from Alternative 2 (A-2)

As in A-1, protecting the overall character of the settlement would have long-term beneficial impacts on historic structures and cultural landscapes. Although the function and uses of some of the neighborhoods and many of the historic structures in the settlement could change, stabilizing, rehabilitating and retaining the character-defining features of the buildings and landscape would have long-term beneficial impacts. Developing a building use and infrastructure plan, which would include recommendations from the cultural landscape report and the historic structures report, would further define NPS responsibilities and goals for the settlement and would lead to additional consultation with the SHPO. This would identify the most important components of the area for preservation and for use. In consultation with SHPO and DHHL, Kalaupapa's NHL-contributing historic structures could be stabilized, preserved, and rehabilitated for current and future uses, including visitor facilities, partner uses, park operations, and as interpretive exhibits, a long-term beneficial impact.

Because the NPS would generally prioritize stabilization of NHL-contributing historic structures before conducting more intensive rehabilitation projects, there would be a focus on preserving key buildings and structures. Reestablishment of some viewsheds would also benefit protection and understanding of the cultural landscape.

In conjunction with SHPO, opportunities for community and partners to assist in hands-on historic preservation projects are a key component of the preferred alternative. Preservation plus partnerships would have long-term beneficial impacts through conducting preservation treatments for some buildings and structures. Rehabilitation that would address health, life safety, and accessibility requirements may create small impacts.

An initial focus on stabilization of landscape features followed by needed rehabilitation according to the *Secretary's Standards* within the Kalaupapa and Kalawao Settlements would prevent loss of resources. Treatments, including compatible adaptive reuse would benefit historic structures because it would help to preserve them. Minor changes to structures for adaptive reuse could also result in adverse impacts. Documentation, development of historic structures reports, and additional adaptive management planning for the buildings and infrastructure would also benefit long-term preservation efforts.

Preservation or rehabilitation of landscape features that illustrate Kalaupapa's many histories and allowing new compatible uses could have short- and long-term adverse effects from changing the use of some areas but would result in long-term preservation of key character-defining historic structures and cultural landscape features.

Impact Avoidance, Minimization and Mitigation Measures

- All project work relating to historic structures and cultural landscapes would be

conducted in accordance with Director's Order 28 and the Secretary's Standards, including the standards and guidelines for the treatment of historic properties and cultural landscapes.

- To the extent possible, historic structures under NPS management that contribute to the NHL or districts would be stabilized until a further appropriate preservation treatment could be undertaken.
- Adverse effects on historic properties listed in, determined eligible for listing, or not yet assessed for eligibility to the NRHP would be avoided, if possible. If adverse effects cannot be avoided, an agreement document would be developed through a consultation process with all interested parties according to Section 106.
- Changes to individual features and resources comprising the cultural landscape would also be assessed in the larger setting and environmental context to ensure incremental change does not adversely affect the integrity of the historic districts.
- The inadvertent discovery of human remains would follow all provisions outlined in the Native American Graves Protection and Repatriation Act and Hawai'i State Burial Laws as applicable.

Cumulative Impacts

Cumulative adverse impacts have resulted from the historic loss of many of the buildings and structures and cultural landscape features (either removed or neglected) prior to NPS management, especially in Kalawao. Over time, other buildings and landscapes in the park have been altered or are deteriorating from lack of use. Cumulative adverse impacts would increase as the patient and DOH populations continue to decline and would be expected to increase more when they are no longer present from the release of an increasing number of buildings from DOH to NPS. Although the NPS would continue to describe the DOH and patients, their absence from the community would mark an unavoidable adverse effect on the character of the cultural landscape, because the cultural landscape and buildings and structures used by them would no longer serve their current functions.

When DOH departs, numerous buildings currently occupied by DOH that contribute to the NHL would become vacant without an identified future use or function. As a result, treating each of the many historic buildings and structures would take many years, and would include interim maintenance actions. Continued evaluation of structures constructed outside of the NHL's period of significance would potentially lead to additional protection of currently undocumented historic structures, and additional beneficial effects.

The NPS would continue to maintain buildings, structures, and cultural landscape features within Kalaupapa Settlement that contribute to the NHL; adverse effects would be avoided or minimized on these contributing features. Initially these buildings and their existing functions would be maintained, however they could later be adaptively reused and may be managed by others under agreements with the NPS. Depending on the use, this could result in small adverse effects but would be consistent with NPS obligations under the Secretary's Standards and would be done in consultation with the SHPO and consulting parties, as stipulated in the programmatic agreement. Combined, overall actions would be intended to avoid or minimize adverse impacts to the integrity of the structures and/or their eligibility for the National Register or their contribution to the NHL.

Over time, as the character-defining features are stabilized, rehabilitated and preserved, there would be cumulative beneficial effects on the historic district, including cultural landscape features, historic buildings, and structures. There would also continue to be cumulative adverse effects from the location of Kalaupapa in a seismic and tsunami hazard zone and extreme

floodplain (See Water Resources Section and Appendix E: Floodplains Statement of Findings). The DOT's new weather station could impact the views and vistas associated with the Molokai Light Station cultural landscape.

When the actions in the alternatives are added to past, present and reasonably foreseeable future actions, such as construction of the memorial and development of historic structures reports, there would continue to be a range of cumulative adverse impacts combined with individual beneficial effects under both alternatives. Because there would be a plan with priorities for preservation of historic buildings and structures and enhanced partnership engagement under A-2, actions under the preferred alternative would have more beneficial impacts.

Conclusion

Under both alternatives there would be long-term beneficial impacts to historic structures and cultural landscapes from continued documentation, preservation and management of buildings and structures and character-defining cultural landscape features. These would likely be combined with some loss of historic resources from delayed rehabilitation. Incremental adverse impacts on the overall character of the park from ongoing loss of non-contributing buildings, structures and landscape features would also continue but because these buildings and structures do not contribute to the NHL, they would not affect it. Although changed uses would result in unavoidable adverse effects on historic buildings and structures, these would be reduced by identifying and preserving character-defining features. Their presence of historic resources in the tsunami evacuation zone would also have the potential to result in unavoidable adverse effects on historic buildings and structures and the cultural landscape (See Appendix E: Floodplains Statement of Findings). Beneficial effects would occur from enhanced identification, stabilization, management and preservation treatments, including from reliance on additional staff, partners and volunteers that would facilitate stewardship. With development of preservation plans and compatible uses for buildings, A-2 would have more beneficial effects than A-1 but both alternatives may continue to have some cumulative adverse effects.

NATURAL RESOURCES

Water Resources and Hydrologic Processes

Impacts from Alternatives 1 (A-1) and 2 (A-2)

The continued maintenance and use of existing facilities within the settlement would have ongoing long-term localized adverse impacts on water resources and hydrologic processes. Current projects to improve natural habitat values and ecosystem function, such as coastal revegetation and feral ungulate removal, would benefit water resources and hydrologic processes by improving and restoring the function and integrity of some natural hydrologic systems. The removal and reclamation of facilities and structures and the stabilization of natural wetland, coastal strand vegetation, and dryland forest (e.g. Kauhakō Crater) areas under the alternatives would result in beneficial impacts, while maintenance of roads, trails, and other facilities would have continuing small adverse impacts on water resources.

Floodplains: As shown in Appendix E: Floodplains Statement of Findings, approximately 1,000 structures would remain in the 100-year floodplain. This would continue to have adverse impacts on floodplain functions and would also continue to be a threat to administrative infrastructure. Retention of these facilities would continue to affect the flow of water during floods and the capacity of the floodplain to store floodwaters.

The structures along the coast that would create debris moved by a tsunami are all of a historic nature. There are no mitigation measures that could be applied to protect facilities within the tsunami hazard zone. The NPS is focusing on protecting human life and safety through warning and evacuation rather than minimizing property damage. Any overnight facilities would be sited to expedite evacuation or be located outside of the mapped inundation zone, and the NPS would improve its knowledge base by completing an assessment of coastal vulnerability to wave overtopping, sea level rise, and extreme wave events for the park. Products would include a paleo tsunami evaluation and maps of historical shoreline change showing coastal erosion areas.

The Floodplains Statement of Findings provides justification for the retention of facilities in the floodplain, and the NPS would document and seek to maintain the integrity of NHL-contributing structures along the ocean shoreline. In the event of a catastrophic loss of historic structures, the NPS would monitor the remaining structures and would make decisions on a case-by-case basis to determine the future management of impacted buildings. The historic buildings could be rehabilitated, treated to increase their resiliency to future events, be abandoned, or have their functions relocated. Replacement structures may be warranted under some scenarios.

Impact Avoidance, Minimization, and Mitigation Measures

- The NPS would post signs along coastal areas advising about the danger of sneaker waves, undertows and rip currents and including information about self-rescue techniques.
- The NPS would provide information about tsunami behavior by various means, which may include websites, kiosks, and waysides, in order to create awareness and reduce the potential risk of injury.
- The NPS would participate in the current tsunami warning system and maintain the evacuation routes, safety area, and center.
- The GMP/EA includes a Floodplains Statement of Findings to document risks of tsunami, hurricanes, sneaker waves, storm surges, flooding and sea level rise.

Cumulative Impacts

There would continue to be adverse effects on water quantity from the diversion of water from Waikolu Stream for human use and agriculture by MIS, which diverts roughly 4.5 million gallons per day. There would also continue to be long-term intermittent cumulative adverse impacts from people living and working in the settlement. Reduction of feral animals from Waikolu Valley would contribute to cumulative beneficial effects. This range of cumulative impacts would continue to take place under a scenario of increasing adverse effects on water resources from climate change. Cumulative adverse effects from the retention of numerous buildings and structures in the tsunami inundation zone would also continue. Adverse impacts to property, safety, and human life could occur from unpredictable seismic events. There are no practicable, hazard-free, alternative locations for visitor facilities other than existing historic structures whose purpose is to facilitate access and educate visitors about the history of Hansen's disease on the isolated peninsula encompassing Kalawao and Kalaupapa. When the impacts of past, present, and reasonably foreseeable future actions are added to the alternatives, there would continue to be small adverse and beneficial effects on water resources and hydrologic processes, combined with cumulative adverse effects on water resources, especially water quantity and floodplains from the presence of the developed areas in the park.

Conclusion

There would continue to be small short-term adverse effects on water resources combined with long-term adverse effects due to climate change on floodplains and water quantity under both

alternatives. Beneficial effects would be contributed by restoration of natural areas under either alternative, although alternative 2 would provide greater benefits by adding to the knowledge base of the park. Although there is a risk to property and individuals in the tsunami inundation zone, mitigation measures and the description of the risk meet NPS obligations under Executive Order 11988 for the protection of floodplains.

Terrestrial and Marine Vegetation and Wildlife

Impacts from Alternative 1 (A-1)

There would be ongoing beneficial effects from continued restoration of native vegetation by removing nonnative species and planting native species, including rare and threatened species propagated by or delivered to the park nursery. Management programs to reduce feral ungulates and to preserve sensitive vegetation communities, such as coastal spray, dry forest, and high-elevation rainforest, would also have beneficial effects.

The presence of nonnative (feral) cats, rats, and mongoose would continue to threaten nest sites for low-elevation terrestrial birds. The cat population is currently managed through spay-neuter programs. Native birds would also continue to be threatened by avian malaria-transmitting mosquitoes (including a recently introduced species that can live at higher elevations).

Impacts from Alternative 2 (A-2)

In addition to impacts from A-1, there would be beneficial long-term impacts from the expanded program at the nursery to cultivate ethnographically important ornamental, food, and medicinal plants and from managing remaining field populations of legacy plants, including identifying and preserving historic vegetation. In the settlement and restoration areas, animal control reduction of small nonnative mammals would increase vegetation recovery opportunities, improve native plant re-establishment, and increase bird fledgling survival in key areas. Increasing understanding of the influence of nonnative wildlife management on native plants and animals through research and increased partnerships would also improve future project success.

Additional adverse impacts on marine resources from the number of visitors who may engage in fishing would be mitigated, as needed, by closing areas to fishing or restricting what species could be taken or the ways that fishing occurs. Working cooperatively with DLNR to establish a marine managed area would improve opportunities for recovery of fish populations and concomitant benefits to reefs and reef habitats.

Impact Avoidance, Minimization, and Mitigation Measures Vegetation

- The park would implement, in consultation with community and other interested parties, a nonnative invasive plant management program and protocols.
- The management program and protocols may include using only weed-free materials for road and trail construction, repair, and maintenance; cleaning construction equipment; treating noxious weeds or topsoil before construction; covering imported materials to prevent weed introduction; limiting the movement of material; regularly treating vector areas, such as staging areas, maintenance facilities, borrow pits, and corrals; revegetating with genetically appropriate native species; and monitoring locations of ground-disturbing operations for at least five years following the completion of projects.
- Kalaupapa NHP would monitor areas used by visitors (such as trails) for signs of

native vegetation disturbance and use public education, revegetation of disturbed areas with native plants, erosion control measures, and barriers to control potential impacts on plants from erosion or social trails.

- The park would designate river and stream access/crossing points and use barriers and closures to prevent trampling and loss of riparian vegetation.
- Revegetation plans would be developed for disturbed areas and require the use of genetically appropriate native species (revegetation plans should specify species to be used, seed/plant source, seed/plant mixes, site-specific restoration conditions, soil preparation, erosion control, ongoing maintenance and monitoring requirements, etc.; salvaged vegetation should be used to the extent possible).
- The park would investigate and/or conduct surveys for rare plants prior to any ground-disturbing activities and to the greatest extent possible, disturbance to rare or unique vegetation will be avoided.
- Visitors would be required to sanitize equipment and footwear to prevent the importation and spread of weeds and pathogens such as Rapid 'Ōhi'a Death and other organisms harmful to native ecosystems

Wildlife, including Marine Wildlife

- The park would employ techniques to reduce impacts on fish and wildlife, including visitor education programs, restrictions on visitor and NPS activities, and monitoring.
- A wildlife protection program would be implemented, including evaluation of project scheduling (season and/or time of day); monitoring; erosion and sediment control, fencing, or other means to protect sensitive resources; disposing of food-related items or rubbish; salvaging topsoil; and revegetating.
- The NPS would protect known spawning aggregation areas for fish and other targeted organisms.
- The park would identify and protect marine areas within the park that are resistant and/or resilient to climate change impacts.
- Sediment control and prevention plans for projects that impact coral reef habitats in nearshore areas would be enhanced.
- The park would establish and enforce mooring sites to minimize anchor damage to coral reefs from vessel traffic.

Biosecurity

All activities, including site surveys, risk introduction of nonnative species into project areas. Specific attention needs to be made to ensure that all equipment, personnel, and supplies are properly checked and are free of contamination (weed seeds, organic matter, or other contaminants) before entering project areas. Quarantines and/or management activities occurring on specific priority invasive species proximal to project areas need to be considered or adequately addressed. This information can be acquired by contacting local experts such as those on local invasive species committees (For Molokai, see: <http://www.molokaiisc.org/>).

All work vehicles, machinery, and equipment should be cleaned, inspected by its user, and found free of mud, dirt, debris and invasive species prior to entry into the natural areas or native habitat.

- Vehicles, machinery, and equipment must be thoroughly pressure-washed in a

designated cleaning area and visibly free of mud, dirt, plant debris, insects, frogs (including frog eggs), and other vertebrate species such as rats, mice, and non-vegetative debris. A hot water wash is preferred. Areas of particular concern include bumpers, grills, hood compartments, areas under the battery, wheel wells, undercarriage, cabs, and truck beds (truck beds with accumulated material [intentionally placed or fallen from trees] are prime sites for hitchhikers).

- The interior and exterior of vehicles, machinery, and equipment must be free of rubbish and food. The interiors of vehicles and the cabs of machinery must be vacuumed clean. Floor mats shall be sanitized with a solution of greater than 70% isopropyl alcohol or a freshly mixed 10% bleach solution.
- All cutting tools, including machetes, chainsaws, and loppers must be sanitized to remove visible dirt and other contaminants prior to entry into natural areas or areas with native habitat, and when moving to a new project area within the native habitat area. Tools may be sanitized using a solution of greater than 70% isopropyl alcohol or a freshly mixed 10% bleach solution. One minute after sanitizing, you may apply an oil-based lubricant to chainsaw chains or other metallic parts to prevent corrosion.
- Any machinery, vehicles, equipment, or other supplies found to be infested with ants (or other invasive species) must not enter natural areas or native habitat. Treatment is the responsibility of the equipment or vehicle owner and operator.
- Base yards and staging areas inside and outside areas must be kept free of invasive species.
- Base yards and staging areas should be inspected at least weekly for invasive species and any found invasive removed immediately. Pay particular attention to where vehicles are parked overnight, keeping areas within 10 meters of vehicles free of debris. Parking on pavement and not under trees, while not always practical is best.
- Project vehicles or equipment stored outside of a base yard or staging area, such as a private residence, should be kept in a pest-free area.

For individuals working in the field:

- Before going into the field, visually inspect and clean your clothes, boots, pack, radio harness, tools, and other personal gear and equipment, for seeds, soil, plant parts, insects, and other debris. A small brush is handy for cleaning boots, equipment, and gear. Soles of shoes should be sanitized using a solution of greater than 70% isopropyl alcohol or a freshly mixed 10% bleach solution.
- Immediately before leaving the field, visually inspect and clean your clothes, boots, pack, radio harness, tools, and other personnel gear and equipment, for seeds, soil, plant parts, insects, and other debris. Soles of shoes should be sanitized using a solution of greater than 70% isopropyl alcohol or a freshly mixed 10% bleach solution.

Cumulative Impacts

Biological resources have been adversely affected from a wide range of past, present, and reasonably foreseeable human activities, including from DOH and park operations and management of existing facilities, nonnative invasive plants, fire suppression, and climate change. When the impacts of A-1 are added to effects from past, present, or reasonably foreseeable future actions, there would continue to be a range of adverse effects from loss of native species, invasion of nonnative species, and alteration of natural environments for human use, combined with small beneficial effects from restoration and management activities. Cumulative impacts from A-2 would be similar, with an increasing range of small

beneficial effects from additional management actions to restore native plants and wildlife and to remove nonnative species.

Conclusion

There would continue to be a range of adverse effects combined with a small degree of beneficial effects on native biological resources under A-1. Under A-2, the range of beneficial effects from additional management actions, such as restoration, would increase; however, longstanding invasive species issues would continue to adversely affect native plants and wildlife until these were controlled. There would also be a very small potential for additional adverse effects from increased visitation levels. However, the visitor use management guidance provided by A-2 would be an overall beneficial impact when DOH is no longer at Kalaupapa.

Special Status Species

Impacts from Alternative 1 (A-1) and Alternative 2 (A-2)

Hawaiian hoary bat: Impacts from A-1

Actions under A-1, including ongoing access on the pali trail by staff and visitors to the park, would continue to traverse hoary bat habitat at the top of the trail during the day, with little impact to the bats. Maintenance of areas within hoary bat habitat would continue to occur outside of the nesting/pupping season for hoary bats to avoid trimming trees or shrubs more than 15 feet tall, which could harm or kill young bats left to roost while parents retrieve food. The park would continue to consult with the USFWS during any proposed maintenance activities that would affect vegetation in the vicinity of areas where hoary bats have been detected and would continue to conduct surveys for bats to expand knowledge of the species and its habitat.

Hawaiian hoary bat: Impacts from A-2

Actions and impacts under A-2 would be similar to A-1. New actions under A-2 include potentially allowing visitors unescorted access to the Kauhakō Crater area. To protect hoary bats, the park would restrict visitors from the area during use by the bats (dusk through dawn) and may regulate visitors in other areas, particularly if roosting areas are discovered. The limited overnight use by visitors that may occur in the park would generally be confined to developed areas and is not anticipated to affect hoary bats because there would be no loss of hoary bat habitat.

Humpback Whales: Impacts from Alternatives 1 (A-1) and 2 (A-2)

Only the annual barge and marine resource management boating activities result in park-generated vessel traffic. Although there is occasional use by patient-sponsored boaters during fishing season, overall use of park waters by boaters is very low. Therefore, it is unlikely that endangered humpback whales would be affected by park actions stemming from the GMP as they transit through park boundaries from December to May each year.

Green and Hawksbill Sea Turtles and Hawaiian Monk Seal: Impacts from Alternative 1 (A-1)

The park would continue to monitor the distribution, abundance, and habitat use of special status species such as the green sea turtle and Hawaiian monk seal. Nonetheless, there would continue to be a range of impacts on sea turtles and Hawaiian monk seals. Although there is the potential for adverse impacts to occur when the turtles haul out or come ashore to nest (May–September with peak in June and July) and/or are observed by residents and visitors, during the annual fishing tournament, and when the monk seals haul out or pup on Kalaupapa beaches, a

range of rules and mitigation measures are in effect at the park to prevent harassment, including the DOH Instructions for Visitors. It is unlikely that park-originated vessel traffic supporting NPS and DOH impacts turtles or monk seals. Because there is no landing and no commercial tours are allowed in the vicinity of the park, recreational boating is limited to areas outside the park, however occasional use of park waters also occurs from patient-sponsored boaters, who may be on the lee side of the island in park waters.

There would continue to be short- and long-term beneficial impacts on sea turtles and monk seals from reducing feral cat populations consequent to a spay-neuter program, from restricting patients and visitors from nesting/pupping areas during the nesting season, from restricting patients and visitors from close proximity to and/or blocking sea access for sea turtles and monk seals, and from the consistent resource monitoring that occurs when turtle nests are likely to occur and/or are detected and/or when monk seals come ashore to pup. The NPS would also continue to survey suitable habitat during the nesting season and to engage staff and trained volunteers in monitoring efforts. Consultation with the USFWS and NMFS for specific projects affecting sea turtles and monk seals would also continue.

Green and Hawksbill Sea Turtles and Hawaiian Monk Seal: Impacts from Alternative 2

Impacts on green sea turtles and monk seals would initially be similar to A-1. Because the GMP is a programmatic, rather than a site-specific plan, no specific actions that would disturb green sea turtles or monk seals are proposed. Over time, the number of people visiting the park and their engagement opportunities would increase but with protection measures in place, adverse effects would be unlikely. The proposed entry pass system and orientation to park policies and regulations, along with updates to the superintendent's compendium, would provide awareness and management to avoid potential adverse effects.

Seabirds: Impacts from Alternatives 1 (A-1) and 2 (A-2)

There would continue to be monitoring of seabird nesting and surveys for these species in suitable habitat. Although suitable nesting habitat likely exists inland near the crater as well, no nesting has yet been detected in these areas. Currently, the seabirds nest on the offshore islets, which are essentially unaffected by actions on the peninsula. Access to these islands would continue to be limited to scientific and resource management activities with public entry and landings prohibited by state law to protect the islets and indigenous species.

Terrestrial Birds: Impacts from Alternatives 1 (A-1) and 2 (A-2)

There are no specific actions that would affect endangered terrestrial birds. There would continue to be no effect on endangered terrestrial birds from actions in A-1 and 2.

Threatened and Endangered Plants: Impacts from Alternatives 1 (A-1) and 2 (A-2)

The park would continue to monitor the distribution, abundance, and habitat use of special status plant species. The park would also continue its program of invasive plant and feral animal control to protect remaining areas with rare plants (such as in the coastal spray zone, crater, pali, and Pu'u Ali'i rainforest) and use fencing to create safe areas for cultivated special status plants.

Park staff currently collects propagules (seeds and cuttings) from plants within the nursery or receives propagules from past collections maintained at botanical gardens. These plants are grown out in the nursery and then reintroduced to the field in the form of seeds, seedlings, or potted plants. Volunteers are commonly used for nursery maintenance and plant propagation.

Although there are no specific actions under A-2 that would affect threatened or endangered plants, actions to inventory, monitor, and propagate special status plants would continue and

would continue to benefit these species. In addition, there are several programmatic actions, which could, if conservation measures were not applied, affect special status plants. These include increased visitation, ongoing browsing by nonnative ungulates, ongoing spread of nonnative invasive species and the risk of fire. Actions are currently being undertaken by the park in A-1 to minimize the risks from fire, ungulate browsing (such as fencing and direct reduction), and nonnative invasive species (such as removal), and these would continue. Potential effects from increased visitation would be part of A-2. With implementation, visitor travel would be restricted to developed areas and would thereby avoid adverse effects on listed species. In addition, issuance of a visitor day use permit (entry pass) would apprise visitors of additional rules regarding travel in formerly inaccessible areas. All other areas would require an NPS partner or commercial guide to access areas below 500 feet. Above that elevation, access would be discouraged and could be prohibited. This requirement would ensure that special status plants were avoided. Similarly, off-trail travel would be restricted in areas where restoration of special status species has occurred, including along the pali trail and near the crater.

Pacific Hawaiian and Orangeblack Damselflies: Under both alternatives there would continue to be long-term beneficial effects from continued removal of feral animals from Waikolu Stream. Improvements to the riparian area of Waikolu Stream would likely improve habitat of the listed damselfly from implementation of A-1 or A-2.

Blackburn's Sphinx Moth: This species is restricted to disturbed areas, including on non-NPS managed areas, such as the landfill. Other host plants from the family Solanaceae occur throughout the park as well and could be important to the sphinx moth, however because none would be removed and no actions in the GMP would affect them, there would be no effect on the sphinx moth from implementation of A-1 or A-2.

Hawaiian Yellow-faced Bees: There would continue to be no effect on yellow-faced bees from implementation of A-1 because no changes would occur to suitable habitat for them on the peninsula. For A-2, the continued improvement of coastal plant communities could improve habitat for bees.

Impact Avoidance, Minimization, and Mitigation Measures

General

- Ongoing efforts to control introduced animals, including axis deer, feral goats, feral pigs, mongoose, rats, cats, and dogs would continue.

Hawaiian Hoary Bats

- There would continue to be ongoing surveys for Hawaiian hoary bats and monitoring of their habitat to determine the occurrence of Hawaiian hoary bats in the park.
- Vegetation modification for trail maintenance and other activities that affect trees and shrubs 15 feet or taller would be conducted outside the Hawaiian hoary bat nesting/pupping season.

Hawaiian Sea Turtles and Monk Seals

- The NPS would continue to support protections under the Endangered Species Act regarding green sea turtles and Hawaiian monkseals.
- Visitors would be restricted from nesting beaches during the early nesting season, as nest sites are established. Depending on the establishment of nests, visitors would continue to be restricted from the area until the hatching turtles have emerged.
- During monitoring of nests, staff (including qualified volunteers) and researchers could be escorted into the vicinity of nests or hatchling turtles.

- During monk seal pupping season, staff (including qualified volunteers) and researchers could be escorted into the vicinity of monk seal pups.
- The NPS would continue to conduct monitoring for and of sea turtle nests and shoreline monitoring of monk seals. The NPS would also continue to conduct monk seal population studies in cooperation with NMFS.
- NPS law enforcement staff would continue to conduct patrols to ensure sea turtles and monk seals are protected from harassment and predation.
- Feral and nonnative animals that may prey on sea turtles or monk seals would be controlled.
- Restoration activities would continue to include removal of nonnative shoreline vegetation in nesting and nursing habitats.
- Because sea turtles may become disoriented and nest below the high tideline or become exhausted when they come ashore to nest, no artificial lighting would be visible along the beaches where green sea turtles nest.
- Only fully shielded lights would be used near beaches and shoreline areas. Shielded lights reduce the direct and ambient lighting of beach habitats within and adjacent to the lighted area. Effective light shields should be completely opaque, sufficiently large, and positioned so that light from the shielded source does not reach the beach/shoreline.
- Any closures or restrictions that are identified by the superintendent to protect sea turtle nesting areas or monk seal pupping beaches will be communicated when a visitor receives their entry pass.
- The park would also employ the conservation measures suggested by the USFWS (2015) to protect sea turtles, including educating visitors and staff to maintain a 6 to 10 foot distance, not surround the turtle or block its access to the water, not feed or touch (or ride) the turtles, keep pets on a leash, use barbless circle hooks when fishing, and if there is an accidental interaction during fishing (hooking or entangling), the park will assist the turtle if it is safe to do so.

Seabirds

- Only fully shielded lights will be used near beaches and shoreline areas. Shielded lights reduce the direct and ambient lighting of beach habitats within and adjacent to the lighted area. Effective light shields should be completely opaque, sufficiently large, and positioned so that light from the shielded source does not reach the beach/shoreline.
- To avoid seabird confusion, injury, or mortality, automatic motion sensor switches and controls would be installed on all outdoor lights or lights turned off when human activity is not occurring in the lighted area (especially during the seabird fledging season, September 15–December 15).
- No nighttime construction or activities along the shoreline would be permitted to avoid attracting adult seabirds during the nesting season as they travel from the ocean to their breeding areas.

Plants

- The superintendent could close or restrict access to areas where special status plants are present.
- The park would continue its program of invasive plant and feral animal control to protect remaining areas with rare plants (pali trail, coastal spray zone, crater, pali, and Pu'u Ali'i rainforest) and use fencing to create safe areas for cultivated plants.
- To assess the possible impact to rare, threatened, and endangered plants, a qualified

biologist would conduct surveys in any areas proposed for modification to document the distribution and status of listed plant species in the future proposed disturbance areas.

- Any plants that would be affected by future proposed projects would be propagated and outplanted in areas that are protected from ungulate browsing, wildfire, competition from invasive species, and other disturbances.
- To avoid potential impacts to special status plants accessible to visitors in the long-term vision for the park off-trail travel would be prohibited in areas where restoration of special status species has occurred, including along the pali trail and near the crater.

Blackburn's Sphinx Moth

- Removal of nonnative tree tobacco would be avoided to minimize impacts to Blackburn's sphinx moths.
- Potential project areas would be surveyed for the presence of adult and larval host plants by a qualified biologist. To minimize the potential for the project to adversely impact the Blackburn's sphinx moth, tree tobacco or other host plants would not be cut or removed and the soil within 33 feet of the host plants would not be disturbed.

Cumulative Impacts

Hawaiian Hoary Bats: Widespread dispersed development, disruption during nesting, and loss of native prey species due to the prevalence of nonnative insects in the Hawaiian Islands has contributed to habitat loss for Hawaiian hoary bats. When the impacts of past, present, and future actions, including incremental habitat disruption from county plans and utility projects, are added to the impacts associated with A-1 and A-2, there would continue to be long-term adverse effects on hoary bats combined with slight beneficial effects from protection in the park and implementation of A-1 and A-2.

Humpback Whale: In the first half of the 20th century, commercial whaling dramatically reduced humpback whales worldwide from an estimated 150,000 to approximately 15,000. Although whaling was reduced beginning in 1965, Soviet whaling continued through 1971, reducing the population to between 1,000 to 1,400 animals. Listing the whale as endangered under the Endangered Species Conservation Act in 1970, as well as the passage of the Marine Mammal Protection Act in 1974, have improved the prognosis for the whales by reducing human threats, which include vessel collisions, marine debris entanglements, noise, and coastal water pollution. When the impacts of past, present, and future actions are added to the impacts associated with A-1 and A-2, there would be no change in the status of humpback whales, which are far more affected by what is occurring outside the park (such as commercial vessel travel) than within it.

Hawaiian Monk Seal, Green and Hawksbill Sea Turtles: Although green sea turtles continue to decline worldwide, their population in the Hawaiian Islands is increasing. Kalaupapa has become a productive pupping area for monk seals (Brown et al. 2011). Sea turtles and monk seals are anticipated to be affected by sea level rise, resulting in reduced or eliminated sandy beaches for nesting and resting habitat. When the actions in this GMP are added to other actions affecting green sea turtles and Hawaiian monk seals, there would continue to be overall adverse effects on these populations from actions outside the park, combined with small beneficial effects from the opportunities for these species to use the shores of Kalaupapa.

Seabirds/Terrestrial Birds: Hawaiian birds have declined, been extirpated or driven extinct by habitat loss, indiscriminate killing, and the introduction of nonnative plants and animals. Birds have also been decimated by disease, particularly the introduced Avian malaria (*Plasmodium*),

which is transmitted by mosquitoes (*Culex quinquefasciatus*). The mosquito larvae are often laid in pig wallows. In addition, rats consume native snails, plant seeds, and bird eggs. Mongoose consume bird eggs, chicks, and adults. When the impacts of past, present, and future actions, including the persistence of some nonnative species, are added to the impacts associated with A-1 and A-2, there would continue to be long-term adverse effects on Hawaiian birds occurring in the park combined with slight beneficial effects from protection in the park and implementation of fencing and habitat restoration in A-1 and A-2.

Threatened and Endangered Plants: Special status plants have declined as a result of grazing, the introduction and spread of nonnative invasive plants and animals, and habitat loss. Until recently much of the park's native vegetation was threatened by feral goats, pigs, and axis deer. Now, within the park, most of the rainforest, dry forest, and coastal salt spray vegetation are protected by fences and a feral animal control program. The recent completion of a fence around a high-elevation forest and successful pig control have fostered improvement in the condition of rainforest habitat and provided a sanctuary for the reintroduction of rare plants (Kalaupapa NHP unpublished data). Informal observation of wallows, hoofprints, and scat during other activities indicates that feral pig populations are low. The number of plant species that are rare or at risk is unknown; however, now that the area is in recovery, surveys for presence of threatened and endangered plants can be completed. The Pu'u Ali'i NAR may include over 15 threatened or endangered plants and/or their critical habitat (FWS 2013).

Axis deer cause the most damage to park resources at lower elevations, especially in the coastal salt spray zone and dry forest. In the coastal area, most species have improved. Restoration efforts have reintroduced or augmented several federally listed plants, including *Tetramolopium rockii*, *Scaevola coriacea*, *Sesbania tomentosa*, and others. One disturbance-mediated species (*Schenkia* [formerly *Centaurium*] *sebaeoides*) that relies on calcareous sand substrate may be extirpated because of increased native plant cover. Invasive shrubs (e.g., *Pluchea* spp.) have been removed from 200 coastal acres on the eastern shore of the peninsula. As a result, the park is now considered to include the best coastal spray vegetation in all of Hawai'i. The park is also beginning to consider measures to remove date palms (*Phoenix dactylifera*) that are spreading throughout the eastern section of the park. Numbers of rare species on the offshore islets (*Pittosporum alophilum* and *Brighamia rockii*) continue to decline. When the impacts of past, present, and future actions, including the persistence of some nonnative species, are added to the impacts associated with A-1 and A-2, there would continue to be long-term adverse effects on native plants in the park combined with slight beneficial effects from propagation and outplanting of some species into suitable habitat as well as from fencing of feasible areas.

Insects: Because of the wide range of introduced nonnative invasive plants and animals, including nonnative insects and their widespread presence in Hawai'i, native species, such as the yellow-faced bee, Pacific Hawaiian and orangeblack damselflies, and Blackburn's sphinx moth have declined. Threats to the moth also include degraded and lost habitat from urban and agricultural development, habitat fragmentation, increased wildfire frequency, and disturbance by grazing cattle. Because there would be no specific actions that would affect these species or their habitat from actions in this GMP, there would be no additional cumulative effects on these species.

Conclusion

Hawaiian Hoary Bat: Actions under A-1 and A-2 may affect but would be not likely to adversely affect Hawaiian hoary bats.

Humpback Whale: There would continue to be no effect on humpback whales from implementation of A-1 and A-2.

Hawaiian Monk Seal, Green and Hawksbill Sea Turtles: Continuing current management actions and/or implementing A-2 may affect, but would be *not likely to adversely affect* green and hawksbill sea turtles and Hawaiian monk seals and monk seal critical habitat. As implementation plans tiering from this GMP are developed, the NPS would undertake consultation on specific project proposals with the USFWS (associated with turtles in terrestrial habitat, such as beaches) and/or NMFS (associated with monk seals and turtles in the water).

Seabirds: Because actions that affect the offshore islets would continue to be in consultation with the USFWS and outside of the nesting season for the endangered Hawaiian petrel and threatened Newell's shearwater, and because the park has implemented conservation measures, such as shielded outdoor lighting near the shoreline, actions under A-1 and A-2 may affect, but would be *not likely to adversely affect* these species.

Terrestrial Birds: There would continue to be *no effect* on endangered terrestrial birds from actions in A-1 and A-2.

Threatened and Endangered Plants: Actions under A-1 and A-2 may affect but would be *not likely to adversely affect* special status plants. Existing implementation of propagation and outplanting of special status plants would continue to have long-term beneficial effects on about eight species of threatened or endangered plants and is covered under agreements with the USFWS for the organizations that provide the propagules and plants to the park.

Insects: Actions under A-1 and A-2 would have *no effect* on special status insects.

For all special status species: As implementation plans tiering from this GMP are developed that may affect specific species or their habitats, the NPS would reinitiate consultation with the USFWS.

VISITOR USE AND EXPERIENCE

Interpretation and Education

Impacts from Alternative 1 (A-1)

General public visitors would continue to be for day use only, with tours limited to approximately four hours and visitors seeing only selected features and areas of the park. Similarly, in the near term, overnight use at Kalaupapa would continue to require sponsorship by a Kalaupapa resident, and stays would be limited to a total of 13 days in a three-month period. This would continue to allow overnight and/or multi-day opportunities only for people with connections to Kalaupapa's residents.

Other visitors to the park would continue to need an escort and be part of a paid organized tour. Visitors would not be able to see or experience the entirety of the peninsula, Kauhakō Crater, and many areas of the settlement. Areas beyond the settlement would continue to be accessed only by patients, staff, and permitted visitors with an escort, resulting in some adverse impacts on visitors who have expressed a desire to see and experience these areas. There would be no entrance fees, however fees for service such as the mule ride and tours would continue. The cost of this required tour and transport (either by mule or airplane) is high and prevents many people from coordinating a visit to the park, adversely affecting visitor opportunities.

Impacts from maintaining the park's website, exhibits at the bookstore, waysides, and park brochure would have long-term beneficial effects from orienting visitors to the park. As patients and their caregivers continue to leave Kalaupapa, the park would provide additional

staffing and programming for interpretation and education, including a self-guided walking tour of the Kalaupapa Settlement. Programs would continue to be operated by patient residents, native Hawaiians, and park staff; however, because of limited programming and visitations, current programming may not convey the breadth of park resources. Because of limited interpretive programming and the unknown departure date of the DOH and their corresponding visitation access requirements, there would continue to be limited learning opportunities at the park.

Impacts from Alternative 2 (A-2)

Establishing an interpretation and education division would have long-term beneficial impacts on visitor experience by enabling the park to conduct a wide range of new on- and off-site interpretive and educational programs. This would enhance the quality, depth of understanding, and breadth of knowledge about the park in Hawai'i and beyond. More opportunities to visit the park and engage in hands-on learning activities would also shift the nature of interpretation and education at Kalaupapa, providing visitors new information and experiences including Native Hawaiian cultural resources, the Molokai Light Station, and the wide variety of natural resources. The NPS would contact kama'āina, lineal descendants of patients, and Native Hawaiians to support participation in stewardship activities, interpretation and education programs, and connecting with the 'āina.

Requiring all visitors to have a mandatory orientation and entry pass would continue to adversely affect some visitors but would increase knowledge and understanding of the history and significance of Kalaupapa. New opportunities for personal reflection and some personal independence while at Kalaupapa would benefit visitor experience, while providing sensitivity to park resources.

Hands-on stewardship programs would contribute to the preservation, rehabilitation, and restoration of Kalaupapa's resources. These programs could perpetuate a range of traditional patient and Native Hawaiian traditions at Kalaupapa, which would have short- and long-term beneficial impacts on interpretation and education.

Traditional facility-based interpretive programs and opportunities for people to interact with rangers and park partners would also be offered. Increasing the allowable numbers of visitors at Kalaupapa would necessarily change visitor experience to allow for more variety in visitor options available to a much broader audience.

Actions would also include development of a long-range interpretive plan. Museum collection items would be used for exhibits, both in-person and virtual, to interpret the stories at Kalaupapa. These traditional and new interpretive methods would greatly increase the quality of visitor experience, not only at Kalaupapa but also off-site.

Hands-on learning and preservation activities would encourage a variety of visitors, including youth and groups, to visit, learn about, and preserve park resources, resulting in long-term beneficial effects. Curriculum-based educational programs and materials such as lesson plans and traveling educational exhibits about Kalaupapa would also improve opportunities for interpretation and education. Volunteer interpreters, including patients, 'ohana, and kama 'āina, would allow visitors to learn from people directly associated with Kalaupapa's living and historical communities. A range of outreach materials and programs targeted toward Molokai, Hawai'i, the U.S., and related international sites—such as web-based materials and multimedia connection with similar sites throughout the world—would also benefit interpretation and education about the park.

Commercial Visitor Services

Impacts from Alternative 1 (A-1)

Although there would continue to be no long-term plan for commercial activities, those operated by patient residents for tours and the mule ride operator would continue in the short term. In addition, a cooperating association would continue to operate the bookstore for educational and merchandise sales related to Kalaupapa.

Impacts from Alternative 2 (A-2)

The bookstore would continue to be operated and managed through a cooperating association. Later, concessioners or nonprofit organizations, including those with first and second rights of refusal, could provide for visitor needs and services, including tours, mule rides, merchandise sales, general store, gas station, food and beverage service, and possible overnight lodging. Additional commercial use opportunities could result in long-term beneficial impacts for visitors by expanding the diversity of services provided for visitors. The scale of commercial activities would be limited by the number of people who could visit the park. Over time, more diverse visitors would visit the park, potentially resulting in more commercially viable (larger) visitor services. Both commercial and nonprofit operation of visitor services could benefit the park by providing support for resource stewardship and programming, a long-term beneficial impact.

Visitor Use, Access, and Transportation

Impacts from Alternative 1 (A-1)

Physical access to Kalaupapa is restrictive, challenging, and expensive, resulting in limited visitors. In the near term, visitor experience would continue to be under shared DOH and NPS management, highly structured (100 people per day), and focused on Kalaupapa's period of significance (1866–1969). People who want to visit Kalaupapa spontaneously, those without a permit, and people who are unable to pay the tour, mule, and/or air travel costs would continue to not be able to visit the park. Access to Pālā'au State Park and the interpretive panels at the Kalaupapa Overlook would continue to provide basic information and be managed by DLNR. These limitations that prevent access to a variety of potential visitors would continue to result in limited beneficial and widespread adverse effects.

Children under 16 would also continue to be prohibited from visiting Kalaupapa below the pali. Although there is a strong desire by educators and families to have children experience firsthand the stories of Kalaupapa, under current conditions, not allowing this access would continue to have adverse impacts on visitor experience and visitor use opportunities.

Existing rules for visitation would continue to maintain community and privacy for the patient residents. DOH and NPS would continue to cooperatively manage the visitor permit and sponsorship system and NPS would continue to manage visitor protection and visitor facilities.

Visitors would continue to need an advance permit from DOH or the tour company to access the pali trail and the peninsula. As a result, there would continue to be individuals, including some topside residents and kama 'āina of Kalaupapa, who are uncomfortable with the formality of this access to the park

Because the 100 person per day limit is rarely reached, most visitors who are able to pay the fees for service are accommodated. Because of trail conditions, the number of mules that can traverse the access trail is limited to no more than 20 per day.

Maintaining the pali trail for foot and mule traffic would continue to provide access from topside Molokai for staff and visitors. Because steep trail conditions limit access to people who

are physically capable of walking or riding a mule, and air and land operations do not support accessibility, people with limited mobility cannot access the park. Under A-1 this would continue to be a long-term adverse effect.

Air access enables transport of visitors, staff, supplies, and garbage, including for emergencies.

Water access to the park is limited to barges (providing supplies and materials), official NPS boat access associated with marine resources management, and boats permitted via special use permit. Therefore, because sea access for visitors would continue to be limited for safety reasons, there would continue to be long-term adverse effects on opportunities for water access to the park.

Access on the approximately 50 miles of roads would be maintained, with fuel-efficient vehicles, bicycles, and pedestrian transport for both visitors and operations within the settlement used when possible, with the intent of reducing transportation by motor vehicles over time.

Overall, access to Kalaupapa is limited due to the current rules and regulations, the high costs of visiting the park, limited points and methods to access the park, and limited access for people with disabilities. For these reasons, impacts of A-1 would continue to result in a range of adverse impacts on access and transportation.

Impacts from Alternative 2 (A-2)

Short-term impacts would be similar to A-1, however in the long term, there would be expanded opportunities to visit Kalaupapa. Access to Kalaupapa would be easier, providing opportunities for more learning and appreciation of park history and resources. These opportunities would include advance arrangements with a tour company, concession, and/or nonprofit entity to visit the park for day use without advance reservations.

Although concession contracts and commercial use agreements would limit the number of individuals allowed on the mule ride, tours, and overnight accommodations, the daily visitation limit would probably change, creating a long-term beneficial impact on visitor access and transportation for a wider range of visitors.

At the Kalaupapa Overlook in Pālā'au State Park, a new kiosk could provide more information about visiting Kalaupapa. New visitor use information would be available via the internet and at off-site locations such as the Ho'olehua Airport. A new visitor facility in Kaunakakai in partnership with others could be established to provide more interpretation and educational materials on Molokai. Stewardship groups could regularly access the park and stay overnight depending on lodging availability, resulting in immersive experiences that would benefit visitors and the park. New overnight opportunities offered to people with preexisting associations and ancestral connections to Kalaupapa and stewardship groups would increase access opportunities, as would potential overnight use by the general public.

Although overall needs for an escort would decrease, access would include a mandatory visitor orientation, and areas beyond the engagement zone would continue to require escorts. Visitors could access many areas of the park on organized tours, as part of stewardship or learning activities, and on their own to select features. Unescorted access would be available from the top of the pali trail to the airport and potentially from the settlement to the Molokai Light Station, Kauhakō Crater rim, and Judd Park along Damien Road. Beyond this escorts would be needed.

Impact Avoidance, Minimization, and Mitigation Measures **Scenic Resources**

- Use facilities such as trails to route people away from sensitive natural and cultural resources, while still permitting access to important viewpoints.
- Design, locate, and rehabilitate facilities in ways that minimize adverse effects on scenic views.
- Provide vegetative screening to mask unwanted visual intrusion of facilities or infrastructure.

Cumulative Impacts

Interpretation and Education: Over time, there have been cumulative adverse effects on visitor experience from minimal interpretation and educational programming. When the impacts of past, present, and future actions are combined with A-1, the development of a limited interpretation and education division would improve opportunities at Kalaupapa; however, overall interpretation and education would continue to be limited by visitation caps, the difficulty of getting to the park, and the small number of opportunities available upon arrival, resulting in ongoing adverse effects combined with limited beneficial effects. Once there are no longer patients at the park, there would be significantly fewer visitors and less or no tours, and visitors would still not be able to access the areas beyond the settlement, resulting in adverse long-term impacts to visitor experience. Under A-2, use of volunteers and stewardship groups to implement park projects, combined with a more robust interpretive program and easier access, would benefit visitor experience.

Commercial Visitor Services: When the impacts of A-1 are added to past, present, and future actions, there would continue to be cumulative adverse impacts on commercial visitor services. When DOH and the patient community, some of whom currently provide tour services, are no longer at the park, there would be no long-term guidance for commercial activities such as tours. This would add to the adverse cumulative impact to commercial visitor services.

Under A-2, commercial visitor use guidance and opportunities would expand and would contribute to an overall cumulative beneficial impact.

Visitor Use, Access and Transportation: Because current visitor use is limited to 100 people per day and these individuals must be on guided tours or formally invited by a patient resident, there have been a range of cumulative adverse effects on visitor experience associated with limitations in access and transportation to Kalaupapa that would continue for some time. When the actions in A-1 are added to past, present, and future actions, there would continue to be cumulative adverse effects to park access, which would increase once there are no patients and there is no guidance to inform visitor management and experience. Overall access, however, would continue to be limited to the pali trail, small aircraft, and infrequent sea access. On the pali trail, the potential for landslides during heavy rains could continue to occasionally limit access by staff and visitors.

Under A-2, the potential for closure of the pali trail could be exacerbated from increased visitor use impacts and would affect visitors and staff. Generally, adverse effects have been minimal, with prompt repairs. Because the DOT and air carriers determine the number and frequency of flights to Kalaupapa Airport, changes to access via air would largely be beyond the control of the NPS and could result in changes to the number of flights, carriers, and costs, increasing or decreasing and causing adverse or beneficial effects on visitor access and transportation.

Conclusion

Interpretation and Education: Under A-1, current interpretation and educational programs combined with additional programming would increase visitor use opportunities, resulting in

slight long-term beneficial effects. Under A-2, the degree of beneficial effects would be much greater, with a wide range of personal and non-personal interpretive services and new visitor use opportunities that would encompass the whole range of history and resources at the park. New hands-on experiential learning and live demonstrations would increase opportunities for visitors to understand and spend extended periods of time at the park.

Commercial Visitor Services: Initially, commercial services impacts would be the same under both alternatives. Current organized tours allow visitors to learn about Kalaupapa but reach a limited number of visitors and provide a small benefit to a small number of operators. Under A-2, more opportunities for commercial services would provide benefits to a larger number of visitors, with more diverse offerings from a larger number of operators.

A wider range of partners, cooperating associations, concessioners, and/or nonprofit entities engaged in providing additional visitor services, programs, and stewardship activities would benefit both visitors and park resources.

Access and Transportation: Under A-1, visitors would continue to access Kalaupapa and learn about it only from guided tours and from information signs at Pālā'au State Park. Visitors would continue to follow current rules, including the permit system, visitation cap, age limit, and day use and escort-only options for limited access to the park. The high cost of visiting the park would continue to prevent many people from experiencing Kalaupapa.

Under A-2, visitors would have additional opportunities to access and visit Kalaupapa. There would be new unescorted opportunities, guided tours, stewardship activities, and more information at Pālā'au State Park, and potential overnight use. Many rules would change, including the permit system, visitation cap, age limit, and day and escort-only options. These new opportunities for access would support a broader and more diverse audience, who would be able to learn about and appreciate the park, resulting in widespread, long-term beneficial effects on visitor experience.

SOCIOECONOMICS

Impacts from Alternative 1 (A-1)

Economics: The NPS spends approximately \$2 million in base funds and approximately \$3 million in project funds annually, mainly for repairs and treatments to historic structures and infrastructure. Increases in NPS spending during construction could result in short-term beneficial impacts; long-term beneficial impacts may also result from the potential for annual operations increases. No new facilities are proposed in A-1, unless adaptive re-use is not feasible for existing structures. Construction and rehabilitation actions would benefit companies and workers in the construction industry for repair, historic preservation, and adaptive re-use if this work is contracted. Depending on the amount of work, rather than providing new jobs, workloads could expand to fill unused worker capacity. Workers frequenting the area would spend income on food and materials, potentially having a small effect on local businesses and sales tax revenues.

Kalaupapa NHP spending would also have beneficial long-term effects. Employment of staff would keep jobs on Molokai and generate personal income. The staff spends a percentage of income on housing, food, entertainment, and other services. NPS spending on operations also has a long-term positive impact on employment and incomes.

Partnerships with state and local agencies for facilities and visitor management would continue in A-1. State and federal spending would likely be maintained at the current levels. Topside Molokai offers a range of benefits to visitors, including lodging, food, shopping, and other services, as well as housing, schools, and other needed services for staff. A-1 would have no

additional effects on local businesses since visitation would also be maintained at the current level.

Social Characteristics: A-1 would continue existing trends in social character at the park and on the island. The current social environment of Kalaupapa and Molokai ensures that the remaining patients are able to live in a well-maintained community and that their lifestyle and privacy is respected. The restrictions on the types and levels of visitation in the park are also designed to maintain the character of the Kalaupapa community. NPS would continue to maintain the social environment in the near term, not affecting Kalaupapa's residents, the DOH, or the character of Kalaupapa.

Impacts from Alternative 2 (A-2)

Economics: In addition to A-1, more opportunities for visitation would be discernible and would benefit both local and outside tourism and transportation businesses, as well as economic activity within the park and on Molokai. Compared to the Molokai tourist economy, however, these increases would be a small but an integral part of future destination tourism. While construction spending related to maintaining and treating the structures and infrastructure would be similar to A-1 and could strengthen some areas of the economy, it would be to a small degree in relation to the island's total economy. NPS spending related to staff travel, production of educational materials, and potential partnerships with organizations and other entities in the region and beyond would increase with more educational programming, but it would continue to provide a small degree of overall benefit. Increased visitation would also increase visitor spending, strengthen local employment, business sales, and tourism, as well as government tax revenues.

Social Characteristics: Exhibiting museum collections items and providing the collections to outside researchers would preserve Kalaupapa's historic and cultural components, a long-term beneficial impact on the social character. Preservation maintenance and rehabilitation of historic structures and cultural landscapes would have long-term beneficial effects in maintaining Kalaupapa.

Changes to the social character of Kalaupapa would occur from the addition of nonprofit or concession-run visitor services and visitors using those services. Overnight visitation by the general public would also affect the social character of Kalaupapa. Depending on the perspective of the community and individuals participating in these activities, these changes could have beneficial or adverse effects on social character. Unlike A-1, adding an overnight component of volunteerism to the visitor population would retain some of the social character of this isolated community because of the increased length of stays; however, compared to resident stays, these would be short. Similarly, depending on perspectives, the presence of children could be perceived to be either beneficial or adverse to the social character of Kalaupapa.

Cumulative Impacts

There would continue to be cumulative beneficial effects on economics from ongoing cooperative agreements with the BLNR, DOT, DHHL, and churches for maintenance and the regular influx of staff and volunteers. This is against the backdrop of decreased patient and staff populations, which would continue to change the social character of Kalaupapa. Combined with the loss of the patient community and the change from a living community to a historical community, actions in the alternatives would continue transformation of the area from a day-to-day residential community to an observed residential community, with the residents continuing to be NPS rather than DOH staff. There would be cumulative adverse effects from the DOH departure and the loss of the patient community that will substantially affect the population, demographics, economic, and social character of the area. When the impacts of the alternatives

are added to past, present, and future actions at the park, there would continue to be growth in NPS staff and concurrent decreases in the patient community and DOH staff and changes in management of the area, which would continue to have both adverse and beneficial effects on the population, demographics, and economics at Kalaupapa.

Conclusion

A-1 would continue to have slight short- and long-term beneficial impacts on the socioeconomic environment. Increased visitation, partnerships, and park operations in A-2 would have slight increases in economic benefits at Kalaupapa and on Molokai. Because state expenditures would decrease and federal expenditures could rise, and because these impacts would be small compared to economic activity on Molokai, overall socioeconomic effects would be small.

Chapter 5

Consultation and Coordination



Patients and NPS staff sing during the celebration of the canonization of Saint Marianne, October 2012. Photo by Jeffrey Mallin.

CHAPTER 5: CONSULTATION AND COORDINATION

This GMP/EA is a revised version of the previously developed GMP/EIS. It includes updated guidance and content that reflects several rounds of public engagement and comments. It also responds to public comments requesting a revised and shortened GMP and additional opportunity for public review.

Public involvement, consultation, and coordination efforts were ongoing throughout the process of preparing this GMP begun as an EIS (*Federal Register* Notice of Intent March 11, 2009). Public involvement methods included public comment periods, public meetings and workshops, meetings and calls with consulting parties for Section 106, meetings with State of Hawai'i agency partners, invited presentations at partner and special interest group meetings, presentations at Kalaupapa NHP Advisory Commission meetings, news releases, newsletter mailings, *Federal Register* notices, and website postings.

LIST OF ENTITIES CONSULTED

The NPS actively consulted agencies, organizations, and individuals throughout the planning process to discuss the planning issues, preliminary alternatives, preferred alternative, draft GMP/EIS, and proposed changes that are included in this GMP/EA. Entities that were frequently consulted included the DOH, DHHL, DOT, Kalaupapa Patient Advisory Council, and DLNR (State Historic Preservation Division, Department of Fish and Wildlife, Land Division, State Parks Division, Division of Aquatic Resources). Other consulted entities included USFWS, National Oceanic and Atmospheric Administration, USDOJ Office of Native Hawaiian Relations, Section 106 consulting parties, Advisory Council for Historic Preservation (ACHP), Office of Hawaiian Affairs, Maui County, 'Aha Kiole, Ka 'Ohana O Kalaupapa, Hawaiian Conference United Church of Christ, Roman Catholic Church—Diocese of Honolulu. The NPS also met with many other agencies, organizations and individuals throughout the planning process. The project mailing list includes roughly 1,500 contacts.

PUBLIC SCOPING AND REVIEW OF THE PRELIMINARY ALTERNATIVES

Public scoping was held between March 11, 2009 and July 15, 2009 and included 12 workshops across four islands. More than 450 comments were received from individuals or organizations and were used to identify a range of issues informing the development of alternatives. Public review of the preliminary alternatives was conducted between May 16, 2011 and July 16, 2011 and included seven public open houses across three islands. More than 200 individuals or organizations provided comments regarding concerns and preferences that helped shape the preferred alternative. More detailed summaries of public scoping and alternatives review are in Chapter 6: Consultation and Coordination of the *Kalaupapa National Historical Park Draft GMP/EIS*.

PUBLIC REVIEW OF THE DRAFT GMP/EIS

Public review of the draft GMP/EIS occurred between April 10, 2015 and June 8, 2015 with a comment period and through 8 public meetings held on three islands, with 250 people participating and approximately 120 written comments received. A summary of the public review of the draft GMP/EIS and NPS responses to public comments on the draft GMP/EIS was printed in Appendix G of the 2018 GMP/EA. A list of the draft GMP/EIS recipients is in Chapter 6: Consultation and Coordination of the *Kalaupapa National Historical Park Draft GMP/EIS*.

PUBLIC REVIEW OF THE GMP/EA

The GMP/EA was released for a 30-day public review on November 15, 2018 and included a comment period and Section 106 consultation call. The comment deadline was extended two times in response to public requests and the partial government shutdown. The first extension was from December 15, 2018 to February 1, 2019. The second extension was to March 7, 2019. Thirty-five written comments were received.

The NPS received comments on the following topics: management structure and partners, management of specific areas, cultural and natural resources, public use, operations, legal and policy requirements, NEPA pathway, NEPA compliance and environmental analysis, planning and compliance process, transition and plan implementation, and NHPA Section 106. Attachment 3 of the FONSI includes the comments received and NPS responses to comments.

CONSULTATION

Consultation with the State of Hawai'i Historic Preservation Officer and the Advisory Council on Historic Preservation for Section 106

In accordance with Section 106 of the National Historic Preservation Act, the National Park Service provided the State Historic Preservation Officer (SHPO) many opportunities to comment on the plan and effects of the plan.

The NPS formally initiated consultation with the State of Hawai'i Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) under Section 106 of the National Historic Preservation Act, as amended, in April 2009 during the public scoping period. In the initiation letters, NPS stated it would use the process and documentation required for the preparation of an EIS to comply with Section 106 of the National Historic Preservation Act (NHPA) in lieu of the procedures set forth in 36 CFR § 800.3 through 800.6. (36 CFR § 800.8 (c). Identified Native Hawaiian Organizations and consulting parties also received the notification. In addition, the NPS communicated with the SHPO and consulting parties and involved the public during the public review of the draft alternatives (2011).

To meet the requirements of Section 106 consultation, the NPS initiated scoping with agencies, stakeholders, and the interested public. The NPS identified and engaged interested parties including individuals, groups, and communities associated with Kalaupapa's history prior to and during public scoping (2009) and draft alternatives (2011). The NPS held in-person and virtual public meetings. In-person meetings were held at Kalaupapa, on Molokai, and other Hawaiian Islands. Historic preservation issues raised during the course of the planning process by the public and consulting parties were considered in the documentation of the affected environment, development of the alternatives, and impact analysis.

On April 10, 2015, the NPS sent letters to the SHPO, ACHP, and consulting parties notifying them of the release of the draft GMP/EIS. The letters invited consultation on the draft GMP/EIS, including the APE, historic properties within the APE, assessment of effects, and a preliminary determination of no adverse effect. The NPS held public meetings and consulted with SHPO, ACHP, Native Hawaiian Organizations, and other consulting parties during the public review of the draft GMP/EIS and additionally held a focused Section 106 consultation call on May 14, 2015. In a letter dated June 15, 2015, the SHPO provided several substantive comments including a recommendation to develop a programmatic agreement. Based on the SHPO letter and requests by consulting parties and the public for additional consultation, the

NPS conducted 18 additional consultation conference calls with the SHPO, Native Hawaiian Organizations, and consulting parties from June 2015 to July 2016.

The NPS held an in-person meeting with the SHPO and State Historic Preservation Division (SHPD) staff and other State of Hawai'i Department of Land and Natural Resources agencies to provide project updates and share changes to the GMP document conducted on May 18, 2016. On August 1, 2016, the NPS held a consultation call with SHPD staff to review the status of the GMP and identify a path forward for completion of the Section 106 process. During the call, NPS provided verbal responses to the SHPO June 8, 2015 comment letter.

On November 7, 2018, the NPS notified the SHPO, consulting parties, and public in writing that an EIS was no longer warranted based on the reduction in impacts that could result from the plan's alternatives and released a draft EA for public comment on November 15, 2018.

On November 20, 2018, a consultation call was held. The results of the impact analysis were articulated in the GMP/EA using methods and terminology appropriate to NHPA. The GMP/EA identified the APE and included a determination of effect to historic properties for the preferred alternative as no adverse effect. It also stated that subsequent Section 106 reviews were necessary to implement site-specific actions and mitigations to ensure consistency with the Secretary of the Interior's Standards for the Treatment of Historic Properties as stated in 36 CFR § 800.5 (3)(b).

In a letter dated March 7, 2019, the SHPO did not concur with the no adverse effect determination and requested additional specific information be included in the plan as well as more detailed inventories. Consulting parties and Native Hawaiian Organizations also objected to the determination of no adverse effect and adequacy of the Section 106 documentation.

On July 8, 2019, the NPS notified the SHPO, ACHP, and consulting parties of its intent not to use the NEPA process for section 106 purposes for the GMP/EA, to change the determination of effect from no adverse effect to potential for adverse effect, and develop a programmatic agreement to resolve potential adverse effects. The NPS requested SHPO concurrence with this method to address the potential for adverse effect to historic properties. The NPS notified and invited the ACHP to participate in Section 106 consultation for the resolution of adverse effects. The NPS also took the opportunity to request information regarding ethnographic resources yet to be identified from consulting parties, and any historic property of religious or cultural significance to Native Hawaiian Organizations. On August 9, 2019, SHPO concurred with the effect determination of "adverse effect" on historic properties and agreed that the preparation of a programmatic agreement was appropriate.

In April 2020, the NPS started to organize a deliberate and focused consultation process to engage in National Historic Preservation Act 106 consultation with various consulting parties to develop a Programmatic Agreement (PA) to address potential adverse effects to historic resources identified in the GMP/EA process. The final PA is the result of more than a year of intensive, focused consultation that set the backbone for the Park's procedures to move through the Section 106 consultation process with SHPD, agency partners and landowners, and members of the community that have immeasurable knowledge and passion for the resources at Kalaupapa. The consultation process gave all parties a much stronger understanding of the complexities of consultation, other parties points of view and developing documents to address how resources would be managed in the future as well as how future projects would meaningfully engage the community. The final PA document represents a long-term commitment to the park and a lot of hard work and is the result of many conversations, discussions, disagreements and heartfelt communications with a very dedicated group of

consulting parties and staff who all care deeply about the important resources within Kalaupapa National Historical Park.

The PA identifies the qualifications and training requirements for the staff that advise the Superintendent on NPS actions, and includes the ability for non-NPS staff to serve this role. It also draws attention to the special hiring authority and training opportunities for native Hawaiians at Kalaupapa NHP; it identifies a community engagement program with routine reporting and opportunities for conversation and feedback on park projects and operations; it identifies that the NPS will play a role in information-sharing when non-NPS organizations are proposing projects within the park boundary; it outlines procedures in the event of inadvertent finds and identifies the need to create a stand-alone Protocol for Inadvertent Finds at the park; it identifies a procedure in the event of an emergency action; and the PA identifies specifics for an annual report with timelines.

U.S. Fish and Wildlife Service

In accordance with the Endangered Species Act, the National Park Service contacted the USFWS by letter in April 2009 to determine which federally listed special status species should be included in the analyses. At the time of the release of the GMP/EIS on April 10, 2015, the NPS submitted a copy of the GMP/EIS to the USFWS on April 10, 2015, along with a letter requesting review and concurrence with the NPS's determinations of effect for the preferred alternative. USFWS responded with a comment letter dated June 8, 2015 offering technical assistance. Based on subsequent analysis of the project and its potential effects, the park has determined that proposed actions may affect but would not be likely to adversely affect listed species and critical habitat present in the park. USFWS provided concurrence with these determinations of effect in a letter dated December 7, 2018.

National Marine Fisheries Service

Communication with the NMFS began in April 2009. When the GMP/EIS was released, the NPS submitted a copy of the GMP/EIS to NMFS on April 10, 2015 along with a letter requesting concurrence with the determinations of effect for the preferred alternative. NOAA responded informally in an email dated November 14, 2016. Another request for concurrence was sent to NMFS with the release of the EA on November 15, 2018. Based on analysis of the project and its potential effects, the park determined that proposed actions may affect but are not likely to adversely affect endangered or threatened species in the marine environment of the park. NMFS responded on February 21, 2019, concurring with the determinations of effect for species within their jurisdiction.

The NPS informally consulted with NMFS on essential fish habitat (EFH). The NPS has determined that activities in the preferred alternative will have minimal adverse effects to EFH given incorporation of all proposed best management practices. NMFS concurred with the determinations of effect to essential fish habitat on March 12, 2019.

Kalaupapa National Historical Park Advisory Commission

The Kalaupapa National Park Advisory Commission was briefed and consulted at every major milestone for this GMP/EA. The GMP was on the agenda for commission meetings on March 15, 2011, July 26, 2011, January 13, 2012, and June 14, 2012. A description of the commission's concerns is in Chapter 6: Consultation and Coordination of the *Kalaupapa National Historical Park Draft GMP/EIS*. Concurrent with the release of the GMP/EIS, the NPS held commission meetings on April 21, 2015 and July 29, 2015 that focused on the draft GMP/EIS and on

questions and general opposition to the boundary proposal for Pelekunu Preserve and Pu'u O Hoku Ranch.

Department of Hawaiian Home Lands Beneficiary Consultation

As described in Chapter 6: Consultation and Coordination of the Kalaupapa National Historical Park Draft GMP/EIS, the Department of Hawaiian Home Lands led beneficiary consultations for the public review of the draft GMP/EIS on June 29–30, 2011 and also on May 26-27, 2015. Full meetings notes for the 2011 and 2015 consultations are available on the DHHL website: <http://dhhl.hawaii.gov/po/beneficiary-consultation>.

Appendixes, Sources, Preparers and Consultants



Aerial view of the Kalaupapa Settlement. NPS photo.

APPENDIX A: MANAGEMENT ZONES

Management zoning is the method used by the NPS to identify and describe the appropriate variety of resource conditions and visitor experiences to be achieved and maintained in the different areas of a park. Zoning is generally a two-step process: (1) identify a set of potentially appropriate management zones, and (2) allocate those zones to geographic locations throughout the park.

Unlike most national park units that are entirely owned and managed by the NPS, most of the land within Kalaupapa NHP is owned by the State of Hawai'i. Through the lease with DHHL and cooperative agreements with the DLNR, DOH, and DOT, the NPS has varying responsibilities for management, administration, and jurisdiction depending on the specific area within the NHP. Management zones were applied to the entirety of Kalaupapa NHP in order to promote cooperation with State of Hawai'i agencies for the protection of resources and management of visitor use within the NHP.

The following four management zones define and spatially apply goals and objectives for resource management, levels of development, and different types of potential visitor experiences.

Integrated Resource Management Zone

This coastal and shoreline zone emphasizes the interconnectedness of nature and culture that is evident in people's connection with the 'āina at Kalaupapa.

Resources

Cultural resources would be preserved to perpetuate their historic, natural, and scenic character and for their interpretive and research values and traditional cultural activities. Selective reconstruction of non-extant cultural or historic features may be appropriate.

Terrestrial and marine native plant communities and wildlife habitat would be preserved and promoted to the greatest extent possible. Ecological processes would be primarily left unimpeded.

The natural soundscape, night sky, and viewsheds would be preserved or restored. Natural sounds dominate, however distant artificial sounds associated with resource management operations and visitor experiences could be heard at times. Habitats for sensitive species would be free or nearly free of intrusive noise. Limited artificial outdoor lighting would be present. Uninterrupted views of natural, cultural, and scenic resources would continue to be a part of the visitor experience.

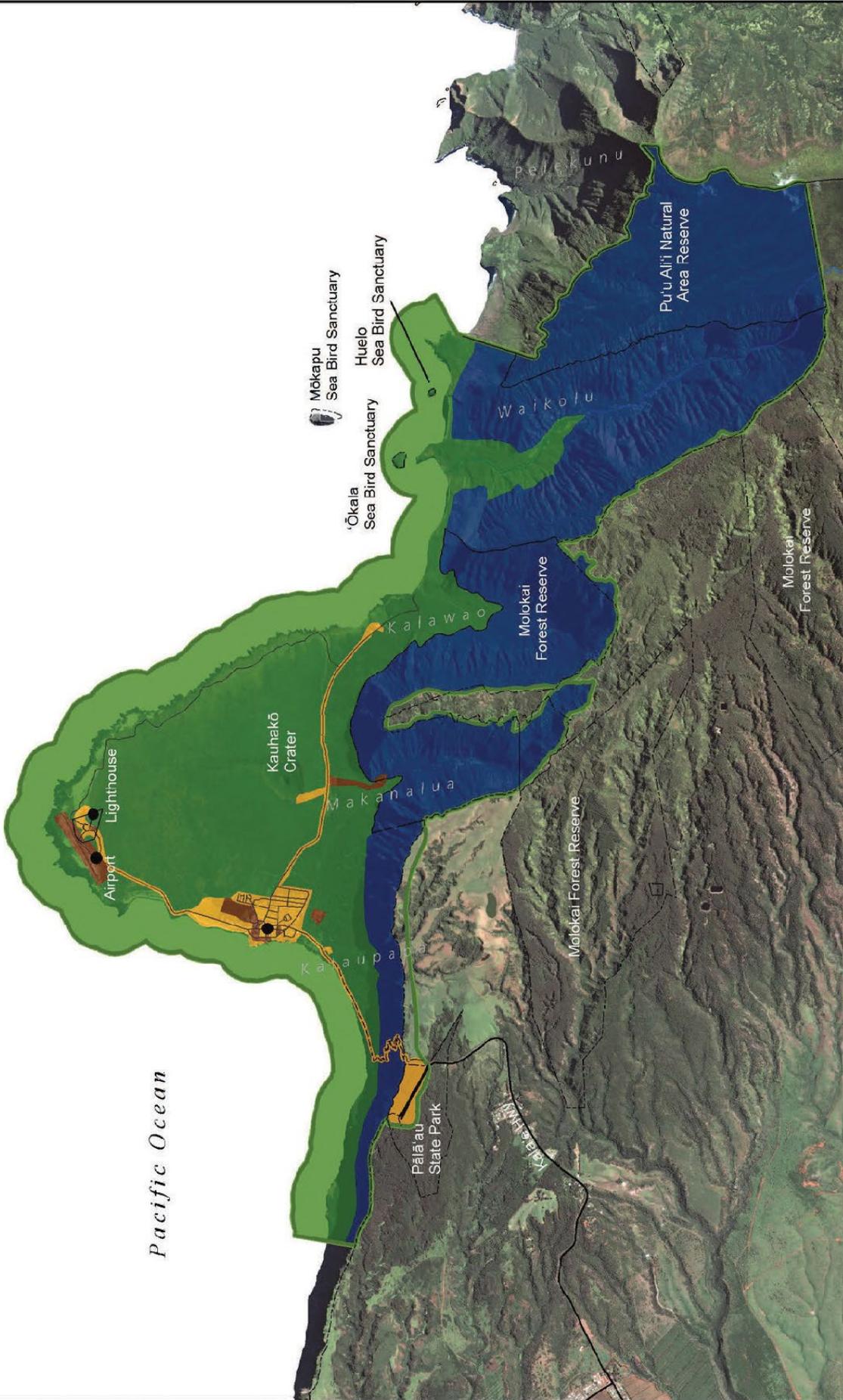
Access and Transportation

Access in this zone would occur via trails and by the unimproved roads. In the near term, patients and residents of Kalaupapa NHP would continue to have access along the unimproved roads to traditional gathering and use areas, and visitors would need an escort. In the long term, residents of Kalaupapa NHP would continue to have access along the unimproved roads to traditional gathering and use areas. Visitor access would be by escort only or through a special use permit to allow for cultural practices, research, and protection activities.

Visitor Use and Experience

Visitation levels would be generally low, with moderate visitation at entry points or points of interest. Group sizes could be limited to protect experiential and resource protection objectives. Structured programs could include hands-on stewardship activities. Visitors would have opportunities to participate in interpretive and stewardship programs including guided walks or hikes. Passive interpretation such as wayside exhibits would be available. Traditional

cultural practices of Kalaupapa could be perpetuated in this zone, and visitors (anyone who is not park personnel or a resident) could perhaps experience these practices through



Management Zones (Alternative 2)

- Kalaupapa National Historical Park
- Reserve Boundaries
- Integrated Resource Management
- Engagement
- Operations
- Name of Ahupua'a
- Wao Akua

Scale:
0 1 Miles
0 1 Kilometers

Projection: UTM, NAD83

North Arrow

FWR, San Francisco - GIS
Date Saved: 04/09/2013

observation and/or participation. A moderate to high degree of physical effort may be required to experience this zone. Visitors should be prepared for challenges and use of outdoor skills.

Facilities

Facilities would be minimal and only allowed in support of resource protection, visitor use, and visitor safety. Types of facilities may include: trails, unimproved roads, fences for resource protection, temporary facilities for resource management (staging areas, storage, helipad), unobtrusive signs and wayside exhibits, and existing structures to support utilities (Waikolu water systems) and resource management (U.S. Geological Survey stream gauges); in addition, limited, small-scale telecommunications facilities and power facilities may be allowed in this zone if designed and sited to minimize visual impacts.

Engagement Zone

This zone, encompassing the primary developed areas of the park, emphasizes providing opportunities for visitors to engage, learn about, and experience Kalaupapa.

Resources

Cultural landscape elements/features could be adapted for visitor use, administrative purposes, safety, and resource protection where compatible with the character-defining features of the cultural landscape. Many historic structures could be rehabilitated and used as interpretive exhibits and to serve operational and visitor needs, such as food service and potential lodging.

Native plant communities and wildlife habitat could be modified to support important cultural features or to illustrate a particular historic period. Invasive nonnative species (i.e. haole koa or Christmas berry) would be managed. Non-invasive nonnative species (i.e. ornamental or fruit trees) could be maintained if determined to be a contributing resource to cultural landscapes. Ecological processes would be primarily left unimpeded except to provide visitor learning opportunities where appropriate.

The natural soundscape, night sky, and viewsheds would remain largely intact and enhance the visitor experience. Natural sounds would be generally audible mixed with sounds from visitor and park operations activities, such as noise from operations and overflights at the Kalaupapa Airport. Outdoor lighting would be present when needed to support visitor services or park operations but would be designed to minimize light pollution. Historically and culturally appropriate sounds and lighting from the period of significance could modify the otherwise intact natural soundscape and night sky.

Access and Transportation

Access would occur along roads and historic trails. Universal access opportunities would be provided. In the near term, escorted access would occur in all parts of this zone except the overlook at Pālā'au State Park topside, which would remain open to unescorted use. In the near term, access between topside and the park along the pali trail would be by DOH permit. In the long term, escorted and unescorted visitor access would be allowed.

Visitor Use and Experience

Visitation levels would generally be moderate in the long term. Visitors could encounter a moderate to high level of contact with staff and other visitors during peak use. A range of group sizes could be accommodated. Visitors would receive an orientation in this zone describing what activities would be appropriate through a variety of interpretive tools and opportunities to learn and participate. In addition, special events such as cultural events and community celebrations may be allowed, but group sizes may be limited.

Facilities

Facilities in this zone consist primarily of buildings, structures, utilities, and transportation facilities supporting visitor use and park operations.

Operations Zone

This zone consists mainly of operation and maintenance facilities for the park and its partners.

Resources

Cultural landscape elements/features could be adapted for visitor use, safety, and resource protection where compatible with the character-defining features of the cultural landscape. Some historic structures could be rehabilitated and used to serve operational needs.

Native plant communities and wildlife habitat would be mostly intact but may be modified by development in suitable areas. Invasive nonnative species would be suppressed and actively managed.

Intact natural soundscapes, night skies, and viewsheds could be experienced at certain locations. Natural sounds would be generally audible mixed with sounds from visitor and park operations activities. Artificial sound levels would be highest in this zone as a result of park operations. Outdoor lighting would be used when needed to support visitor services or park operations but would be designed to minimize light pollution.

Access and Transportation

This zone would encompass major transportation infrastructure such as the airport, harbor, and pier, as well as improved roads. Access may be controlled in certain locations. Universal access opportunities would be provided.

Visitor Use and Experience

Low use levels would be expected since this area is intended for staff and official business. Passive interpretive tools could include waysides.

Facilities

Facilities in this zone consist primarily of buildings, structures, utilities, and transportation facilities supporting park operations.

Wao Akua Zone

This zone is based on the Hawaiian land classification called “wao akua” (place of the spirits). These upland forests would be managed for their sacredness, biocultural resources, and natural features.

Resources

No adaptive re-use of cultural landscape features would occur in this zone. There would be minimal introduced features, and only for resource protection.

Terrestrial and marine native plant communities and wildlife habitat would be preserved and promoted to the greatest extent possible. Ecological processes would be primarily left unimpeded. Measures would be taken to prevent the importation of weeds and pathogens harmful to the native ecosystems.

The natural soundscape, night sky, and viewsheds would be intact. Natural sounds would dominate in these areas, with few artificial sound disturbances limited to occasional park resource management operations and visitors. Habitats for sensitive species would be free or nearly free of intrusive noise. No artificial outdoor lighting would be present. Viewsheds would be protected to a high degree. There would be no visible human constructed features.

Access and Transportation

Access to this zone would occur by limited trails and would be afforded mainly to NPS managers, researchers, cultural practitioners, and hunters. Unescorted access in this zone from within and outside the park would only be provided to visitors with knowledge of the landscape and its access trails. A landing zone clearing could afford helicopter access in support of resource management operations. Motorized access would not be allowed.

Visitor Use and Experience

Visitation levels would be low, and encounters with other visitors would be infrequent. NPS managers have the discretion to allow visitor uses that would not be disruptive to conduct research or resource protection activities. Large group events would not be permitted. Interpretation and education would emphasize the sacredness, significance, and/or sensitivity of the area and the importance of protecting it. A moderate to high degree of physical effort may be required to experience this zone. Visitors should be prepared for challenge and the use of outdoor skills.

Facilities

Facilities would be allowed only in support of resource protection and safety.

APPENDIX B: DESIRED CONDITIONS FROM LAW AND POLICY

The desired conditions described in this section provide the broadest level of direction for management of Kalaupapa NHP and are based on federal laws, executive orders, and NPS *Management Policies 2006*.

To understand the implications of the actions described in the alternatives, it is important to describe the laws and policies that underlie the management actions. Many park management directives are required based on law and/or policy and therefore are not subject to alternative approaches. A GMP is not needed to decide, for instance, that it is appropriate to protect endangered species, control nonnative invasive species, protect archeological sites, conserve artifacts, or provide for universal access—laws and policies already require the NPS to fulfill these mandates. The NPS would continue to implement these requirements with or without a new GMP.

The National Park System General Authorities Act affirms that while all national park system units remain “distinct in character,” they are “united through their interrelated purposes and resources into one National Park System as cumulative expressions of a single national heritage.” The act makes it clear that the NPS Organic Act and other protective mandates apply equally to all units of the system. Further, the Redwood Act of 1978 states that NPS management of park units should not “derogate[e]... the purposes and values for which these various areas have been established.” The NPS has established policies for all units under its stewardship that are explained in a guidance manual: *NPS Management Policies 2006*. The alternatives considered in this document incorporate and comply with the provisions of these laws and policies.

The following sections of the document describe the most pertinent laws and policies related to planning and managing Kalaupapa NHP. Many laws and policies, such as the Antiquities Act, National Park Service Act, NEPA, NHPA, and *NPS Management Policies 2006*, are applicable to all areas of NPS management and are not listed under specific resource types. For each topic there are a series of desired conditions required by law and policy that Kalaupapa NHP would continue to work toward under all of the alternatives presented in this GMP/environmental assessment. The alternatives therefore address the desired future conditions that are not mandated by law and policy and that are appropriate to determine through a planning process.

CULTURAL RESOURCES

Federal Law, NPS Policy Guidance Applicable to Cultural Resources:

- Historic Sites Act, 1935
- Management of Museum Properties Act, 1955
- Protection and Enhancement of the Cultural Environment (Executive Order 11593, 1971)
- American Indian Religious Freedom Act, 1978
- Archaeological Resources Protection Act, 1979
- *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation*, 1983
- Abandoned Shipwreck Act, 1987
- Native American Graves Protection and Repatriation Act, 1990
- Curation of Federally Owned and Administered Archeological Collections (36 CFR 79, 1990)
- *Secretary of the Interior's Standards for the Treatment of Historic Properties*, 1995
- *Secretary of the Interior's Standards for the Treatment of Historic Properties*

with Guidelines for the Treatment of Cultural Landscapes, 1996

- NPS Cultural Resource Management Guideline (Director's Order 28, 1996)
- National Historic Lighthouse Preservation Act, 2000
- Protection of Historic Properties (36 CFR 800, 2004)
- NPS Museum Collections Management (Director's Order 24, 2008)
- NPS Museum Handbook
- Programmatic Agreement among the National Park Service (US Department of the Interior), the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers for Compliance with Section 106 of the National Historic Preservation Act, 2008

Archeological Resources

According to the NPS's *Cultural Resource Management Guideline* (DO-28), archeological resources are nonrenewable and irreplaceable; they are the tangible evidence of past human activity, whether the recent past or the far-distant past.

Desired Conditions:

- Archeological sites are identified and their significance is evaluated against National Register criteria, reports are written and submitted to the State of Hawai'i, State Historic Preservation Division (SHPD), and they are in good condition.
- Archeological sites are protected in an undisturbed condition unless it is determined through formal processes that disturbance is unavoidable or that ground disturbing research or stabilization is desirable.
- When disturbance or deterioration of an eligible property is unavoidable, through Section 106 consultation, appropriate mitigation measures will be developed, including that the site is professionally documented and excavated and the resulting artifacts, materials, and records are curated, conserved, and analyzed with reports submitted to SHPD.
- Some archeological sites that can be adequately protected may be interpreted to the visitor.
- Archeological site baseline data are documented and available for appropriate park staff. Site conditions are monitored to record changes in resource conditions as a result of environmental conditions, floral or faunal impacts, or visitor use impacts.
- To the extent feasible, archeological resources degraded from environmental conditions, floral or faunal impacts, and visitor impacts are mitigated through data recovery or other appropriate site treatment techniques developed through the Section 106 consultation process.
- Archeological resources threatened by project development are mitigated first through avoidance or secondly through other preservation strategies such as data recovery.
- Archeological sites are nominated for listing in the National Register of Historic Places either individually or in districts.

Management Direction/Strategies:

- Continue the process of parkwide archeological survey until the majority of archeological resources have been identified, documented, and evaluated against National Register criteria, with reports submitted to SHPD.
- Archeological inventory surveys will also take place as part of the Section 106 review of NPS management actions; appropriate documentation will be submitted to SHPD.
- Qualified individuals and organizations conduct archeological fieldwork and research in

accordance with the Office of Personnel Management qualification standards for the 0193 series, as well as the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation*.

- Curate archeological collections in accordance with federal standards.
- Document all archeological sites, including new discoveries, on site forms; request SIHP numbers from SHPD; submit site forms and the related archeological inventory survey reports to SHPD; and update the appropriate NPS management database and GIS systems.
- Monitor all archeological sites periodically, update the archeological site files with condition assessment reports, and update the appropriate NPS management database and GIS systems.
- Regularly update archeological baseline documents including but not limited to GIS base maps and the archeological overview and assessment.
- Protect archeological site locations and other sensitive archeological information and keep confidential as required or appropriate, per Section 304 of the NHPA and Section 9 of the Archaeological Resources Protection Act.
- Educate visitors on regulations governing protection and conservation of archeological resources.
- Partner with colleges, universities, and other appropriate organizations to encourage preservation and appropriate research for the public benefit.

Cultural Landscapes

According to the NPS's *Cultural Resource Management Guideline* (DO-28), a cultural landscape is a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use, reflecting cultural values and traditions.

Desired Conditions:

- Cultural landscape inventories are conducted to identify resources potentially eligible for listing in the National Register and to assist in future management decisions for landscapes and associated resources, both cultural and natural.
- The management of cultural landscapes focuses on preserving the landscape's physical attributes, biotic systems, viewshed, and use when that use contributes to its historical significance.
- The preservation, rehabilitation, restoration, or reconstruction of cultural landscapes is undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*.
- The cultural landscapes of Kalaupapa NHP are managed to retain a high degree of integrity.
- Identified and evaluated cultural landscapes are monitored, inspected, and managed to ensure preservation of the contributing resources, qualities, materials, and the historic character defining significance.
- Actions identified in cultural landscape reports are implemented, and a record of treatment is added to the reports.

Management Direction/Strategies:

- Complete a survey, inventory, and evaluation of cultural landscapes.

- Assure all important cultural landscape resources are preserved in their historic setting and larger environmental context to the degree possible.
- Determine the general preservation philosophy for long-term stewardship of the cultural landscape through park management plans (such as the GMP).
- Prepare a cultural landscape report outlining preservation treatments for the cultural landscape holistically, in compliance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*.

Historic Structures

NPS *Management Policies 2006* (§5.3.5.4) calls for the treatment of historic structures, including prehistoric ones, to be based on sound preservation practice to enable the long-term preservation of a structure's historic features, materials, and qualities that contribute to its National Register status.

Desired Conditions:

- Historic structures are inventoried and fully documented, and their significance and integrity are evaluated against National Register criteria.
- The qualities that contribute to the listing or eligibility for listing of historic structures on the National Register are protected in accordance with the *Secretary of the Interior's Standards and Guidelines for the Treatment of Historic Properties*.
- Historic structure reports are prepared and existing reports amended as needed; reports are submitted to SHPD, and NPS historic structure databases are updated. Actions identified in historic structure reports are implemented and a record of treatment added to the reports.
- Identified and evaluated historic structures are monitored, inspected, and managed to ensure long-term preservation; monitoring reports are written and filed appropriately, and NPS databases are updated.

Management Direction/Strategies:

- Employ the comprehensive maintenance, protection, and preservation measures in accordance with the *Secretary's Standards*. For properties lacking specific plans, preservation actions would be based on the *Secretary's Standards* and NPS policy and guidelines for stabilization of historic resources.
- Create design guidelines and/or historic structure reports for primary building types in Kalaupapa NHP to preserve the architectural characteristics and character-defining features of the buildings. Assure the siting and design for new structures within the NHL are reviewed to comply with the *Secretary of the Interior's Standards for Treatment of Historic Properties* and Section 106 of the NHPA.
- Address recurring maintenance activities for important historic buildings to assure structures remain stable and in good condition.
- Document the history of individual buildings through physical investigations and oral histories of individuals, groups, and others who have ties to the park.

Museum Collections

Desired Conditions:

- All museum collections (objects, specimens, NPS records, and manuscript collections) are identified and inventoried, catalogued, documented, preserved, protected, and

available for access and use for research, interpretation, and exhibits, subject to appropriate limitations.

- The qualities that contribute to the significance of collections are protected in accordance with established standards.
- Research and development projects include plans for the curation of collected objects and specimens that are then made available online through NPS websites and apps, subject to appropriate limitations.
- Kalaupapa NHP's museum collections are housed in appropriate facilities that provide protection for current collections and allow for future collection expansion.
- Museum collections provide documentation of Kalaupapa NHP's cultural and natural resources.

Management Direction/Strategies:

- Continue to ensure adequate conditions for the climate control of collections and means for fire detection and suppression, integrated pest management, and research and interpretation access.
- Inventory and catalog all park museum collections in accordance with standards in the *NPS Museum Handbook*.
- Develop and implement a collection management program according to NPS standards to guide the protection, conservation, and use of museum objects.
- Develop documentation for all specimens in the cultural and natural resource collections.
- Ensure that the qualities that contribute to the significance of collections are protected and preserved in accordance with established NPS museum curation and storage standards.
- Maintain a curator-of-record.

Values, Traditions, and Practices of Traditionally Associated Peoples (also referred to as ethnographic resources)

As defined in *NPS Management Policies 2006*, ethnographic resources are objects and places, including sites, structures, landscapes, and natural resources, with traditional cultural meaning and value to associated peoples. Research and consultation with associated people identifies and explains the places and things they find culturally meaningful. Place-based values, traditions, and practices of traditionally associated peoples can be eligible for the National Register of Historic Places as part of traditional cultural properties. Traditionally associated peoples are social/cultural entities such as tribes, communities, and kinship units, as well as park neighbors, traditional residents, and former residents who remain attached to a park area despite having relocated. Peoples are “traditionally associated” with a particular park when (1) the entity regards park resources as essential to its development and continued identity as a culturally distinct people; the association has endured for at least two generations (40 years); and (3) the association began prior to establishment of the park.

Desired Conditions:

- Appropriate cultural anthropological research is conducted in consultation with groups traditionally associated with Kalaupapa NHP.
- To the extent practicable, permitted by law, and consistent with essential agency functions, the NPS accommodates traditionally associated peoples' (including but not limited to: patients, kōkua, 'ohana, and native Hawaiians) access to important sites, features, objects, and natural resources, and avoids adversely affecting the physical integrity of these resources.

- Traditionally associated peoples linked by ties of kinship or culture to ethnically identifiable human remains, sacred objects, objects of cultural patrimony, and associated funerary objects are consulted when such items may be disturbed or are encountered on park lands.
- All traditional cultural properties determined eligible for listing or listed in the National Register of Historic Places are protected. If disturbance of such resources is unavoidable, formal consultation with the State of Hawai'i Historic Preservation Division, the Advisory Council on Historic Preservation, the Patients Advisory Council, and patients, kōkua, 'ohana, and native Hawaiian groups as appropriate, is conducted.
- The identities of community consultants and information about sacred and other culturally sensitive places and practices are kept confidential according to protocols established in consultation with the affected groups.
- Potentially sensitive natural and cultural resources and traditional cultural properties eligible for the National Register of Historic Places are identified, recorded, and evaluated through consultation with affected groups. The integrity of traditional cultural properties is preserved and protected.

Management Direction/Strategies:

- Survey and inventory practices and traditions to assess their significance to traditionally associated people and groups. This could be done in the framework of a potential traditional cultural property.
- Treat all potential traditional cultural properties as eligible for listing in the National Register of Historic Places pending a formal determination by the NPS.
- As possible under laws and regulations, allow for continued access to and use of resources and areas essential to the survival of family, community, or regional cultural practices.
- Exercise reasonable control over the times when and places where specific groups are provided exclusive access to particular areas of the park.
- Allow for consumptive use of park resources as provided for in regulations published in 36 CFR 2.1. These regulations allow superintendents to designate certain fruits, berries, nuts, or unoccupied seashells which may be gathered by hand for personal use or consumption if it will not adversely affect park wildlife or the reproductive potential of a plant species, or otherwise adversely affect park resources.
- Protect sacred resources to the extent practicable.
- Restrict information about the location and character of sacred sites from the public, if disclosure will cause effects, such as invasion of privacy, risk harm to the resource, or impede the use of a traditional religious site by practitioners.
- Develop a record about such places in consultation with appropriate groups, and identify any treatments preferred by the groups. This information will alert superintendents and planners to the potential presence of sensitive areas and will be kept confidential to the extent permitted by law.
- Collaborate with affected groups to prepare mutually agreeable strategies for providing access to locales, and for enhancing the likelihood of privacy during religious ceremonies or important cultural events. Any strategies that are developed must comply with constitutional and other legal requirements.
- Make accommodations for access to, and the use of, sacred places when interest is expressed by traditionally associated peoples who have a long-standing connection to and identity with Kalaupapa.
- Continue to encourage the employment of native Hawaiians in the NPS to improve communications and working relationships and encourage cultural diversity in the

workplace.

NATURAL RESOURCES

Federal Law, NPS Policy Guidance Applicable to Natural Resources:

- Rivers and Harbors Act, 1899
- Lacey Act, 1900
- Wild and Scenic Rivers Act, 1968
- Clean Air Act, 1970
- Protection and Enhancement of Environmental Quality (Executive Order 11514, 1970)
- Clean Water Act, 1972
- Coastal Zone Management Act, 1972
- Endangered Species Act, 1973
- Federal Noxious Weed Act, 1974
- Mining in the Parks Act, 1976
- Hawai'i Coastal Zone Management Act, 1977
- Protection of Wetlands (Executive Order 11990, 1977)
- Floodplain Management (Executive Order 11988, 1977)
- Executive Orders: 11987 (1977), 13112 (1999), 13751 (2016)
- Federal Compliance with Pollution Control Standards (Executive Order 12088, 1978)
- National Parks Overflight Act, 1987
- Federal Cave Resources Protection Act, 1988
- National Invasive Species Act, 1996
- Executive memorandum signed by President Clinton on April 22, 1996
- Marine Protected Areas (Executive Order 13158, 2000)
- National Parks Air Tour Management Act, 2000
- Sound Preservation and Noise Management (Director's Order 47, 2000)
- Federal Wildland Fire Management Policy, 2001
- Wetland Protection (Director's Order 77-1 and accompanying procedural manual, 2002)
- NPS Director's Order 77-2, 2003
- NPS Ocean Park Stewardship Action Plan, 2006
- NPS Pacific Ocean Parks Strategic Plan, 2007
- Stewardship of Our Oceans, Coasts, and Great Lakes (Executive Order 13547, 2010)
- The Green Parks Plan, Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings Guidance, 2011
- Wildland Fire Management (Director's Order 18 and Reference Manual 18, 2008)

Air Quality

Kalaupapa NHP is a Class I air quality area under the Clean Air Act. Class I areas are afforded the highest degree of protection under the Clean Air Act. This designation allows very little additional deterioration of air quality.

Desired Conditions:

- Air quality in the park meets national ambient air quality standards for specified pollutants. The park's air quality is maintained or enhanced with no major deterioration.
- Nearly unimpaired views of the landscape both within and outside the park are present.
- Scenic views are substantially unimpaired (as defined by the Clean Air Act).

- Kalaupapa NHP management and visitor service activities promote preservation of excellent air quality, including healthful indoor air quality in NPS and concession facilities.
- Air quality monitoring within or near Kalaupapa NHP is able to verify whether trends are improving or deteriorating, and whether Class I air quality standards are met within Kalaupapa NHP.

Management Direction/Strategies:

- Cooperate with the Hawai'i Department of Land and Natural Resources and the U.S. Environmental Protection Agency to monitor air quality and ensure that park actions do not impair air quality. (Note: The NPS has very little direct control over air quality in the airshed encompassing the park.)
- Inventory the air quality-related values associated with the park. Establish baseline conditions and monitor native plants or other species that may be sensitive indicators of air pollution.
- Minimize air pollution emissions associated with park operations, including the use of prescribed fire, management practices, and visitor use activities.
- Conduct park operations in compliance with federal, state, and local air quality regulations.
- Ensure healthy indoor air quality at NPS facilities.
- Participate in federal, regional, and local air pollution control plans and drafting of regulations and review permit applications for major new air pollution sources.
- Develop educational programs to inform visitors and regional residents about the threats of air pollution.
- Participate in research on air quality and the effects of air pollution. Determine changes in ecosystem function caused by atmospheric deposition and assess the resistance and resilience of native ecosystems in the face of these external perturbations.

Ecosystem Communities and Processes

Desired Conditions:

- Kalaupapa NHP is managed holistically, as part of a greater ecological, social, economic, and cultural system.
- Managers seek to maintain all components and processes of naturally evolving park ecosystems. Natural disturbance and change are recognized as an integral part of the functioning of natural systems.
- Natural abundance, diversity, dynamics, distribution, and habitat of native plant and animal populations are preserved and restored.
- Potential threats to the park's native plants and wildlife are identified early in the planning process and proactively addressed through mitigation measures.
- Sources of air, water, and noise pollution and visitor uses adversely affecting plants and animals are limited to the greatest degree possible.
- In collaboration with landowners inside and outside Kalaupapa NHP, watersheds within and adjacent to the park are protected.
- Visitors and staff recognize and understand the value of the park's native plants and wildlife and the role that surrounding landscapes play in habitat connectivity.
- State and federally listed threatened and endangered species and their habitats that are critical to maintain ecosystem processes are protected and sustained. NPS staff prevents the introduction of nonnative species and provides for their control to minimize the

economic, ecological, cultural resource, and human health impacts that these species cause.

Management Direction/Strategies:

- Continue to inventory and monitor plants and animals in the park. Collected data will be used to monitor the distribution, abundance, and condition of selected species, including indicators of ecosystem condition and diversity, rare and protected species, and nonnative species. Management plans will be modified to be more effective, based on the results of monitoring.
- Participate in regional ecosystem efforts and develop methods to restore native species and ecosystem processes.
- Minimize and mitigate negative human impacts on native plants, animals, and ecosystem processes.
- Rely upon natural processes whenever possible to maintain native plant and animal species and to influence natural fluctuations in populations of these species.
- Protect a full range of genetic types (genotypes) of native plant and animal populations in the park by perpetuating natural evolutionary processes and minimizing human interference with evolving genetic diversity.
- Manage populations of exotic plant and animal species using integrated pest management techniques, up to and including eradication, when control is prudent and feasible.
- Work cooperatively with other public and private land managers to conserve open space connectivity and native species, both common and rare. Work cooperatively with park neighbors regarding best management practices inside and outside the park to conserve native species and habitats.
- Avoid, minimize, or otherwise mitigate any potential impacts on state or federally listed species.
- Provide interpretive and educational programs about the preservation of native species, ecosystem processes, “ecological services,” and methods to sustain these.

Fire Management

Desired Conditions:

- Fire management programs are designed to meet resource management objectives prescribed for Kalaupapa NHP and to ensure that the safety of firefighters, the patient community, staff, and visitors is not compromised.
- All wildland fires are effectively managed, while considering resource values to be protected and human safety, using the full range of strategic and tactical operations as described in an approved fire management plan.
- Natural fire regimes are restored and maintained but will be modified to comply with air quality regulations, and/or to protect listed species, cultural resources, and the safety of life and property.
- The NPS conducts routine monitoring to determine if objectives are met and to evaluate and improve the fire management program.
- Kalaupapa NHP managers develop a comprehensive cross-boundary fire management plan with adjacent land managers, recognizing fire as a natural process that does not acknowledge administrative boundaries.
- Other fire management program goals and objectives from the 2011 *Fire Management Plan* for Kalaupapa NHP include enhancing the firebreak around the settlement of Kalaupapa and utilizing strategically arranged areas of fuel reduction to reduce fire

hazard across the peninsula and within the settlement.

Management Direction/Strategies:

- Maintain a current fire management plan to reflect the most recent fire policy, managed fire applications, and the body of knowledge on fire effects within the unit's vegetation types.
- Maintain cooperative agreements for fire suppression with appropriate federal, state, and local agencies and organizations.
- Conduct fire history research and other studies to describe Kalaupapa NHP's natural fire regime.
- Conduct research and monitor the effects of fires in Kalaupapa NHP to ensure that long-term resource objectives are met.
- Controlled burns are used as possible and appropriate to reduce invasive vegetation and reestablish native communities.
- Fire protection zones are established to create defensible space around all structures.

Geologic and Soil Resources

Desired Conditions:

- The park's geologic and soil resources are preserved and protected as integral components of its natural systems. Natural geological processes are unimpeded.
- The NPS actively seeks to understand and preserve the soil resources of Kalaupapa NHP and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or the soil's contamination of other resources.

Management Direction/Strategies:

- Assess the impacts of natural processes and human-related events on geologic resources.
- Integrate geologic resource management into NPS operations and planning to maintain and restore the integrity of geologic resources.
- Develop programs to educate visitors about geologic resources.
- Update geologic interpretations of localities that are the subject of interpretive venues.
- Collect baseline information on surficial geology.
- Partner with the U.S. Geological Survey (USGS) and others to inventory geologic resources, conduct research, and identify and monitor geologic hazards.
- Update the geologic map of the park in digital format that can be used in GIS applications.
- Update the geologic history of the peninsula using modern theory and techniques.

Lightscape Management/ Dark Night Sky

NPS *Management Policies 2006* recognizes that natural lightscapes are natural resources and values that exist in the absence of human-caused light. Natural lightscapes contribute to positive visitor experiences and natural resource processes.

Desired Conditions:

- Natural darkness and other components of the natural lightscape in Kalaupapa NHP are protected.
- Artificial light sources both within and outside the park do not adversely impact the natural lightscape or affect opportunities to see the night sky.

Management Direction/Strategies:

- Cooperate with visitors, neighbors, and local government agencies to find ways to

prevent or minimize the intrusion of artificial light into Kalaupapa NHP.

- Limit artificial lighting in the park to basic safety requirements where possible.
- Evaluate impacts on the night sky caused by park facilities. If light sources within the park are affecting night skies, alternatives such as shielding lights, redirecting lights, changing lamp types, or eliminating unnecessary light sources would be used.

Marine Resources

Marine resources are at risk due to a variety of threats, including invasive species, excessive resource use, pollution, and changes in ocean temperature and chemistry as a result of global climate change. Coastal habitats are important for the preservation of several rare and endangered species, such as the Hawaiian monk seal, humpback whale, green sea turtle, and Hawaiian spinner dolphin, in addition to well-preserved reef communities of coral, fish, and invertebrates.

Desired Conditions:

- Marine resources are managed from an ecosystem perspective, considering both internal and external factors affecting visitor use, environmental quality, and resource stewardship.
- Park management demonstrates leadership in resource stewardship and conservation of ecosystem values.
- Pollution prevention and protection of water quality to meet the needs of aquatic organisms are priorities.
- Communicate an ocean stewardship message to visitors, park staff, and the public.

Management Direction/Strategies:

- Develop and implement a marine management plan, which includes pollution prevention and environmental best management practices.
- Through collaboration with other agencies and organizations, the park will continue to conduct and support regional baseline inventories, monitoring, and mapping of marine resources.
- Park staff in collaboration with other agencies will continue to document and monitor physical processes influencing marine resources.
- Park staff will identify and quantify threats to marine resources, including those associated with invasive species, resource extraction, land- and water-based activities, and climate change.
- Consider the establishment of sensitive resource zones and special closure areas in consultation with DLNR, the local community, and stakeholders. The park will protect the most sensitive biological resources from disturbance.

Soundscapes

The sounds of nature are among the intrinsic elements that combine to form the environment of national park system units. Park natural soundscape resources encompass all the natural sounds that occur in parks, including the physical capacity for transmitting those natural sounds and the interrelationships among park natural sounds of different frequencies and volumes.

Natural sounds occur within and beyond the range of sounds that humans can perceive, and they can be transmitted through air, water, or solid materials.

Cultural soundscapes are also important resources and values in many parks. The NPS protects opportunities for appropriate transmission of cultural and historic sounds that are fundamental to the purposes and values of the park.

Desired Conditions:

- The NPS preserves the natural ambient soundscapes and restores degraded soundscapes to the natural ambient condition wherever possible.
- The NPS protects natural soundscapes from degradation due to noise.
- Noise from park operations or recreational uses is minimized using the best available technology and methods to provide a high-quality visitor experience and protect biological resources and processes that involve natural sounds (for example, species that use sound to attract mates, protect territories, locate prey, navigate, or avoid predators).
- Visitors have opportunities to experience and understand natural soundscapes. The soundscape contributes to a contemplative, reverent, and reflective setting at Kalaupapa.
- Kalaupapa NHP maintains a library of baseline ambient sound levels and, as feasible, monitors key locations for maintaining natural soundscapes.
- Ecological interactions that depend upon or are affected by sound are protected.

Management Direction/Strategies:

- Take actions to monitor and minimize or prevent unnatural sounds that adversely affect park resources and values, including visitors' enjoyment.
- Require NPS staff, concessioners, and contractors to comply with measures designed to reduce noise levels.
- Consider noise in the procurement and use of equipment within the park.
- Consult and make recommendations to the Federal Aviation Administration regarding any proposed changes to current Air Tour regulations designed to protect the privacy of patient community at Kalaupapa.
- Monitor and ensure compliance with the Programmatic Agreement with the Marine Corps that restricts any increase in 2012 levels of military air flight training exercises at the Kalaupapa Airport.
- Encourage visitors to respect the sacredness and spirituality of Kalaupapa by reducing unnecessary noise.
- Provide interpretive programs and materials to help visitors understand the role and value of natural soundscapes.

Scenic Resources

Desired Conditions:

- The scenic views at Kalaupapa NHP continue to stir imaginations, inspire, and provide opportunities for visitors to understand, appreciate, and forge personal connections to the peninsula.
- Intrinsically important scenic vistas and scenic features are not dramatically diminished by development.

Management Direction/Strategies:

- Park operations and projects will preserve scenic viewsheds and scenic vistas.
- NPS staff will work with adjacent and nearby landowners to minimize any visual impacts from nearby developments and to ensure that developments do not encroach on

Kalaupapa NHP.

Water Resources

NPS *Management Policies 2006* (§4.6.1, 4.6.2) calls for the NPS to perpetuate surface and groundwater as integral components of park aquatic and terrestrial ecosystems. NPS *Natural Resource Management Reference Manual #77* provides further direction on the management of water quantity in parks, stating the NPS will manage and use water to protect resources, accommodate visitors, and administer park units within legal mandates. The Clean Water Act strives to restore and maintain the integrity of U.S. waters, which includes waters found in national parks.

Desired Conditions:

- Surface water and groundwater are protected, and water quality meets or exceeds all applicable water quality standards.
- NPS and NPS-permitted programs and facilities are maintained and operated to avoid pollution of surface water and groundwater.
- Water resources in Kalaupapa NHP meet or exceed all federal and state water quality standards for temperature, bacteria, dissolved oxygen, turbidity, toxic substances, pH, and nutrients.
- Pollution prevention and protection of water quality to meet the needs of freshwater and marine aquatic organisms are priorities.

Management Direction/Strategies:

- Develop and implement an environmental management plan, which includes pollution prevention and environmental best management practices.
- Promote water conservation by the NPS, partners, visitors, and park neighbors.
- Apply best management practices to reduce pollution-generating activities and facilities in Kalaupapa NHP.
- Minimize the use of pesticides, fertilizers, and other chemicals, and manage them in keeping with NPS policy and federal regulations.
- Manage stormwater runoff appropriately.
- Promote greater public understanding of water resource issues at Kalaupapa NHP and encourage public support for and participation in protecting watersheds.

Wetlands

Desired Conditions:

- Natural and beneficial conditions of wetlands are preserved and enhanced.
- The NPS implements a "no net loss of wetlands" policy and strives to achieve a longer-term goal of net gain of wetlands across the national park system through the restoration of previously degraded wetlands.
- To the extent possible, the NPS avoids long- and short-term adverse impacts associated with the destruction or modification of wetlands and avoids direct or indirect construction in wetlands wherever there is a practicable alternative.
- The NPS compensates for remaining unavoidable adverse impacts on wetlands by restoring wetlands that have been previously degraded.
- Species that depend upon wetland habitats occur in sustainable numbers.
- Park visitors have the opportunity to learn about and understand the unique services and functions provided by wetlands.

- Wetlands near developed areas remain unaffected by maintenance of park or concession facilities or management or recreational activities.
- Wetlands adversely affected by prior human activity are restored where feasible.

Management Direction/Strategies:

- Wetlands within Kalaupapa NHP are inventoried and their conditions monitored. The distinct functions they perform are identified.
- Locate any new facilities if needed, or relocate existing facilities, to avoid impacting wetlands if feasible. If avoiding wetlands is not feasible, undertake other actions such as compensation to comply with Executive Order 11990 "Protection of Wetlands," the Clean Water Act, and Director's Order 77-1: *Wetland Protection*.
- Prepare a statement of findings if proposed actions would result in adverse impacts on wetlands, including an analysis of alternatives, delineation of the wetland, a wetland restoration plan, mitigation, and a functional analysis of the impact site and restoration sites.
- Restore degraded wetlands by removing invasive species and obstructions to natural water movements.
- Encourage the use of wetlands for educational and scientific purposes that do not disrupt natural wetland functions.
- Participate in collaborative planning efforts with adjacent land managers and other associated groups to protect and restore wetlands within and outside the boundaries through cooperative conservation strategies.

Wild and Scenic Rivers, Rivers, and Floodplains

The Wild and Scenic Rivers Act (act), passed in 1968, protects the free-flowing waters of many of our nation's greatest rivers, while also recognizing the potential for appropriate use and development. The act ensures the public's enjoyment of the river and its resources for present and future generations. Floodplains are protected and managed in accordance with Executive Order 11988 "Floodplain Management," NPS Director's Order 77-2: *Floodplain Management* and its accompanying procedural manual, and NPS *Management Policies 2006* (§4.6.4).

Desired Conditions:

- Management actions and visitor uses do not inhibit the natural free flowing conditions of rivers and streams.
- When it is not practicable to locate or relocate development or inappropriate human activities to a site outside the floodplain or tsunami hazard zone, the NPS prepares and approves a statement of findings in accordance with Director's Order 77-2: *Floodplain Management*.
- The NPS uses nonstructural measures as much as practicable to reduce hazards to human life and property while minimizing impacts on the natural resources of floodplains.
- The NPS ensures 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 60).

Management Direction/Strategies:

- Identify 100-year and 500-year floodplains and any administrative, maintenance, operational, or visitor facilities within them.
- Develop a program to protect these facilities using the most current techniques that

minimize adverse effects on aquatic and riparian habitats and fluvial processes.

- Recognize that native Hawaiian archeological features, such as lo'i, are part of the significance of stream systems.
- Manage important prehistoric and historic properties to protect cultural and scientific values and to educate visitors about the system's cultural history.
- Work with area partners, including federal, state, and county agencies, and others, to develop restoration plans for at-risk river systems. Use current technologies, over time, to restore or improve floodplain and riparian functions such as removing invasive species.
- If facilities are damaged or destroyed by a hazardous or catastrophic natural event, thoroughly evaluate options for relocation or replacement at a different location. If a decision is made to relocate or replace a severely damaged or destroyed facility, it will be placed, if practicable, in an area believed to be free from natural hazards.
- Prepare evacuation plans for facilities in flood or tsunami hazard areas.
- Protect shoreline areas along rivers that provide spawning, feeding, and rearing habitats for fish and support rare aquatic plant species.
- When emergency situations occur, consult with traditionally associated peoples of that area to evaluate the potential impact of the proposal and consider traditionally associated people's views in the decision-making process. Protocols for consultation would be developed when needed.

SOCIAL RESOURCES

Federal Law, NPS Policy Guidance Applicable to Social Resources:

- Architectural Barriers Act (ABA), 1968
- Americans with Disabilities Act, 1990
- Federal Acquisition, Recycling, and Waste Prevention (Executive Order 12873, 1993)
- Energy Efficiency and Water Conservation at Federal Facilities (Executive Order 12902, 1994)
- OSHA Regulations (29 CFR)
- Telecommunications Act of 1996
- 16 USC 5, Rights-of-Way Through Parks or Reservations for Power and Communications Facilities
- Accessibility for Visitors with Disabilities (Director's Order 42, 2000)
- Interpretation and Education (Director's Order 6, 2005)
- Emergency Medical Services (Director's Order 51, 2005 and Reference Manual 51, 2009)
- Environmental Management Systems (Director's Order 13A and 13B, 2009)
- Law Enforcement (Director's Order 9, 2005, Reference Manual 9, 2009)
- Programmatic Access Guidelines for NPS Interpretive Media, February 2012
- NPS Servicewide Interdisciplinary Strategic Plan for Interpretation, Education, and Volunteers, 2013-2016 (draft)

Visitor Experience

The NPS Organic Act, NPS General Authorities Act, and NPS *Management Policies 2006* (§1.4, 8.1) all address the importance of national park units being available to all people to enjoy and experience. Current laws, regulations, and policies leave considerable room for judgment about the best mix of types and levels of visitor use activities, programs, and facilities. For this reason,

most decisions related to visitor experience are addressed in the alternatives; however, all visitor use of the national park system must be consistent with the following guidelines.

Desired Conditions:

- Park resources are conserved “unimpaired” for the enjoyment of future generations.
- Visitors have enjoyment opportunities that are uniquely suited and appropriate to the natural and cultural resources in the park; opportunities continue to be provided for visitors to understand, appreciate, and enjoy the park within its regional context.
- Visitors have opportunities to understand and appreciate the significance of the park and its resources, and to develop a personal stewardship ethic. Interpretive and educational programs build public understanding of and support for such decisions and initiatives, for the NPS mission, and for the park.
- Visitors will have opportunity for participatory experiences that promote stewardship and provide relevant, inclusive, and active learning experiences.
- To the extent feasible, all programs, services, and facilities in the park are accessible to and usable by all people, including those with disabilities.
- For all zones or districts in Kalaupapa NHP, the types and levels of visitor use are consistent with the desired resource and visitor experience conditions prescribed for those areas.
- The level and type of commercial guided activities is managed to protect resources and the visitor experience.

Management Direction/Strategies:

- Provide visitors with easy access to the information they need to have a safe and enjoyable experience through information and orientation programs.
- For all zones, districts, or other logical management divisions in Kalaupapa NHP, identify visitor carrying capacities for managing public use and ways to monitor for and address unacceptable impacts on resources and visitor experiences.
- Provide both on- and off-site interpretive programs that are designed to encourage visitors to form their own intellectual or emotional connections with the resource. Interpretive programs facilitate a connection between the interests of visitors and the meanings of the park.
- Design curriculum-based educational programs that link park themes to national standards and state curricula and involve educators in planning and development. These programs would include pre-visit and post-visit materials, address different learning styles, include an evaluation mechanism, and provide learning experiences that are linked directly to clear objectives. Programs would develop a thorough understanding of a park's resources in individual, regional, national, and global contexts.
- Develop interpretive media that provide visitors with relevant park information and facilitate more in-depth understanding of and personal connection with park stories and resources. This media will be continually maintained for both quality of content and condition based upon established standards.
- Integrate resource issues and initiatives of local and national importance into the interpretive and educational programs.
- Modifications for access are assessed in consideration to and following the *Secretary of the Interior's Standards for Historic Preservation*.
- Fully integrate programmatic and physical access to ensure equal access by people with disabilities.
- Provide special, separate, or alternative facilities, programs, or services only when existing ones cannot reasonably be made accessible.

Public Health and Safety

NPS *Management Policies 2006* (§8.2.5) states that the saving of human life would take precedence over all other management actions as the NPS strives to protect human life and provide for injury-free visits.

Desired Conditions:

- Kalaupapa NHP and its partners, contractors, and cooperators work together to provide a safe and healthful environment for all, while applying nationally accepted standards and while recognizing that there are limitations on the NPS's capability to eliminate all hazards.
- Consistent with mandates and nonimpairment, the park would reduce or remove known hazards by applying appropriate mitigation measures, such as closures, guarding, gating, education, and other actions.

Management Direction/Strategies:

- Maintain a documented safety program in the park to address health and safety concerns and to identify appropriate levels of action and activities to reduce or eliminate safety hazards.
- Incorporate operational leadership strategies and concepts into common practice to promote a safe environment.
- Ensure that all potable water systems and wastewater systems in the park continue to meet state and federal requirements.
- Provide interpretive signs and materials as appropriate to notify visitors of potential safety concerns, hazards, and procedures; to help provide for a safe visit to the park; and to ensure visitors are aware of the possible risks of certain activities.

Relations with Private and Public Organizations, Owners of Adjacent Land, and Governmental Agencies

NPS *Management Policies 2006* (§1.6) stresses the need for cooperative conservation beyond park boundaries. This cooperation is necessary in order for the NPS to fulfill its mandate to preserve the park's natural and cultural resources unimpaired for future generations. Local and regional cooperation may involve other federal agencies, state, and local governments, neighboring landowners, and nongovernmental and private sector organizations.

Desired Conditions:

- Kalaupapa NHP is managed as part of a greater ecological, social, economic, and cultural system.
- Good relations are maintained with residents and adjacent landowners, religious organizations in the park, and private and public groups that affect, and are affected by Kalaupapa NHP.
- Kalaupapa NHP is managed proactively to resolve external issues and concerns and ensure that the resources and values of Kalaupapa NHP are not compromised.
- Because Kalaupapa NHP is an integral part of a larger regional and islandwide environment, the NPS works cooperatively with others to anticipate, avoid, and resolve potential conflicts, protect Kalaupapa resources, and address mutual interests in the quality of life for community residents.

Management Direction/Strategies:

- NPS staff would continue to establish and foster partnerships with public and private

organizations to achieve the purpose of Kalaupapa NHP. Partnerships would continue to be sought for resource protection, research, education, and visitor enjoyment purposes.

- To foster a spirit of cooperation with neighbors and encourage compatible adjacent land uses, NPS staff would continue to keep landowners, land managers, local governments, and the public informed about management activities. Periodic consultations would continue with residents and landowners who might be affected by visitors and management actions.
- NPS staff would continue to respond promptly to conflicts that arise over NPS activities, visitor access, and proposed activities and developments on adjacent lands that could affect Kalaupapa NHP.
- NPS staff may provide technical and management assistance to landowners to address issues of mutual interest. NPS staff would continue to work closely with adjacent landowners, local, state, and federal agencies, Kalaupapa NHP Advisory Commission, and other groups whose programs affect, or are affected by, activities in Kalaupapa NHP.
- NPS managers would continue to pursue cooperative regional planning whenever possible to integrate the park into issues of islandwide concern.

Transportation to and within Kalaupapa NHP

NPS *Management Policies 2006* (§9.2) calls for NPS managers to identify solutions to transportation issues that preserve natural and cultural resources while providing a high-quality visitor experience. Management decisions regarding transportation generally require a comprehensive alternatives analysis. The location, type, and design of multimodal transportation facilities (such as roads, bridges, parking areas, sidewalks, bikeways, and pedestrian trails) strongly influence the quality of the visitor experience and the preservation of park unit resources.

Desired Conditions:

- Transportation facilities in Kalaupapa NHP preserve the integrity of the surroundings within a National Historic Landmark; respect ecological processes; protect natural, cultural, and scenic resources; and provide the highest visual quality and a rewarding visitor experience.

Management Direction/Strategies:

- NPS staff would participate in transportation studies and planning processes that may result in links to Kalaupapa NHP or impacts to resources. NPS managers would work closely with other federal agencies, state and local governments, regional planning bodies, citizen groups, and others to enhance partnering and funding opportunities, and to encourage effective regional transportation planning.
- In general, the preferred modes of transportation would be those that contribute to maximum visitor enjoyment of, and minimum adverse impacts to, resources and values. Before a decision is made to design, construct, expand, or upgrade transportation access to or within Kalaupapa NHP, non-construction alternatives—such as distributing visitors to alternative locations—would be fully explored. If non-construction alternatives would not achieve satisfactory results, then a development solution should consider whether the project:
 - is appropriate and necessary to meet management needs;
 - is designed with extreme care and sensitivity to the landscape through which it passes;

- would not cause adverse impacts to natural and cultural resources, and would minimize or mitigate those impacts that cannot be avoided;
- reduces traffic congestion, noise, air pollution, and adverse effects on resources and values;
- would not violate federal, state, or local air pollution control plans or regulations;
- would not cause use in the areas to exceed the areas' user capacity;
- incorporates the principles of energy conservation and sustainability;
- is able to demonstrate financial and operational sustainability;
- incorporates universal design principles to provide for accessibility for all people, including those with disabilities;
- takes maximum advantage of interpretive opportunities and scenic values;
- is based on a comprehensive and multidisciplinary approach that is fully consistent with Kalaupapa NHP's GMP and asset management plan; and
- enhances the visitor experience by offering new or improved interpretive or visitor opportunities, by simplifying travel within Kalaupapa NHP, or by making it safer to see features within Kalaupapa NHP.

Utilities and Communication Facilities

The Telecommunications Act of 1996 directs all federal agencies to assist in the national goal of achieving a seamless telecommunications system throughout the United States by accommodating requests by telecommunication companies for the use of property, rights-of-way, and easements to the extent allowable under each agency's mission. The NPS is legally obligated to permit telecommunication infrastructure in park units if such facilities can be structured to avoid interference with park unit purposes. Rights-of-way for utilities to pass over, under, or through NPS property may be issued only pursuant to specific statutory authority, and generally only if there is no practicable alternative to such use of NPS lands. Statutory authorities in (16 USC 5) and in *NPS Management Policies 2006* (§8.6.4) provide guidance on these rights-of-way.

Desired Conditions:

- Kalaupapa NHP resources or public enjoyment are not degraded by nonconforming uses.
- Telecommunication structures are permitted in Kalaupapa NHP to the extent they do not jeopardize Kalaupapa NHP's purpose and resources.
- No new nonconforming uses or rights-of-way are permitted through Kalaupapa NHP without specific statutory authority and approval by the director of the NPS or his/her representative, and are permitted only if there is no practicable alternative to such use of NPS lands.

Management Direction/Strategies:

- NPS staff would work with service companies, local communities, and the public to locate new utility lines and maintain existing lines so that there is minimal effect on resources.
- If necessary, and if there are no other options, new or reconstructed utilities and communications infrastructure would be placed in association with existing structures and along roadways or other established corridors in developed areas. For reconstruction or extension into undisturbed areas, routes would be selected that minimize impacts on Kalaupapa NHP's natural, cultural, and visual resources.

Utility lines would be placed underground to the maximum extent possible, away from sensitive resources.

- NPS policies would be followed in processing applications for commercial telecommunications facilities.

APPENDIX C: USER CAPACITY WITH INDICATORS AND STANDARDS

General management plans are required to include identification of and implementation commitments for user capacities for all areas of a national park unit. The NPS defines user capacity as the type and level of use that can be accommodated while sustaining the quality of resources and visitor opportunities consistent with the purpose of a national park unit.

For the purpose of this plan, user capacity would address visitor use and use by patient residents, DOH, and NPS staff. User capacity depends upon a variety of factors including facility space, physical and logistical constraints, resource resiliency, and desired conditions for resources and visitor experiences. In managing for user capacity, a variety of management tools and strategies would be employed, including regulating the number of people in the park and managing the levels, types, behaviors, and patterns of visitor use in order to protect the condition of the resources and quality of the visitor experience. The ever-changing nature of visitor use requires a deliberate and adaptive approach to user capacity management involving monitoring, evaluation, actions (managing visitor use), and adjustments to ensure a unit's values are protected.

The foundations for making user capacity decisions in this GMP are the purpose, significance, special mandates, and management zones associated with the park, which define why the park was established and identify the most important resources, values, and visitor opportunities that would be protected and provided. The management zones describe the desired resource conditions and visitor experiences, including appropriate types of activities and general use levels, for different locations throughout the park. The zones are consistent with and help the NPS achieve its specific purpose, significance, and special mandates. As part of the NPS's commitment to implement user capacity, the park staff would abide by these directives for guiding the types and levels of visitor use that would be accommodated while sustaining the quality of park resources and visitor experiences consistent with the purposes of the park.

Managing Use Levels

A variety of logistical and facility constraints must also be considered in determining appropriate types and levels of use at Kalaupapa. Because Kalaupapa is an isolated peninsula on a remote Hawaiian Island, all aspects of human use must be considered. Food, materials, and garbage must be transported by barge, plane, or by foot or mule on the pali trail. Access to Kalaupapa is difficult and foot access on the pali trail is physically challenging. The mule rides down the trail and air access are costly. Boat access is not allowed, unless through a special use permit. The lack of medical services, difficulties in responding to an emergency for large numbers of visitors, as well as fire safety need to be considered in management of user capacity.

The limited number and size of facilities also set the sideboards for determining overall user capacity at Kalaupapa. These facilities include buildings, structures, the pali trail, utilities, and supporting infrastructure. The overnight capacity of the buildings and the capacity of the water and sewage systems have been identified through data gathering for this GMP. Through this planning process, it has been determined that the number and size of these facilities and systems to support more people would not substantially increase. When facilities and systems need replacement or improvements, the facilities would generally be maintained to support current levels of use.

The capacities of select facilities at Kalaupapa were determined for the purposes of this GMP. Overnight lodging facilities can support a maximum of 368 people per night, based on a pillow count of available bed space within the residential buildings at the settlement. The water system could support a maximum of 300 people per day, based on available water and the cost benefits

of converting diesel to solar power for the pumping and water treatment systems. The sewage system could support a maximum 300 people per day, based on the septic and cesspool systems and professional judgment of NPS maintenance staff.

Within the context of Kalaupapa NHP's limited facility capacities, guidance for the park's overall user capacity addresses both visitor use (including day visitors, sponsored overnight guests, and potential overnight visitors) and current patient residents and DOH and NPS staff. The patients, DOH, and NPS have priority for occupying facilities in order to maintain the patient resident community and operations. Once the DOH departs Kalaupapa, NPS would have priority for occupying and using facilities in order to maintain park operations in consultation with DHHL. Under both alternatives, visitor use levels would generally stay the same in the near term. In the long term, facilities would no longer be occupied by patient residents and DOH staff, which would allow for possible visitor use of additional facilities.

Alternative Management Strategies for Managing Use Levels

The park's enabling law contains provisions to respect the special needs of the patients and provides direction for the number of visitors allowed to visit Kalaupapa in one day. For the purposes of this plan, a visitor is anyone who does not reside at Kalaupapa. One of the provisions states, "So long as the patient may direct, the Secretary shall not permit public visitation to the settlement in excess of one hundred persons in any one day" (16 USC 410jj-5). This cap on visitation has been in place since 1980 when the park was established, and the Kalaupapa Patients Advisory Council directed that the limit be maintained. It must also be noted that visitation over the last several years has averaged approximately 25 to 30 people per day. As part of this GMP, user capacity is being considered within the context of the limit of 100 visitors per day, as well as in the long term when the numerical limit on visitation could change or be removed.

Under A-2, user capacity would be managed through one or more of the following management strategies: 1) limits on users through commercial use authorizations, concessions contracts, and contracts or agreements with organizations as described in the "Number of Visitors" sections; 2) entry pass system that manages access to the park and within the park, as described in the preferred alternative in the "Orientation and Entry Pass" section, and 3) through indicators and standards for the preferred alternative as described below. Concessions contracts, agreements with organizations and partners, and/or commercial use authorizations would set numerical limits on number of visitors. In addition to visitor limits, the NPS would also manage user capacity through the GMP's qualitative descriptions of desired resource conditions, visitor experience opportunities, and general levels of management.

Indicators, Standards, Monitoring, and Management Strategies

This GMP includes indicators (measurable variables) and standards (management decisions about minimum acceptable conditions) that would be monitored to track changes in resource conditions and visitor experiences. The indicators and standards help the NPS ensure that desired conditions are being attained, supporting the fulfillment of the park's legislative and policy mandates. The GMP also identifies the types of management actions that would be taken to achieve desired conditions and related legislative and policy mandates. NPS staff would monitor indicators to determine if standards were being exceeded using techniques that could include monitoring of visible impacts to trails or resources as part of regular and volunteer patrols, establishing systematic resource assessments, and monitoring vandalism. NPS staff could also review general information collected with respect to accidents, visitor complaints, and the functionality of the entry pass system.

User capacity decision-making is a form of adaptive management. With any use on public lands comes some level of impact that must be accepted. Therefore, it is the responsibility of the State of Hawai'i and the NPS as the managers of Kalaupapa NHP to decide what level of impact is acceptable and what actions are needed to keep impacts within acceptable limits. The monitoring component of this user capacity process helps test the effectiveness of management actions and provides a basis for informed adaptive management of public use. The indicators and standards included in this plan would generally not change in the future. However, as monitoring of Kalaupapa NHP's conditions continues, NPS managers may decide to modify, add, or delete indicators if better ways are found to measure important changes in resource and social conditions. The results of Kalaupapa NHP's monitoring efforts, related visitor use management actions, and any changes to Kalaupapa NHP's indicators and standards would be available for public review. It should be noted that revisions to indicators and standards would potentially be subject to compliance with NEPA, NHPA, and other laws, regulations, and policies.

The planning team considered many potential issues and related indicators that would identify impacts of concern, but those described below were considered the most important, given the vulnerability of the resource or visitor experience affected by visitor use. These indicators and standards help translate the broader qualitative descriptions of desired conditions into measurable conditions.

The priority indicators for Kalaupapa NHP are associated with the following issues: 1) incidents of human-caused damage or alteration to archeological resources; 2) maintenance work orders to repair historic structures damaged by visitors; 3) human disturbance to special status species; 4) condition of the pali trail; 5) visitor crowding; and 6) unauthorized visitor access in limited areas. See Figure A: Management Zones (Alternative 2) for zones related to the application of indicators.

Indicator 1 is **Human-caused Damage to Archeological Resources** and is described as the number of incidents of human-caused damage or alteration to archeological resources including digging, graffiti, rock art, rock stacking, moving resources, and looting. Indicator 1 applies to the following management zones: Integrated Resource Management, Engagement, and Wao Akua. The standard is no incidents of damage or alternation reported in one year. Resource management monitoring projects and/or ranger patrols and complaints about human-caused damage would be monitored. Potential management actions could include education, signage, increased patrols, placing natural barriers, rerouting visitor access, selective closures, and taking appropriate law enforcement actions.

Indicator 2 is **Visitor Damage to Historic Structures** and is described as the number of maintenance work orders (beyond normal wear and tear) to repair historic structures damaged by visitors. Indicator 2 applies to the following management zones: Engagement. The standard is no more than 10 maintenance work orders per year. The number of maintenance work orders to repair historic structures damaged by visitors and/or regular housing inspections would be monitored. Potential management actions could include education, signs, citations, and requiring visitors to pay for repairs.

Indicator 3 is **Human Disturbance to Special Status Species** and is described as the number of incidents of human disturbance to special status species (such as monk seals, green turtles, birds, and protected plant species). Indicator 3 applies to the following management zones: Integrated Resource Management, Engagement, and Wao Akua.

Indicator 4 is **Condition of Pali Trail** and is described by a condition class assessment or comparable categorical metric. Indicator 4 applies to the following management zones:

Engagement. The standard is that the condition of trail has a condition rating of fair or above. Resource management monitoring projects, and/or ranger patrols, or photo documentation at several locations on the trail would be monitored. Potential management actions could include additional visitor information, signs, rehabilitating social trails, placing natural barriers, repairing trail using more resistant materials, coordinating with mule operation, and limiting the number of mules and users.

Indicator 5 is **Visitor Crowding** and is described as the number of complaints relating to crowding and noise intrusions as logged by incident reports, staff or visitor complaints, and comment cards. Indicator 5 applies to the following management zones: Integrated Resource Management, Engagement, and Wao Akua. The standard is no more than five total complaints about crowding or noise per month. Ranger patrols and tracking staff and visitor complaints would be the methods for monitoring. Potential management actions could include education, signs, staggering visitation at high-use areas, managing larger groups, and setting limits on the number of people on tours and/or number of tours.

Indicator 6 is **Unauthorized Visitor Access in Limited Areas** and is described as the number of incidents of unauthorized visitor access in limited areas. Indicator 6 applies to the following management zones: Integrated Resource Management, Engagement, Wao Akua, and Operations. The standard is no more than 10 incidents per year for unauthorized visitor access in limited areas. Ranger patrols would be the method for monitoring. Potential management actions could include education, signs, improving orientation information, citations, and rerouting visitor access.

APPENDIX D: SPECIAL STATUS SPECIES

This table lists special status species (plants, birds, mammals, and invertebrates) within Kalaupapa NHP (based on Fung Associates and SWCA 2010 and updated based on consultation with park staff).

Species Name	Common Name	Status	Park Locality
Marine Reptile: <i>*Chelonia mydas</i>	Green sea turtle or honu	T	Marine
Marine Reptile: <i>*Eretmochelys imbricate</i>	Hawksbill sea turtle	E	Marine
Marine Mammal: <i>Megaptera novaeangliae</i>	Humpback whale or kohola	T	Marine
Marine Mammal: <i>*Neomonachus schauinslandi</i>	Monk seal or ‘ilio holo i ka uaua	E	Marine
Terrestrial Mammal: <i>*Lasiurus cinereus semotus</i>	Hawaiian hoary bat	E	Parkwide
Birds: <i>*Pterodroma sandwichensis</i>	Hawaiian petrel	E	Parkwide
Birds: <i>*Puffinus auricularis newelli</i>	Newell’s shearwater	T	Parkwide
Birds: <i>*Vestiaria coccinea</i>	‘i‘iwi	SE	Pu‘u Ali‘i
Birds: <i>*Paroreomyza flammea</i>	Molokai creeper or kākāwahie	E	Pu‘u Ali‘i
Birds: <i>*Myadestes lanaiensis</i>	Molokai thrush or oloma‘o	E	Pu‘u Ali‘i
Birds: <i>Oceanodroma castro</i>	Band-rumped storm-petrel	E	unknown
Insects: <i>Hylaeus anthracinus</i>	Yellow-faced bee	E	Coast
Insects: <i>Hylaeus facilis</i>	Yellow-faced bee	E	Coast
Insects: <i>Hylaeus hilaris</i>	Yellow-faced bee	E	Coast
Insects: <i>Hylaeus longiceps</i>	Yellow-faced bee	E	Coast
Insects: <i>*Manduca blackburni</i>	Blackburn’s sphinx moth	E	Unknown
Insects: <i>*Megalagrion pacificum</i>	Pacific Hawaiian damselfly	E	Waikolu
Insects: <i>Megalagrion xanthomelas</i>	Orangeblack Hawaiian damselfly	E	Waikolu

Species Name	Common Name	Status	Park Locality
Plants: * <i>Adenophorus periens</i> ¹		E CH	Critical Habitat Unit 6 with <i>Brighamia rockii</i> , <i>Cyanea dunbarii</i> , <i>Cyenia procera</i> , <i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i> , <i>Lysimachia maxima</i> , <i>Peucedanum sandwicense</i> , <i>Phyllostegia manni</i> , and <i>Schiedea nuttalli</i>
Plants: * <i>Bidens wiebkeii</i>	ko'oko'olau	E CH - p	Cliffs Critical habitat proposed coastal units 3, 4, 5 and lowland wet unit 2
Plants: * <i>Brighamia rockiii</i>	pua'ala	E CH CH - p	Islets (Huelo), Molokai Forest Reserve, Kūka'iwa'a restoration project The population was documented as declining precipitously due to rockslides in the natural resources condition assessment (Wood 2008 in SWCA 2010: 41). Planted at the top of the pali trail and slightly below (SWCA 2010). Critical Habitat Unit 4 with <i>Hibiscus arnottianus</i> Critical Habitat Unit 5 with <i>Peucedanum sandwicense</i> and <i>Tetramolopium rockii</i> Critical Habitat Unit 6 with <i>Adenophorus periens</i> , <i>Cyanea dunbarii</i> , <i>Cyenia procera</i> , <i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i> , <i>Lysimachia maxima</i> , <i>Peucedanum sandwicense</i> , <i>Phyllostegia manni</i> , and <i>Schiedea nuttalli</i> Critical habitat proposed coastal units 3, 4, 5

¹ As noted above, the USFWS has also proposed a new rule that would modify the critical habitat in the project area.

1) Coastal Units 3, 4, and 5: *Bidens wiebkei*, *Brighamia rockii*, *Canavalia molokaiensis*, *Hibiscus arnottianus* ssp. *immaculatus*, *Hibiscus brackenridgei*, *Ischaemum byrone*, *Marsilea villosa*, *Peucedanum sandwicense*, *Pittosporum halophilum*, *Schenkia sebaeoides*, *Sesbania tomentosa*, and *Tetramolopium rockii*.

2) Lowland Wet Unit 2: *Asplenium dielirectum*, *Bidens wiebkei*, *Canavalia molokaiensis*, *Clermontia oblongifolia* ssp. *brevipes*, *Cyanea dunbariae*, *Cyanea grimesiana* ssp. *grimesiana*, *Cyanea solanacea*, *Cyrtandra filipes*, *Lysimachia maxima*, *Melicope reflexa*, *Peucedanum sandwicense*, *Phyllostegia hispida*, *Phyllostegia mannii*, *Plantago princeps*, *Stenogyne bifida*, and *Zanthoxylum hawaiiense*.

3) Lowland Mesic Unit 1: *Alectryon micrococcus*, *Asplenium dielirectum*, *Bonamia menziesii*, *Canavalia molokaiensis*, *Clermontia oblongifolia* ssp. *brevipes*, *Ctenitis squamigera*, *Cyanea dunbariae*, *Cyanea mannii*, *Cyanea procera*, *Cyanea profuga*, *Cyanea solanacea*, *Cyperus fauriei*, *Cyrtandra filipes*, *Diplazium molokaiense*, *Festuca molokaiensis*, *Flueggea neowawraea*, *Gouania hillebrandii*, *Isodendrion pyriformum*, *Kadua laxiflora*, *Labordia triflora*, *Melicope mucronulata*, *Melicope munroi*, *Melicope reflexa*, *Neraudia sericea*, *Phyllostegia haliakalae*, *Phyllostegia mannii*, *Phyllostegia pilosa*, *Santalum haleakalae* var. *lanaiense*, *Schiedea lydgatei*, *Schiedea sarmentosa*, *Sesbania tomentosa*, *Silene alexandri*, *Silene lanceolata*, *Spermolepis hawaiiensis*, *Stenogyne bifida*, *Vigna o-wahuensis*, and *Zanthoxylum hawaiiense*.

Species Name	Common Name	Status	Park Locality
Plants: <i>*Canavalia molokaiensis</i>	'āwikiwiki	E CH - p	Pu'u Ali'i Planted near the Crater and in the North Shore Cliffs NNL (SWCA 2010). Critical habitat proposed coastal units 3, 4, 5 and lowland wet unit 2 and lowland mesic unit 1
Plants: <i>Centaurium sebaeoides</i>	Lavaslope centaury or 'āwiwi	E CH	Coastal Spray Zone Potentially extirpated. It has not been seen in 10 years of walk-throughs in suitable habitat (Hosten, pers. comm.) Critical Habitat Unit 3: with <i>Tetramolopium rockii</i>
Plants: <i>*Clermontia oblongifolia</i> ssp. <i>brevipes</i>	'oha wai	E CH - p	Pu'u Ali'i Critical habitat proposed lowland wet unit 2 and lowland mesic unit 1
Plants: <i>*Cyanea dunbarii</i>	hāhā	E CH CH - p	Molokai Forest Reserve Critical Habitat Unit 6 with <i>Adenophorus periens</i> , <i>Brighamia rockii</i> , <i>Cyanea procera</i> , <i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i> , <i>Lysimachia maxima</i> , <i>Peucedanum sandwicense</i> , <i>Phyllostegia manni</i> , and <i>Schiedea nuttalli</i> Critical habitat proposed lowland wet unit 2 and lowland mesic unit 1
Plants: <i>*Cyanea procera</i>	hāhā	E CH CH - p	Pu'u Ali'i Critical Habitat Unit 6 with <i>Adenophorus periens</i> , <i>Brighamia rockii</i> , <i>Cyanea dunbarii</i> , <i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i> , <i>Lysimachia maxima</i> , <i>Peucedanum sandwicense</i> , <i>Phyllostegia manni</i> , and <i>Schiedea nuttalli</i> Critical habitat proposed lowland wet unit 2 and lowland mesic unit 1
Plants: <i>Cyrtandra hematos</i>	ha'iwale	E	Unknown <i>C. bisserata</i> observed near Waikolu stream in the montane wet forest (SWCA 2010).
Plants: <i>Gardenia remyi</i>	nanu	E	unknown
Plants: <i>*Hedyotis manni</i>	pilo	E	Pu'u Ali'i
Plants: <i>*Herperomannia arborescens</i>	n/a	E	Pu'u Ali'i

Species Name	Common Name	Status	Park Locality
Plants: * <i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i> ⁱ	n/a	E CH CH - p	Molokai Forest Reserve Planted at the North Shore Cliff NNL. Critical Habitat Unit 4 with <i>Brighamia rockii</i> Critical Habitat Unit 6 with <i>Adenophorus periens</i> , <i>Brighamia rockii</i> , <i>Cyenea dunbarii</i> , <i>Cyenia procera</i> , <i>Lysimachia maxima</i> , <i>Peucedanum sandwicense</i> , <i>Phyllostegia manni</i> , and <i>Schiedea nuttalli</i> Critical habitat proposed coastal units 3, 4, 5
Plants: <i>Joinvillea ascendens</i> ssp. <i>ascendens</i>	ohe	E	unknown
Plants: * <i>Lysimachia maxima</i> ⁱ		E CH CH - p	Critical Habitat Unit 6 with <i>Adenophorus periens</i> , <i>Brighamia rockii</i> , <i>Cyenea dunbarii</i> , <i>Cyenia procera</i> , <i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i> , <i>Peucedanum sandwicense</i> , <i>Phyllostegia manni</i> , and <i>Schiedea nuttalli</i> Critical habitat proposed lowland wet unit 2
Plants: * <i>Melicope reflexa</i> ⁱ	alani	E CH - p	Pu'u Ali'i, North Shore Cliff NNL Critical habitat proposed lowland wet unit 2 and lowland mesic unit 1
Plants: <i>Nothoestrum latifolium</i>	aiea	E	unknown
Plants: * <i>Panicum fauriei</i> var. <i>carteri</i>	Carter's panicgrass	E	Kūka'iwa'a Peninsula, North Shore Cliff NNL
Plants: * <i>Peucedanum sandwicense</i> ⁱ	makou	T CH CH- p	Islets – Huelo, Crater NPS has developed a plan to plant this species at the Crater (SVMA 2010) and also fenced a small population near the top of the pali trail. Another small population, then affected by herbivory, was also found below the fenced one (SWCA 2010). Critical Habitat Unit 5 with <i>Brighamia rockii</i> and <i>Tetramolopium rockii</i> Critical Habitat Unit 6 with <i>Adenophorus periens</i> , <i>Brighamia rockii</i> , <i>Cyenea dunbarii</i> , <i>Cyenia procera</i> , <i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i> , <i>Lysimachia maxima</i> , <i>Phyllostegia manni</i> , and <i>Schiedea nuttalli</i> Critical habitat proposed coastal units 3, 4, 5 and lowland wet unit 2

Species Name	Common Name	Status	Park Locality
Plants: <i>*Phyllostegia hispida</i> ⁱ	n/a	E CH - p	Pu'u Ali'i Also found in Kamakou preserve. Outplanted in both areas using propagules from Ohialele forest. Goal is to create a population of 150 reproducing plants. See also <i>P. mannii</i> below. Critical habitat proposed lowland wet unit 2
Plants: <i>*Phyllostegia mannii</i> ⁱ	n/a	E CH CH - p	Pu'u Ali'i Critical Habitat Unit 6 with <i>Adenophorus periens</i> , <i>Brighamia rockii</i> , <i>Cyanea dunbarii</i> , <i>Cyenia procera</i> , <i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i> , <i>Lysimachia maxima</i> , <i>Peucedanum sandwicense</i> , and <i>Schiedea nuttalli</i> Critical habitat proposed lowland wet unit 2 and lowland mesic unit 1
Plants: <i>Phyllostegia stachyoides</i>	n/a	E	unknown
Plants: <i>Pittosporum halophilum</i> ⁱ	hō'awa	E CH - p	Islets and Kūka'iwa'a Peninsula, Kūka'iwa'a restoration project Critical habitat proposed coastal units 3, 4, 5
Plants: <i>*Plantago princeps</i> var. <i>laxiflora</i> ⁱ	kuahiwi laukahi		Pu'u Ali'i Critical habitat proposed lowland wet unit 2
Plants: <i>*Platanthera holochila</i>	n/a	E	Pu'u Ali'i
Plants: <i>Portulaca villosa</i>	ihi	E	Crater. Six individuals were found in 1990 (Asherman et al. 1990).
Plants: <i>Pseudognaphalium sandwicense</i> var. <i>molokaiense</i>	enaena	E	Coast
Plants: <i>*Ranunculus mauiensis</i>	makou	C	Cliffs and Pālā'au State Park
Plants: <i>*Scaevola coriacea</i>	dwarf naupaka	E	Islets – Okala, Kūka'iwa'a restoration project Known from five locations in the state, three on offshore islets (Swentson 2008 in SWCA 2010: 41).
Plants: <i>*Schenkia sebaeoides</i> (<i>Centaurium sebaeoides</i>) ⁱ		E CH - p	Critical habitat proposed coastal units 3, 4, 5
Plants: <i>Schiedea diffusa</i> ssp. <i>diffusa</i>	n/a	E	unknown

Species Name	Common Name	Status	Park Locality
Plants: * <i>Schiedea nutallii</i>		E CH	Considered extirpated from the park Critical Habitat Unit 6 with <i>Adenophorus periens</i> , <i>Brighamia rockii</i> , <i>Cyanea dunbarii</i> , <i>Cyenia procera</i> , <i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i> , <i>Lysimachia maxima</i> , <i>Peucedanum sandwicense</i> , and <i>Phyllostegia manni</i>
Plants: <i>Schiedea pubescens</i>	maolioli	E	unknown
Plants: * <i>Sesbani tomentosa</i> '	'Ōhai	E CH - p	Nursery and outplanting locations along east coast of Kalaupapa peninsula Critical habitat proposed coastal units 3,4,5
Plants: <i>Solanum nelsonii</i>	pōpolo	E	Nursery and outplanting locations along east coast of Kalaupapa peninsula
Plants: <i>Stenogyne bifida</i> '	n/a	E CH - p	Pu'u Ali'i Critical habitat proposed lowland wet unit 2 and lowland mesic unit 1
Plants: * <i>Tetramolopium rockii</i> var. <i>rockii</i>	n/a	E CH CH - p	Coastal Spray Zone, Kūka'iwa'a restoration project Critical Habitat Unit 3 with <i>Centaurium (Schenkia) sebaeoides</i> Critical Habitat Unit 5 with <i>Brighamia rockii</i> and <i>Peucedanum sandwicense</i> Critical habitat proposed coastal units 3,4,5
Plants: * <i>Zanthoxylum hawaiiense</i>	a'e	E CH - p	Pu'u Ali'i Critical habitat proposed lowland wet unit 2 and lowland mesic unit 1

* in USFWS letter dated 7-27-15.

E – endangered

T – threatened

C – candidate

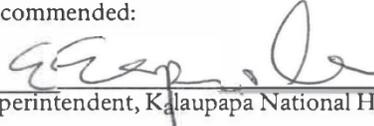
SE – state endangered

APPENDIX E: FLOODPLAINS STATEMENT OF FINDINGS

Floodplains Statement of Findings for the Kalaupapa NHP GMP

Kalawao County, Molokai, Hawai'i

Recommended:

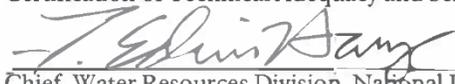


Superintendent, Kalaupapa National Historical Park

5/17/2019

Date

Certification of Technical Adequacy and Servicewide Consistency:

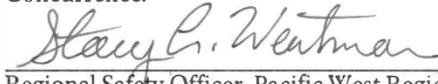


Chief, Water Resources Division, National Park Service

6/4/2019

Date

Concurrence:



Regional Safety Officer, Pacific West Region, National Park Service

7/10/2019

Date

Approved:

CINDY ORLANDO Digitally signed by CINDY ORLANDO
Date: 2021.08.10 16:14:06 -07'00'

Regional Director, Regions 8, 9, 10 and 12, National Park Service

Date

INTRODUCTION

The NPS prepared the Floodplains Statement of Findings for the Kalaupapa NHP GMP to describe proposals to implement broad actions described in the GMP and to review the GMP in sufficient detail to:

- provide an accurate and complete description of the coastal hazards assumed by implementation of the GMP (without mitigation);
- provide an analysis of the comparative risk between proposed alternatives;
- describe the effects on coastal values associated with the proposed action; and
- provide a thorough description and evaluation of mitigation measures developed to achieve compliance with Executive Order 11988 (Floodplain Management) and the NPS Floodplain Management Guideline (Director's Order 77-2).

Resource Description

Kalaupapa NHP consists of a relatively flat peninsula (the peninsula) midway along the north shore of Molokai and is backed by three deeply carved valleys and steep cliffs (pali) rising from 1,600 feet above sea level at the western end of the park to more than 3,000 feet at the highest elevation of the pali.

Kalaupapa NHP's seaward boundary extends ¼ mile offshore. Two distinct marine habitats, the intertidal zone and the coastal reefs, lie inside the boundary. Park waters shelter the endangered Hawaiian monk seal and humpback whale, the threatened green sea turtle, protected marine mammals such as the Hawaiian spinner dolphin, and well-preserved reef communities of coral, fish, and invertebrates. The ocean portion of the park also includes two islets, 'Ōkala and Huelo, which serve as seabird sanctuaries, and one rocky pinnacle, Nāmoku, on the northwestern section of the peninsula.

The intertidal zone wraps around the peninsula to cover a total area of 0.22 square miles. Like other exposed north shores throughout Hawai'i, the intertidal area includes sandy beaches, cobble and boulder beaches, sea cliffs, raised benches, and tide pools.

Compared to other coastal areas throughout the main Hawaiian Islands, the Coastal Spray Area at Kalaupapa NHP (766 acres) supports a diverse and extensive native coastal vegetation community. For this reason, the Coastal Spray Area of the eastern coast of the Kalaupapa peninsula has been identified as a Special Ecological Area. Other terrestrial resources for which Kalaupapa NHP is known include the dryland forest remnants within the Kauhakō Crater and the higher elevation Pu'u Ali'i Rainforest. Areas dominated by native plants have been fenced off to define areas of ongoing feral animal control (goats, deer, and pigs), and form Special Ecological Areas.

Kalaupapa NHP has approximately 1,500 historic buildings and structures, including roughly 270 historic buildings, four outdoor sculptures, two main roads, 30 ruins, 1,199 grave markers, 27 cemeteries, one special feature (Waikolu water line), and one marine/waterway feature (Kalaupapa Landing). The preservation of these buildings and structures is paramount because they are the physical evidence and remnants that help tell the story of Kalaupapa. Since the designation of Kalaupapa as a national historic landmark in 1976 and designation as a national park unit in 1980, several dozen buildings and structures have been lost due to lack of maintenance, weather-related deterioration, and termite infestation.

Coastal Hazards

Tsunami

Tsunamis are a series of waves most commonly caused by large earthquakes below or near the ocean floor on thrust faults associated with subduction zones. Tsunamis can also be caused by undersea landslides. Tsunamis differ from ordinary ocean waves and storm surges in that the entire water column from the sea floor to the ocean surface is displaced, not just the upper few feet of the ocean surface as with ordinary ocean waves. As tsunamis enter shallower coastal waters, the speed of the wave slows down and the height increases. A wave that may be only 3 feet high or less in the ocean may climb to more than 60 feet when it hits the coastline.

Tsunamis can cause great loss of life and property damage where they come ashore. The first wave is almost never the largest; successive waves may be spaced tens of minutes apart and continue arriving for many hours. All low-lying areas along the Pacific Coast of the U.S. are subject to inundation by tsunamis. Two kinds of tsunami could affect Kalaupapa NHP.

The Pacific Rim is the name given to the land masses surrounding the Pacific Ocean. Very large earthquakes anywhere around the Pacific Rim may cause a distant source tsunami that could strike the Kalaupapa NHP coastline. The first waves would reach the coastline many hours after the earthquake occurred, depending on the distance of the quake from Kalaupapa NHP.

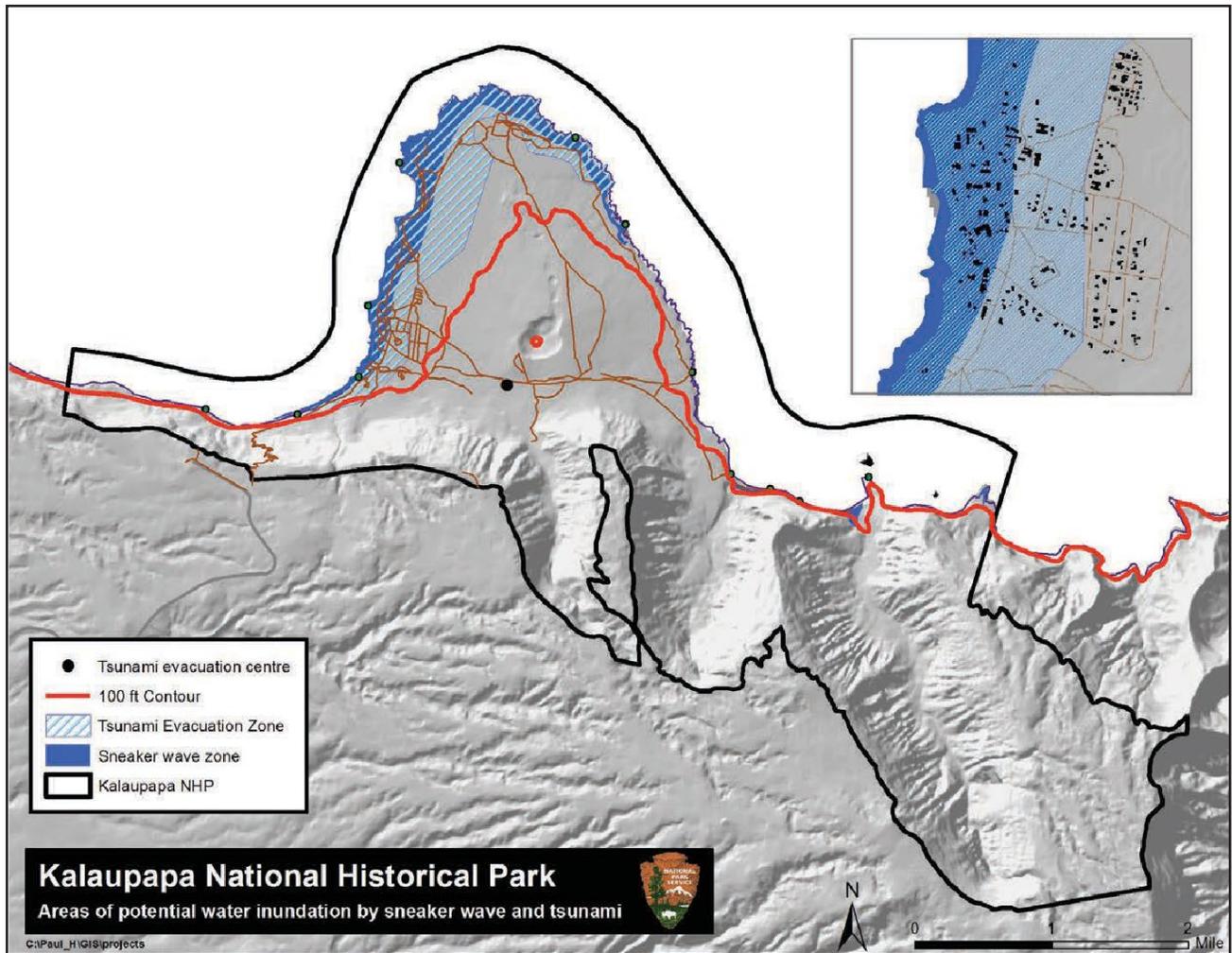


Figure E: Areas of Potential Inundation by Water Due to Flood or Tsunami

Tsunami Warning Centers will alert local officials, who may order evacuation along the coastline in Kalaupapa NHP.

The effects of a distant-source tsunami on Kalaupapa NHP may be negligible or severe, depending on the magnitude of the earthquake, the distance of the earthquake from the park, and the direction of approach. Valley mouths or inlets are more vulnerable than exposed coastlines because the height of the waves may increase as the wave energy becomes concentrated as it moves through a constricted valley/inlet entrance.

If a large earthquake occurs within the major Hawaiian Islands, the first waves (a local source tsunami) may reach the coast within minutes after the ground-shaking stops. There is no time for authorities to issue a warning. People on the beach or in low coastal areas need to move to higher ground as soon as the ground-shaking stops and stay away from low-lying coastal areas until an official “all clear” is broadcast. Locally generated tsunamis constitute the most serious threat because they can strike suddenly, before a tsunami warning system has been activated and sometimes before ground-shaking stops.

Lack of information about how tsunamis behave is widely responsible for loss of human life in many situations. Often the damage from a tsunami is caused not by the water but by large amounts of debris carried in the water. The arrival of a tsunami may be preceded by a

withdrawal of water from the coastline. Tsunamis are not breaking waves like those usually seen along a beach, but most often hit the coast as debris-filled turbulent water. Debris entrained in the tsunami strikes whatever is in its path and can cause extensive damage to structures. Strong currents are also a common feature of tsunamis and can cause extensive scour and deposition of debris.

Other Coastal Dangers

Other seismic hazards in the coastal area are ground-shaking and liquefaction. Liquefaction can also occur when loosely packed, wet sand is shaken in an earthquake causing the sand to flow like a liquid. Ground shaking is amplified in soft sediments such as sand, which increases the potential for damage to structures.

The cliffs for which Kalaupapa NHP is famed present yet another hazard. Local earthquakes would likely result in loose boulders and landslides posing a threat to hikers on the trail and residents and visitors below the cliffs.

Although earthquake-derived hazards such as tsunamis are assumed by many people to be the most serious hazard to human life and safety along the Hawaiian coastline, there is also a great risk to park visitors along the coast from exceptionally large waves that are impossible to predict and that occur every year. They are called rogue or sneaker waves because they appear without warning any time of the year, often surging high up on the beach with deadly force. These waves generally result in one or more fatalities across the Hawaiian isles on an annual basis.

Influence of Predicted Climate Change

Direct hurricane strikes to the Hawaiian Islands are relatively rare, averaging fewer than one per decade. However, high wave events related to passing low pressure systems and distant storms that generate long period swell are a common seasonal phenomenon.

Since Kalaupapa NHP is a coastal park, sea level rise may inundate low-lying resources such as nesting and nursing habitat for threatened and endangered species, historic structures, and archeological sites. Higher storm tides may result in more frequent flooding and coastal erosion. Globally, sea level is rising at the rate of 0.13 inches per year, although this rate has been accelerating in recent years (Church and White 2011). In Hawai'i, sea level has risen over 5 inches since 1918 (Firing and Merrifield 2004). This rise is expected to accelerate in the future with melting of the polar ice caps and thermal expansion of the ocean with increasing water temperature.

As sea level rises, normally non-hazardous wave events occurring on annual and interannual frequencies will penetrate further inland and threaten coastal ecology, cultural resources, and park infrastructure. Areas at risk likely include the zone of potential inundation by water due to flood or tsunami as defined by Figure E: Areas of Potential Inundation by Water Due to Flood or Tsunami.

Kalaupapa Tsunami Evacuation Plan

The current evacuation map for Kalaupapa is available online from the Hawai'i Emergency Management Agency (<http://www.scd.hawaii.gov/>). The 1991 map interpolates between the few run-up measurements of the tsunami of 1946. This was converted to inundation distance by one-dimensional modeling. Recent modeling efforts projecting "worst-case" scenarios are currently under examination by Maui County (including Kalawao County). For Kalaupapa, recent modeling shows flooding entirely contained within the evacuation area of the 1991 map. It is expected that the evacuation map for Kalaupapa will not change in the near future. However, evacuation maps may be updated in the future as studies of the 2011 Japanese earthquake are completed.

The current evacuation maps approximate the 60 to 70-foot contour and are considered conservative. In 1946, Kalaupapa Settlement saw a maximum run-up of about 32 feet, though a half mile to the west of Kalaupapa the run-up reached 44 feet. The largest run-up anywhere in the islands in 1946 was over 54 feet on the cliffs just east of the Kalaupapa peninsula—the largest run-up ever measured in Hawai‘i. It is unlikely that flooding from a tsunami even twice as large as the 1946 event would extend inland beyond the evacuation zone. Other authors suggest the adoption of the 100-foot contour as a measure of inundation zone for an extreme event. The 100-foot contour completely envelopes the settlement of Kalaupapa, see Figure E.

GMP Alternatives

The GMP alternatives differ principally in the incorporation of a long-term plan (no-action versus the preferred) and visitation. See Chapter 2: Alternatives for descriptions of the alternatives.

Structures in the Hazard Zone

The NPS Floodplain Management Guideline (Director’s Order 77-2) divides actions into the following three groups:

Class I Actions—include administrative, residential, warehouse and maintenance buildings, and nonexempted (overnight) parking lots. Picnic facilities, scenic overlooks, foot trails, and small associated daytime parking facilities that are water-dependent are exempted only if they are in non-high hazard areas.

Class II Actions—those that would create “an added disastrous dimension to the flood event.” Class II actions include schools, clinics, emergency services, fuel storage facilities, large sewage treatment plants, and structures such as museums that store irreplaceable records and artifacts.

Class III Actions—Class I or Class II Actions that are in high hazard areas such as those subject to coastal hazards.

While no new structures are proposed for construction, a few hundred historic buildings and structures serve a wide variety of functions crucial to the functioning and preservation of the history of the settlement.

The primary historic structures in the hazard zone are the care facility (DOH), state Department of Health administration office, visitors quarters used to house non-volunteer visitors, Kalaupapa NHP administration office, Hale Malama archival facility, Paschoal Hall used for recreation, Bishop Home, St. Francis Church, Protestant Church, store and warehouse, gasoline station, Bayview Home used for offices and housing, Quonset hut, and many historic maintenance facilities and residences.

An Analysis of GMP Alternatives’ Influence on Coastal Hazards

Neither alternative proposes construction of new facilities within the tsunami inundation zone. Both alternatives favor the restoration of key buildings symbolic of the history of Kalaupapa.

There is little substantial difference between alternatives but for the number of visitors within the tsunami inundation zone, endangerment to human lives, and coastal hazards. Alternative 2 would have a greater number of visitors within the settlement of Kalaupapa than alternative 1. Alternative 2 would have a larger number of visitors at threat from tsunami or sneaker waves.

All of the actions proposed in the alternatives are considered Class III actions because of their location immediately adjacent to the ocean in an area known to be at risk for a damaging seismic event, including both distant source and local tsunamis and liquefaction. The regulatory

floodplain for Class III actions is the extreme floodplain, which in this case is the modeled tsunami generated by a magnitude 8+ earthquake originating along the Pacific margins of South America, Alaska, the Aleutian Islands, Kamchatka, the Kuril Islands, or Japan, and assumed to have a run-up of least 20 vertical feet and perhaps as much as 100 vertical feet.

Justification for Use of the Coastal High Hazard Zone

Kalaupapa NHP's facilities serving the patient community, DOH and NPS operations, and day-use and overnight visitors to Kalaupapa NHP are immediately adjacent the coastline. Based on the park's enabling law, preservation of the buildings and public education are the major purposes of Kalaupapa NHP. There are no alternative sites out of the coastal high hazard zone where historic preservation and interpretation can be located. Designation as a national historic landmark and desire to preserve historic viewsapes prevents the construction of new visitor facilities outside of the tsunami zone.

Because much of the historic Kalaupapa Settlement is subject to extreme seismic events, it is not practicable to locate interpretive sites out of a coastal high hazard zone. It is not possible to relocate historic buildings to avoid damage from a major seismic event. It is only practicable to reduce loss of life and property through preparations before, during, and immediately after an earthquake or a tsunami. The primary preparation for tsunamis is to inform people how tsunamis behave and what risks are associated with tsunamis.

The Tsunami Warning System (TWS) was created to monitor seismic activity capable of generating tsunamis (tsunamigenic earthquakes) in the Pacific basin and to provide timely warnings to affected areas to reduce loss of human life. The TWS monitors seismic events and tide stations throughout the Pacific Basin to evaluate potential tsunami-generating earthquakes and to disseminate tsunami warnings. The Pacific Tsunami Warning Center (TWC) in Honolulu, Hawai'i is the operational center for the Pacific TWS. The West Coast and Alaska Tsunami Warning Center (WC/ATWC) in Palmer, Alaska serves as the regional tsunami warning center for California, Oregon, Washington, British Columbia, and Alaska. If the preliminary magnitude of an earthquake detected by one of the TWCs is greater than 7.5 and the expected travel time to the Hawaiian Islands is more than five to six hours (Walker 2008), the TWS issues a tsunami advisory bulletin. If the expected travel time is between two and six hours, a tsunami watch bulletin is issued, with a tsunami warning bulletin issued to areas within two hours travel time to warn of imminent tsunami hazard. Since 1981, the WC/ATWC has issued 17 regional tsunami warnings, with an average response time of 10.6 minutes (range 8–14 minutes) between the quake and the warning.

All beach users are also at risk from sneaker waves. The north coast of all the Hawaiian Islands are renowned for sneaker/rogue waves. People in the intertidal zone (typically local fisherman and opihi (limpet) pickers) are under the highest threat, though large waves can endanger visitors well above the high tide mark. Several lives are lost every year in Hawai'i to unpredictable sneaker waves.

Description of Site-specific Coastal Hazard Risk

The height of a tsunami and tsunami risk at Kalaupapa NHP depends on the magnitude and location of the seismic event that generates the tsunami. For a distant source tsunami, the NPS will rely on the TWS, the local Office of Emergency Services, and local emergency services providers to disseminate information about the expected arrival time of a tsunami and to evacuate anyone in the coastal high hazard zones until the threat has subsided. There may be no warning time for a locally generated tsunami.

Distant source tsunamis, regardless of run-up height, will be preceded by advisories, watches, or warnings issued by the TWC in Honolulu. Once a watch or a warning is issued, the NPS will reduce or eliminate the risk at Kalaupapa NHP by evacuating any visitors and most park staff out of the immediate area using trained staff from Kalaupapa NHP and the state Department of Health.

For locally generated tsunamis, the risk depends on the magnitude and duration of ground-shaking and whether liquefaction occurs. Should liquefaction occur, any persons in the immediate area will have to move to the nearest high ground as soon as possible. The current tsunami evacuation plan for locally generated tsunamis (identified by earth tremblers strong enough to jar or throw a person to the ground) calls for immediate evacuation on foot to higher ground along a predetermined route. Households and staff with vehicles would drive along the evacuation route within minutes to move all foot traffic to higher ground. Under this scenario, most Kalaupapa residents could evacuate within minutes of the earthquake. Following the issuance of a tsunami warning, the end point for any exodus from the settlement or the east coast of the peninsula is the tsunami evacuation center immediately south of the crater, midway between the crater and the pali.

Design or Modifications to Minimize Harm to Coastal Values or Risks to Life and Property

Actions occurring within the coastal high hazard zone are subject to the provisions of the NPS Floodplain Management Guideline (Director's Order 77-2).

Destruction from tsunamis is the direct result of three factors: wave impact, inundation, and erosion. Less easily perceived is the highly damaging effect of water loaded with debris as it recedes back to the ocean. Water rendered dense with debris, including vegetation and artifacts from structures, becomes highly erosive as it scours the landscape and objects within the water on the way back to the ocean. Erosion becomes more likely if severe local ground-shaking results in soil liquefaction before or during a tsunami. Erosion of the Kalaupapa coastline is an unavoidable and unmitigatable consequence of a damaging earthquake and ensuing tsunami.

New structures would be kept to a minimum to reduce intrusions into the ocean views and preserve the historic viewscape. The structures along the coast that would create debris moved by a tsunami are all of a historic nature. Vegetation and driftwood that washes down the rivers and onto the beach is an additional source of debris.

The proposed facilities are of major historical significance, and the NPS acknowledges that many facilities within the settlement of Kalaupapa are subject to damage or destruction from seismic events and tsunamis. The GMP acknowledges that both the seismic and tsunami risk are substantially greater than what was known when the settlement was founded. The NPS is focusing on protecting human life and safety through warning and evacuation rather than minimizing property damage.

Risk to life and property at Kalaupapa NHP would be minimized by:

- Posting signs at the beach advising about the danger of sneaker waves, undertows, and rip currents;
- Encouraging visitors to adopt a vigilant attitude (keep attention focused on the water rather than turning their back to the ocean) and to describe swimming techniques for escaping undertow and rip currents;
- Providing information about tsunami behavior, such as the series of waves and entrained debris, will further reduce risk of injury;
- Installation of a tsunami warning system and definition of an evacuation route;

- The construction of a tsunami evacuation center;
- Favoring overnight facilities outside of the mapped inundation zone; and
- Improving our knowledge base by completing an assessment of coastal vulnerability to wave overtopping, sea level rise, and extreme wave events for Kalaupapa NHP.

Conclusion

The NPS concludes that the proposed action would not appreciably increase the impacts of coastal hazards associated with tsunamis or “sneaker” waves at Kalaupapa NHP.

Exceptionally large sneaker waves and seismic events capable of generating a tsunami are expected to occur, but precise timing is unpredictable. Sneaker waves may arrive in any season. Winter storm surges during high tides will increase the hazard associated with large waves. The NPS will monitor weather and sea conditions during all seasons and will post additional warnings and increase beach patrols during periods of hazardous sea conditions.

Property along the coastline will be damaged or destroyed in a major seismic event generated locally or regionally. The extent of property damage will depend on the magnitude and location of the event. A local event will be likely to cause greater damage than a distant event. The reduced warning consequent to a local earthquake event would result in greater loss of life due to a shorter notice for evacuation.

Distant seismic events capable of generating a tsunami allow time for warning and evacuation, which will reduce or eliminate hazards to human life and safety. There is no mitigation that can be prescribed for the infrastructure and facilities along the coastline.

While restricted public access to much of the Kalaupapa coastline reduces the risk posed to the public by rogue and seismically induced waves, it is not practicable to prevent people from accessing the coastline within the bounds of the Kalaupapa Settlement.

NPS investments in historic buildings within the potential tsunami inundation zone amount to over \$20,000,000. Furthermore, key administrative buildings, law enforcement, residences, and the archival center would be destroyed by a tsunami event that completely covered the inundation zone depicted by Figure E. The loss of administrative centers (NPS and DOH), the law enforcement buildings and safety equipment/first aid supplies, and other key facilities would cripple short-term and long-term operations within Kalaupapa NHP.

The primary response by the NPS to reduce harm of potential tsunamis on human life would be to:

- Post warning signs describing the hazards and evacuation procedures in the case of a major local event;
- Undertake tsunami warning and evacuation procedures consistent with the directions given by local emergency services agencies;
- Construct an evacuation center outside of the maximum inundation zone;
- Clearly mark an evacuation route to higher and safer grounds beyond the safety inundation zone; and
- Participate in Kalaupapa-specific, islandwide, and regional exercises to prepare for future tsunami events.

Adverse impacts to property, safety, and human life are likely to occur from unpredictable seismic events over the long term, but there is no practicable way to avoid these impacts and continue to meet other legal obligations for providing access to the settlement and adjacent

coastal zone. There are no practicable, hazard-free, alternative locations for visitor facilities other than existing historic structures whose purpose is to facilitate access and educate visitors about the history of Hansen's disease on the isolated peninsula encompassing Kalawao and Kalaupapa. Therefore, the National Park Service finds the proposed action to be acceptable under Executive Order 11988 for the protection of floodplains.

References

Church, J. A. and N. J. White.

2011 Sea-level rise from the late 19th to the early 21st Century. *Surveys in Geophysics*, doi:10.1007/s10712-011-9119-1.

Firing, Y. L. and M. A. Merrifield.

2004 Extreme sea level events at Hawaii: Influence of mesoscale eddies, *Geophysical Research Letters*, 31: L24306, doi:10.1029/2004GL021539

Loomis, G. H.

1976 *Tsunami Wave Run-up Heights in Hawai'i*. Hawai'i Institute of Geophysics, Joint Tsunami Research Effort, Pacific Marine Environmental Laboratory, Environmental Research Laboratories, NOAA. Honolulu, HI: University of Hawai'i at Manoa.

Walker, D. A.

2008 "Tsunamis in Hawai'i." An informational poster prepared by the Tsunami Memorial Institute, Haleiwa, HI.

APPENDIX F: WILD AND SCENIC RIVER ANALYSIS

The Wild and Scenic Rivers Act of 1968 resulted in the Nationwide Rivers Inventory—a listing of more than 3,400 free-flowing river segments in the United States that are believed to possess one or more special natural or cultural values judged to be rare, unique, or exemplary within a region of comparison. Free-flowing condition and possession of these river-related or river-dependent outstandingly remarkable values (ORVs) form the basis for describing a river as eligible for listing as a “Wild and Scenic River.”

Rivers are also classified as Wild, Scenic, or Recreational based on the level of human impact they have experienced. In general, rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted, are classed as Wild rivers. Scenic rivers or sections of rivers are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads. Recreational rivers are rivers or sections of rivers readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Purpose and Scope

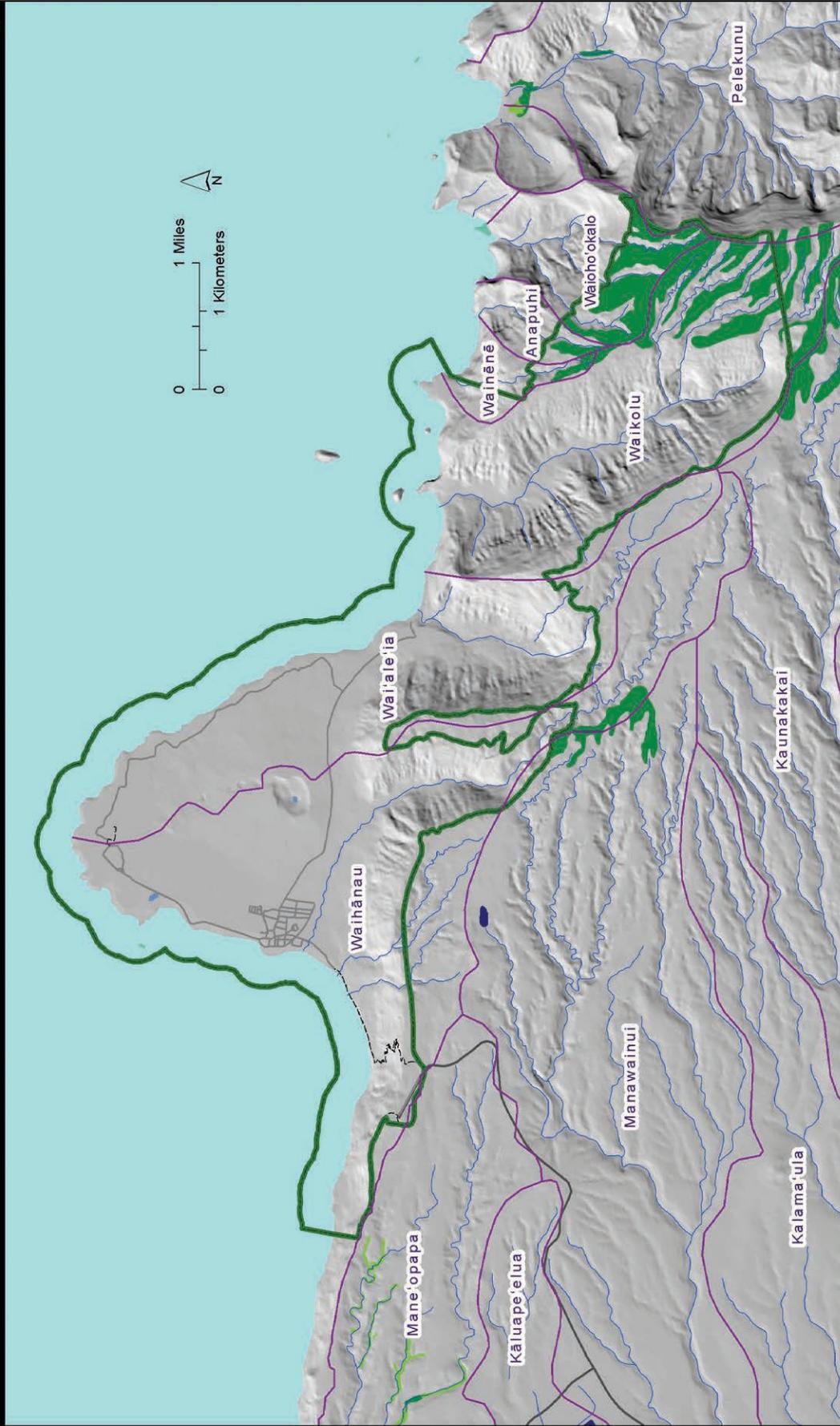
In 1990, the Hawai'i Stream Assessment documented, analyzed, and made recommendations about streams throughout the Hawaiian Islands, including Waikolu Stream in Kalaupapa NHP. In 1993, Waikolu Stream and other Molokai North Shore rivers (Pelekunu and Wailau) were listed within the National Rivers Inventory as eligible for Wild and Scenic classification. The National Rivers Inventory states that Waikolu contains outstandingly remarkable values of *scenery, fish, and wildlife*. Waikolu was tentatively classed as both Wild and Scenic based on the degree of existing development.

The first purpose of this report is to update past eligibility findings based on new information and changes that have occurred since 1993, and on new guidance and criteria developed and adopted by the Interagency Wild and Scenic River Coordinating Council. The second purpose is to lay the groundwork for a more detailed analysis of suitability during the lifetime of this GMP. See Figure F: Aquatic Ecosystems.

Waikolu Watershed

Moving from the dry west to the east end of the island of Molokai, Waikolu is the only stream with a perennial watercourse that maintains running water through the dry season. It is also the only perennial stream within the boundary of Kalaupapa NHP. Other streams within the park may have perennial seeps and pools, but do not maintain flow throughout the year to enable the designation as a perennial stream. The Hawaiian meaning of Waikolu, “three waters,” is in reference to its three major tributaries.

The Waikolu Stream watercourse is deeply entrenched in the floor of Waikolu Valley. It is artificially interrupted by water diversion structures in its upper reaches. The valley, like most north shore Molokai streams, is wide at the mouth and narrow with steep valley walls in the upper portion. The steep headwaters arise from mountain bogs between Pepeopae and Pu'u



Data Sources:
Wetlands (FWS, 2009),
Rivers and Streams (USGS, 1997)
Watershed Boundaries (GDSI, 1995)

Wetlands
Freshwater Forested And Shrub Wetland
Freshwater Emergent Wetland

Watershed Boundary
Rivers and Streams

Freshwater Pond
Estuarine and Marine Wetland
Lakes

Valleys. The headwater reach drops rapidly to the mid-reach, which has a moderate gradient and numerous small waterfalls and rapids. The mouth of Waikolu Stream consists of a relatively shallow boulder riffle (Brasher 1996, Polhemus 1996). The location of the opening to the sea can change as winter storms rearrange the boulder rampart at the shoreline.

Four miles of the stream are considered eligible for listing. The area of the watershed is 4.7 square miles, with a maximum elevation of 4,275 feet. Most of the Waikolu watershed occurs on State of Hawai'i Department of Land and Natural Resources lands (82.7%) within Kalaupapa NHP, while the remainder is under private ownership by the Nature Conservancy (9.7%).

Waikolu Stream Management

The entire Waikolu watershed is under conservation management by the NPS, DLNR, and the Nature Conservancy through a cooperative agreement (DAR 2008).

The Waikolu watershed incorporates the Pu'u Ali'i National Area Reserve. The State of Hawai'i DLNR and Division of Forestry and Wildlife are responsible for the National Area Reserve System, which is managed according to Hawai'i Administrative Rules (HAR) Title 13, Chapter 209.

The NPS, DLNR, and the Nature Conservancy collaborate on the management of the watershed. The construction of large feral ungulate exclosures and wingfences for the management of problem animals is a joint venture between partner organizations. Partners continue to work together to maintain low numbers of goats and pigs over much of the landscape and to eradicate animals from exclosures for the protection of the rainforest. The prevention of soil surface disturbance and recovery of vegetation reduces erosion and the transfer of sediments along the Waikolu watercourse, thus improving water quality.

Water diversions remain one of the major impacts to the Waikolu system. Upper Waikolu Stream has been diverted for irrigation and human use by the Molokai Irrigation System (MIS) since November 1960. Water taken from Waikolu Stream is transported through the 5.1-mile Waikolu Tunnel for use in the western and southern portions of Molokai (Brasher 1996). Three surface water diversion structures exist at approximately 1,000 feet in elevation; two diversions occur on tributaries to Waikolu Stream and one on the main stream. There is also a surface water diversion structure at 730 feet, which collects and pumps water up to the Waikolu Tunnel. The MIS diverts roughly 4.5 million gallons per day (Way et al. 1998). Six wells have been drilled, five in the valley and one in the tunnel (Brasher 1996); however, their current operational status is unknown.

Eligibility Analysis

The Wild and Scenic Rivers Act has two requirements for eligibility: the river segment must be free-flowing and possess one or more outstandingly remarkable value in *fish, wildlife, geology, recreation, scenery, history, culture*, or other similar value. This section reexamines the current listing of Waikolu's eligibility for free-flowing condition and outstandingly remarkable values of scenery, fish, and wildlife that are listed on the National Rivers Inventory. This section also provides new information and analysis about the river's historical and cultural context.

Free-flowing Condition

"Free-flowing" is defined in section 16(b) of the Act as: existing or flowing in natural condition without impoundment, diversion, straightening, riprapping, or other modification of the waterway. However, the existence of low dams, diversion, and other minor structures does not

bar Waikolu's eligibility as a wild and scenic river. Considerable research about the effects of water removal on the hydrology has been completed for Waikolu.

Three stream gauges were recently operating on Waikolu Stream. A single gauge was in the upper reach of Waikolu Stream at an altitude of 900 feet. Another gauge was maintained on Waikolu Stream below the pipeline crossing at 252 feet from 1919 to 1996. A third gauge operated in the Molokai Tunnel east portal from 1966 to 2002.

Daily discharge is monitored at the three stations along the stream course. There are often high peaks in the mean daily flows. Base flows at the gauging station near the mouth of Waikolu Stream ranged from 9.89 to 30 cubic feet per second (cfs) during the rainy season and less than 9.89 cfs during the dry season (Kondratieff et al. 1997).

Temperature measurements taken at three gauging stations on Waikolu Stream increased slightly between 1969 and 1898. Polhemus (1996) found that water temperatures along the main channel of Waikolu Stream ranged from 64.4 degrees Fahrenheit at 590 feet to 69.8 degrees at 262 feet. The water temperature in the spring-fed tributaries was slightly colder, measured as 66.2 degrees (Polhemus 1996). From 1969 to 1985, the lower and middle stations experienced a drop in pH. During this period, the State of Hawai'i Water Quality Standards upper limit for pH levels in surface water resources was exceeded nine times (DeVerse and DiDonato 2006).

Water diversion has altered the natural base flow of the stream. The lower reach maintains continuous flow due to intermediate surface runoff and groundwater accretion. In contrast, intermediate reaches below the diversion are dry for most of the year. It has been estimated that the intermediate reaches of Waikolu Stream carry only 50% of the natural undiverted flow conditions, while the lower reaches carry 70% (Brasher 1996); however, the accuracy of these estimates may be in question due to the short duration of these studies.

The instantaneous measurements of discharge at the upper level intake are generally higher (mean = 3.9 cfs) than at the station just below it (mean = 2.7 cfs) and much lower than the lowest elevation station (10.4 cfs) (DeVerse and DiDonato 2006). The impact of water withdrawals by the diversions is also dependent on the amount of stream flow. The diversions have the greatest hydrological impact on low flows, with levels of depletions reaching 50%, and the least impact on very high flows (Diaz et al. 1995).

Historic data indicate that before the stream was diverted, periods of high flow greater than 10.6 cfs occurred in the winter and spring, followed by drier periods of greater than 4.9 cfs in the summer and fall. Once the MIS became operational, there was a reduction in flow for all months.

Concerned about the potential impacts of water diversion upon the native amphidromous fauna in Waikolu Stream, the NPS Water Resources Division and DLNR initiated a project to demonstrate the impact of the diversions and well pumping on the natural flow regime of the stream (NPS 1996). As stated above, Water Resources Division collected discharge data at two locations on Waikolu Stream between 1993 and 1996. Immediately downstream of the lower-most diversion, the lowest and highest daily mean discharge collected during this time period was 0.12 and 149 cfs, respectively. Above the upper-most surface water diversion, the lowest and highest daily mean discharge was reported as 0.3 and 63 cfs, respectively.

Brasher documented microhabitat and substrate composition for certain sections or stations of Waikolu Stream (Brasher 1996, 1997a, 1997b). In and just below the diverted section in Waikolu Stream, 93% of the macrohabitat at sampling stations was classified as "pool," indicating negligible flow through the section during the period of study. Boulders were the most common substrate.

The distribution patterns of freshwater gobies provide some evidence of the influence of altered hydrology on the aquatic ecology of Waikolu Stream. *Awaous guamensis* was observed in the upper stations of Waikolu Stream above the diversion. Brasher suggested that the lack of fish in this area may be due to restricted upstream movement by the two dams and the reduction of flow (Brasher 1996). In Hawai'i, *Lentipes concolor* typically increase in abundance with increasing distance upstream; however, *L. concolor* were more abundant in the lower reaches of Waikolu Stream, and less abundant in the higher reaches, especially above the diverted section. Brasher suggested that the lower number of *L. concolor* in the mid and upper reaches of Waikolu Stream may be a result of the decreased flow and periodic dewatering of the stream section below the upper dam, reducing available habitat for the gobies and inhibiting upstream migration (Brasher 1996).

Outstandingly Remarkable Values

An Outstandingly Remarkable Value (ORV) is defined as a river-dependent feature that is unique, rare, or exemplary at a comparable regional or national level. Typically, a "region" is defined on the scale of an administrative unit, a portion of a state, or an appropriately scaled physiographic or hydrologic unit. To be considered river-dependent, a value must be in the river or on its immediate shorelands and contribute substantially to the functioning of the river ecosystem or owe its location or existence to the presence of the river.

Scenery

The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features and/or attractions. When analyzing scenic values, additional factors, such as seasonal variations in vegetation, scale of cultural modifications, and the length of time negative intrusions are viewed may be considered. Scenery and visual attractions may be highly diverse over the majority of the river or river segment.

The narrow watercourse hemmed in by steep cliffs clothed in verdant vegetation is the primary contributor to Waikolu's scenic character. Much of the higher-elevation vegetation within the bogs that feed Waikolu Stream remains native. The structure of the vegetation including ferns, sedges, shrubs, and trees clothed in mosses and lichens is characteristic of the dwindling native rainforests of Hawai'i. The rainforest is within a Natural Area Reserve managed by the State DLNR.

The Pu'u Ali'i NAR is considered an outstanding example of a Hawaiian montane wet forest or *Metrosideros* ('ōhi'a) forest (NPS 2007). Five natural vegetation communities have been identified in the Pu'u Ali'i NAR. These include *Metrosideros*/Mixed Shrub Montane Wet Forest, *Metrosideros* Montane Wet Shrubland, Mixed Fern/ Mixed Shrub Montane Wet Cliffs, *Metrosideros/Cheirodendron* ('ōlapa) Montane Wet Forest, and *Metrosideros/Dicranopteris* (uluhe) Montane Wet Forest (Hawai'i Natural Heritage Program 1989).

Roughly 160 plant species were documented in the Pu'u Ali'i NAR in 2003 (Wood and Hughes 2003). Seventy percent of these species are considered endemic to Hawai'i. At least 43 new plant records have been surveyed and documented for the NAR (Wood et al. 2005). Approximately 34 species within the NAR and surrounding area are considered rare plant taxa. The Pu'u Ali'i Management Plan defines a species as rare "if it is known from 20 or fewer locations worldwide, or fewer than 3,000 individuals." Of these, 10 have been confirmed within the reserve boundary.

Apart from the contribution of vegetation to the scenic ORV, the valley has a unique topography and drainage structure compared to the nearby Pelekunu and Wailau Valleys (Diaz et al. 1995). The steep headwaters arise from mountain bogs between Pepeopae and Pu'u Ali'i just above an elevation of 4,000 feet on the interfluvium that separates Waikolu and Pelekunu Valleys.

The headwater reach drops rapidly to the midreach (at 1,650 feet in elevation), which has a moderate gradient and numerous small waterfalls and rapids. The mouth of Waikolu Stream consists of a relatively shallow boulder riffle (Brasher 1996, Polhemus 1996). The location of the opening to the sea can change as winter storms rearrange the boulder rampart at the shoreline. The water that originates from the bogs feeds the numerous tributaries that cascade over towering cliffs to eventually form the main stem of Waikolu.

Fish

Fish values may be judged on the relative merits of fish populations, habitat, cultural use, recreational importance, or a combination of these river-related conditions.

Characteristic macrofauna of Hawaiian streams include five species of goby fishes: *Awaous guamensis* (o'opu nakea), *Sicyopterus stimpsoni* (o'opu nopili), *Lentipes concolor* (o'opu alamo'o); and the eleotrids *Eleotris sandwicensis* (o'opu akupa) and *Stenogobius hawaiiensis* (o'opu naniha). Two gastropods, *Neritina granosa* (hīhīwai) and the estuarine *Neritina vespertina* (hapawai), are common in many East Maui, Hawai'i, Molokai and Kaua'i streams. The shrimp *Atyoida bisulcata* (ōpae kalaole) inhabits the middle and upper reaches of pristine mountain streams statewide. The Hawaiian prawn *Macrobrachium grandimanus* (ōpae 'oeha'a) inhabits estuaries and the terminal reaches of streams.

All of these species share the same life history strategy referred to as amphidromy. All the Hawaiian amphidromous species exhibit 'freshwater amphidromy' where spawning takes place in freshwater, and the newly hatched larvae are swept into the sea by stream currents. While in the marine environment, the larvae undergo development as zooplankton before returning to freshwater to grow to maturity.

The lower reaches of Waikolu Stream contain a dense and diverse assemblage of native macrofauna. This portion of the stream provides habitat for all five native amphidromous fish species. Overall, Waikolu Stream has one of the highest densities of stream gobies in the Hawaiian Islands, with total fish densities approaching four to eight individuals per square meter (Brasher 1996, 1997a).

Wildlife

Wildlife values may be judged on the relative merits of either terrestrial or aquatic wildlife populations, habitat, cultural uses, recreational importance, or a combination of these conditions. Of particular importance are species considered to be unique, and/or populations of federal- or state-listed (or candidate) threatened endangered or sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of "outstandingly remarkable."

Rare insect invertebrates can be found along the Waikolu watercourse. *Megalagrion pacificum* and *Megalagrion xanthomeles* (listed as an endangered species by the U.S. Fish and Wildlife Service) have been recorded from Waikolu Stream. *Megalagrion nigrohamatum* nigrohamatum, a Species of Concern, has also been documented in Waikolu Stream. Waikolu also supports a dense population of the native Hawaiian stream snail *Neritina granosa*, which can be uncommon in some streams due to overfishing or other causes.

The vegetation communities of the Waikolu watershed are dominated by native plants (as described in the "Scenery" section) and provide essential habitat for native forest birds, including rare and endangered species (NPS 1997). Six native forest birds have historically been recorded in Pu'u Ali'i NAR and the vicinity. Three are currently protected by federal or state law. More common native forest birds that have been recorded in the NAR include

Himatione sanguinea ('apapane), *Hemignathus virens wilsoni* (Maui 'amakihī), and *Asio flammeus sandwichensis* (Hawaiian short-eared owl or pueo).

History

Historic values of a water system may contain sites that are associated with a historically important event, an important person, or a cultural activity of the past that was rare or one-of-a-kind in the region.

Being the only dependable, year-round stream of fresh water in the vicinity of the Kalaupapa area, Waikolu Valley was extremely important to the Kalawao and Kalaupapa Settlements from 1866 through the 1980s. For the newly arrived exiles to Kalawao, access to fresh potable water was a significant challenge from the very beginning, and there was rarely an adequate supply. With no freshwater springs nearby and no water transportation system in place, water for cooking and drinking had to be carried long distances in containers from Waikolu Stream. In the early years, patients often went thirsty. Scarcity of water contributed to unsanitary living conditions. There was not enough water for basic hygiene, cooking, or washing clothes and soiled bandages (BOH Appendix M 1886b: cxiii; BOH Appendix N 1886b: cxxv). For patients in advanced stages of leprosy, the mile-long trek one-way on foot to Waikolu Stream was difficult and next to impossible given their medical condition, especially if they did not own a horse.

When Father Damien arrived in May of 1873, he quickly realized the water supply problem would have to be solved if improvements were to be made in living conditions. The Board of Health had already been considering the idea of laying pipes from Waikolu to Kalawao, but this would be expensive. Seven years after the settlement's establishment in summer of 1873, the Board of Health provided pipe for the first water system at Kalawao. Patients and kōkua helped to lay the pipe from Wai'ale'ia, an intermittent stream close to Kalawao, and built a rock-lined water cistern at Kalawao.

In addition to water, the settlement depended on the cultivation of kalo (taro) as an essential food. Father Damien understood the importance of diet on the effects of the disease. He saw that while the food in the settlement was of poor quality, that kalo seemed the easiest food to digest. Furthermore, he was aware of how important kalo was to the early community; he noted not only the nutritional aspect, but also an emotional attachment to the crop.

In 1877, Puna wrote about Waikolu:

A wide and cool stream leads to the ocean from the foot of the dark green mountains. We follow its course when we get there, below the steep hills, on horseback or by foot. We go down below the palis [between Kalawao and Waikolu] every Wednesday to get our share of hard poi. When I first went below the pali I was filled with fear lest the stones fall down, for if you go and look upward the pali top juts over above as though you are going through a cave. I held in my dread. Our store house (for the Leper Colony) is situated at this place (Puna 1877 from Summers 1971: 185).

In 1891, pressure was put on the Board of Health to allow further kalo cultivation and settlement in Waikolu. Waikolu Valley was the host of much of the kalo cultivation to the settlement until at least 1905 and would be known as Waikolu Taro Plantation (Greene 1985: 207).

While the cistern at Kalawao was sufficient for about 10 years, a growth in the patient population in the mid-1880s proved taxing to the water system. The Wai'ale'ia and the Waihānau streams no longer provided enough water for an ever-growing community of patient settlers. The Board once again weighed the possibility of bringing in water from Waikolu Valley.

The distance was much farther but Waikolu was a perennial stream. At first, water from Waikolu was piped from Notley Springs on the eastern slope of the pali.

Initially, the Waikolu pipeline only went to Kalawao. But as demands increased, the pipeline was extended to Kalaupapa and enlarged from a four-inch pipe in the 1880s to an eight-inch pipe in 1894. For protection, the eight-inch pipe was buried underground whenever possible, going down the pali, across Waikolu Valley, then running west at the base of the pali along the boulder beach, across and up the gulch and onto the Kalawao end of the peninsula.

Maintaining the pipeline to Waikolu was plagued with problems that went on for nearly 100 years. The pipeline was battered by natural elements—winter storms, falling rocks from the pali above, and landslides triggered by earthquakes. Broken joints and smashed pipes constantly needed repair. There was no backup, and the settlement did not have a source of water during emergencies. In 1894, the Board recommended construction of a reservoir to supply water to the settlement during such times. Two stone reservoirs (50,000 and 150,000 gallons) were built on high ground between Kalawao and Kalaupapa. Both reservoirs are still intact.

From 1908 to 1948, several extensions and modifications were made to the water system. In 1908, the United States Leprosy Investigation Station (UCLIS) was established at Kalawao, and a pipeline extension to the head of the valley was constructed where it connected to an old 'auwai (irrigation ditches) system for lo'i kalo (wetland taro). At this time, the Notley reservoir system consisting of three catch basins was enlarged. In 1912, the Board extended the water line further up the valley to connect with an old 'auwai at 2,200 feet to ensure a reliable water supply. Thinking that ditch water was unsanitary, the Board felt that a flume would provide cleaner water, so a wooden flume was built and reached 2,800 feet up the valley (NPS 1998-1999:8). In 1931, a 750,000-gallon tank was constructed that increased the storage capacity to over one million gallons of water (NPS 1998-1999:7-8). In 1937, the Waikolu water system was overhauled and reconstructed. The new system utilized updated features (concrete Hume pipes and cast-iron pipe instead of wood flumes) that greatly improved the quality of the water to the settlement. The new system also included an updated water intake. In 1948, the Waikolu water system was lengthened one last time. The head reaches about 560 feet in elevation, 5 miles from Kalaupapa. This time, the intake drew water from main Waikolu Stream. This system was used until the 1980s.

In the late 1960s, the beach portion of the pipeline was dug up and mounted on concrete trestles. To provide access for repairs and facilitate travel across the rough boulder beach, a wood walkway was built over the trestles. Over time, this arrangement proved to be unsatisfactory. The pipeline was now even more exposed to falling rocks, landslides, and storms, and the need for repairs increased. In the 1970s, PVC pipe was used for quick repairs, but the plastic pipe could not hold the waterline pressure. A good solution for protecting the Waikolu pipeline across the boulder beach segment was never found (NPS Report 1998-1999:5-6).

In 1980, Kalaupapa NHP was established, and one of its mandates was to “provide a well-maintained community,” which involved ensuring a reliable and well-maintained water system.

Instead of Waikolu Stream, Waihānau was chosen for the site of a new well that was completed in 1983. A second well was added in 1985. Today, the Kalaupapa water system relies on water from Waihānau Valley instead of Waikolu.

Site Integrity

The Waikolu water pipeline components and access road are in good condition; much of the remaining pieces are unmodified and retain original character. A dam at Waikolu Stream is also

in good condition; it is unmodified and retains its original character. These historic features are the only examples of the important water system to the Kalaupapa Leprosy Settlement National Historic Landmark (NHL).

Terraces for kalo cultivation associated with the leprosy settlement period in Waikolu Valley exhibit two construction styles. The first is native Hawaiian construction and the second is thought to be done by Chinese immigrant cultivators. The terraces are unmodified, retain their original character, and are in very good condition. Furthermore, these terraces are exceptional examples of kalo terraces within this region (Kirch 2002).

Educational or Interpretive Opportunities

The kalo terraces and water pipeline components at Waikolu reveal the unique history of the Kalaupapa leprosy settlement. The features have high integrity and exhibit several aspects of life at Kalaupapa that could be interpreted for the public. These include the needs of the community, the Board of Health's responses to the community's need for water, the engineering structures to convey water in the early periods, and the hard work and hardships experienced by patients in ill health. Hiking the trek to Waikolu illustrates the difficulties that the early patients had to endure. Other educational and interpretive opportunities could be more hands-on through site stabilization projects on the kalo terraces.

Designations

The Waikolu Stream, water pipeline, and archeological features contribute to the Kalaupapa Leprosy Settlement NHL.

The water pipeline components at Waikolu are directly associated with the leprosy settlement period and are characteristic of an impressive water system that was the only reliable source of water to the peninsula for decades. The water pipeline components are eligible for listing on the National Register under criteria A and C.

The kalo terraces are eligible for listing in the National Register under criteria A, C, and D. They are associated with the leprosy settlement. There are at least two styles of construction in the corridor that show impressive utilization of the resources. There is a recognized opportunity for these terraces to yield more data, not only about kalo cultivation, but also about life in the Waikolu Valley and the similarities and differences between Hawaiian cultivators and immigrant cultivators.

Culture

Cultural values include sites, events, and related factors contributing to notable or important cultural features or attractions within the region. Cultural sites associated with Native Hawaiians may be highly diverse along the majority of the river corridor.

Waikolu contains evidence of pre-contact habitation, which includes sacred places, mo'olelo (a story, tale, myth or legend), and agriculture. Waikolu means "Three Waters" or "Triple Water," and Kili'o'opu is the name of its wind (Summers 1971: 185). Waikolu is an ahupua'a that is composed of a narrow valley and bounded by two sharp points of land and three small islets. In the mid-1850s, voyaging naturalist M. Jules Remy toured the island of Molokai and described Waikolu as "a village situated at the opening of a valley which marked, to the west, the limit of the insurmountable pali of Moloka'i." In 1931 Arning said "In crossing the Pali between Kalawao and Waikolo [sic] the natives deposited oval stones on the dangerous hills. This custom was, during my stay, still rigidly observed" (Arning 1931 from Summers 1971:185). These early written descriptions provide a glimpse of native Hawaiian life in the Waikolu Valley and adjacent area.

Several different types of archeological features exist in Waikolu and are evidence of ongoing habitation and agriculture in pre-contact Hawaiian history. These include heiau (Hawaiian pre-Christian places of worship or shrines), lo'i kalo, and a variety of other archeological features. "The valley and its sites exemplify the extremes of windward valley adaptation in the Hawaiian archipelago" (Kirch 2002:46).

There are three heiau that were noted to be at Waikolu. One heiau, 'Ahina, has been located. The other two heiau have not been located, even with efforts in 1909 by Stokes of the Bishop Museum. Stokes was unable to gather information on the second heiau, Ka'aiea. The other heiau, Moa'ula, is described in 1909 as being "out of human reach" high up on the pali and is credited as being built by "Menehunes" (Stokes 1909).

Prior to 1866, Hawaiians utilized water from Waikolu Stream to support the many lo'i kalo on the terraced mountain slopes of Waikolu Valley. A charcoal sample from a stratigraphic layer interpreted as being associated with human occupation dates from the period 1200–1290, which corresponds to the Early Expansion Period in terms of island chronology. See Kirch (2002) and McCoy (2007) for further information.

Also part of Waikolu ahupua'a are two points. The first is called Leinapapio. It is described by Coelho:

This place was famous for this is where the people learned to leap over the cliffs in the olden days. From Huelo [an island] came the loulu palm leaves which were woven into hammocks, like the thick floor mats. A man was laid thereon and was tossed into the sea. This game was somewhat like the darts made of pieces of heavy paper by the children. The first Hawaiian who originated this game of leaping off the cliff, like an aeroplane, was Papio. Because the game was such fun, the pali was named Leinapapio, that is Papio's leaping place...a place from which Papio leaped (Coelho 1922 from Summers 1971: 185-186).

The other point is Kuka'iwa'a, which is a vast archeological landscape but largely unrecorded. The archeology site types include platforms, mounds, terraces, enclosures with several possible functions, including heiau, ko'a and ku'ula, and burial sites (NPS Field Notes 2009). Ko'a are fishing grounds, usually identified by lining up with marks on shore or a shrine, often consisting of circular piles of coral or stone, built along the shore or by ponds or streams and used in ceremonies to make fish multiply (Pukui and Elbert 1986: 156). Ku'ula, which is any stone god used to attract fish, whether tiny or enormous, carved or natural, are named for the god of fisherman and are heiau near the sea for worship of fish gods (Pukui and Elbert 1986: 187). The area is currently targeted by the NPS for native outplanting sites.

The islets in the ocean off Waikolu are known as the "Rocks of Kana," and their presence is described in mo'olelo, see Fornander (1916-1917: 444, 446).

Although not yet fully inventoried, Waikolu is remote and isolated, and it is presumed that a high level of intact archeology is in good condition showing a wide variety of site types enabling better understandings of Native Hawaiian life in the north shore valleys.

Current Use

Waikolu Stream is important to Native Hawaiians today because of the ability to perform traditional cultural practices. It is also important because of its rich landscape of cultural sites and mo'olelo. At present, it is protected and rarely visited because of its remote location and because of DOH rules for visitors to the Kalaupapa Settlement. There is some limited use by Kalaupapa workers for gathering plants and fishing both in the ocean and the freshwater stream.

There is also limited and infrequent use by hunters in the upper reaches of the valley.

Site Integrity

There are extensive sets of formerly irrigated lo'i kalo on both sides of Waikolu Stream, exhibiting distinctly Hawaiian architectural construction. The Hawaiian construction terraces are unmodified and retain their original character; they also are exceptional examples of this site type in the region and are in good condition.

The heiau site named 'Ahina, first recorded by Stokes in 1909, is still present. The main terrace wall is well-constructed but covered in vegetation (Kirch 2002). A stabilization project to remove invasive vegetation with a cultural cyclic maintenance plan would keep vegetation away. The heiau is unmodified and retains its original character; it is in good condition and provides an example of valley heiau within the region.

Educational or Interpretive Opportunities

There is an opportunity to share Native Hawaiian traditions and practices at Waikolu with student groups, Native Hawaiian organizations, and those seeking an in-depth visit to Kalaupapa NHP. Archeological investigations and stabilization projects at Waikolu would illustrate how early Hawaiians lived in the remote valleys, as well as assist the NPS archeology program. Hands-on educational and interpretive opportunities could be afforded through site stabilization projects targeting 'Ahina Heiau and the kalo terraces.

Designations

Nearly all of the archeology associated with the Kalaupapa Settlement and within the Kalaupapa NHP contributes to the NHL designation.

'Ahina Heiau, the kalo terraces, and other archeological resources are eligible for listing in the National Register under criteria C and D. They are characteristic of specific and distinct Hawaiian construction and provide prime opportunities to yield more data about early occupation of Waikolu Valley.

Waikolu Valley, like the rest of Kalawao County, is incredibly important to native Hawaiians and the resident patient community. The valley has been accessed for subsistence living from the first inhabitants through today. Because there was a displacement period of the native kama'āina, there is great interest in providing opportunities for people to re-connect to this landscape, especially since the mo'olelo and archeological sites are so intact with a high degree of integrity. For this reason, it is likely that an in-depth look at the cultural importance of the valley would reveal eligibility for designation as a Traditional Cultural Property.

Classification
In the 1993 listing of Waikolu Stream on the National Rivers Inventory, Waikolu Stream was classified as both Wild and Scenic. This report supports the continued classification of Waikolu Stream as both Wild and Scenic.

Conclusions

The three main steps involved in a Wild and Scenic River study are eligibility, classification, and suitability analysis.

The eligibility analysis is a resource inventory and evaluation to determine if the river is free-flowing and possesses one or more outstandingly remarkable value. This document verifies the initial evidence leading to the 1993 listing of Waikolu as eligible for designation as a Wild and Scenic River based on *scenery*, *fish*, and *wildlife* as outstandingly remarkable values.

The majestic topography composed of perched bogs bisected by deep ravines and broken by cascading waterfalls is reason enough for identifying scenery as an ORV. The native rainforest and bog communities enhance the scenery and provide habitat for rare birds, supporting the addition of wildlife as an additional ORV for Waikolu.

Aquatic biologists in Hawai'i consider the presence of native amphidromous species as an indicator of outstanding environmental quality. The presence of five native amphidromous fish and one mollusk at relatively high densities indicate favorable aquatic conditions. Furthermore, the presence of invertebrates considered rare or indicative of high water quality (DAR 2008) are testament to favorable aquatic conditions (despite water diversions) and the establishment of fish as an ORV. The 2008 DAR study supports the identification of Waikolu as a "Priority Aquatic Site" by the Nature Conservancy, one of the reasons for the 1993 eligibility listing.

Waikolu Stream provided fresh water for human use for over 100 years to the Hansen's disease patient communities at Kalawao and Kalaupapa. The pipeline and engineered water system traversed steep cliffs and rocky surf and travelled for nearly 3 miles from Waikolu to Kalaupapa Settlement. Waikolu Stream and the engineered system to convey the water are largely unmodified and in good condition and are contributing features to the Kalaupapa Leprosy Settlement NHL. These important features support including history as an ORV for Waikolu Stream.

This analysis recommends the addition of culture as an ORV for Waikolu Stream. The lo'i kalo represent the extensive utility of the valley and some of the earliest occupation throughout the Hawaiian archipelago. Because of Waikolu's remoteness and its location within Kalawao County, it has remained relatively untouched and represents an example of valley habitation with high integrity and importance. Waikolu Stream and associated archeological and cultural sites contribute to the Kalaupapa Leprosy Settlement NHL.

The identification of *scenery*, *fish*, *wildlife*, *history*, and *culture* as ORVs supports the continued eligibility of Waikolu Stream, and its existing level of development continues to support the classification of Waikolu as Wild and Scenic. The current lack of public access precludes recreation as an outstandingly remarkable value. Sudden storm-mediated water-flows, coupled with remoteness and rugged topography make recreation dangerous. The difficulty in delivering medical aid in the event of a mishap make it unlikely that recreation activities would ever be developed within Waikolu Valley.

An examination of information, much collected since 1993, supports the continued listing of Waikolu as eligible for designation as a Wild and Scenic River. Final suitability determination is based on an assessment of the characteristics that make the river segments worthy of designation; the ability of NPS and its non-federal partners to manage the river segments to protect their ORVs, water-quality, and free-flow; the compatibility of Wild and Scenic River designation with other potential uses of the river segments; and public support and involvement. An issue facing Waikolu's suitability for Wild and Scenic River designation is future flow management, specifically whether flow-dependent ORVs and water quality can be protected and enhanced in light of community needs for water supply and consequent alterations to the river's natural flow regime. Designation of eligible and suitable river segments into the National Wild and Scenic River System on NPS-managed lands would be decided through a congressional act. The necessary suitability assessment would be completed within the lifespan of the GMP.

References for Wild and Scenic River Analysis

Arning, Edward

1931 *Ethnographic Notes on Hawaii 1883–1886*. Ms., partial translation from the German by Elsa C. Thot. Hamburg.

Brasher, A. M.

1996 “Monitoring the Distribution and Abundance of Native Gobies (‘o‘opu) in Waikolu and Pelekunu Stream on the Island of Moloka‘i.” Cooperative National Park Resources Studies Unit Technical Report 113. Honolulu, HI: University of Hawai‘i at Manoa.

1997a “Habitat Use by Fish (‘o‘opu), Snails (hihiwai), Shrimp (‘opae) and Prawns in Two Streams on the Island of Moloka‘i.” Cooperative National Park Resources Studies Unit Technical Report 116. Honolulu, HI: University of Hawai‘i at Manoa.

1997b “Life History Characteristics of the Native Hawaiian Stream Snail *Neritina granosa* (hihiwai).” Cooperative National Park Resources Studies Unit Technical Report 114. Honolulu, HI: University of Hawai‘i at Manoa.

2003 “Impacts of Human Disturbances on Biotic Communities in Hawaiian Streams.” *BioScience* 53.11 (2003): 1052-1060.

Coelho, W. J.

1922 “A Trip to Moloka‘i.” *Ka Nupepa Ku‘oko‘a, September 14, 1922*. Ms. translation by M. K. Pukui.

Damien, J.

1886 “Special Report from Rev. Father J. Damien, Catholic Priest at Kalawao. Personal Experience During Thirteen Years of Labor Among the Lepers at Kalawao,” March 1, 1886. Ms., Hawai‘i State Archives, Honolulu, HI.

DeVerse, K. and E. DiDonato

2006 “Appendix I: Water Quality Report.” In *Pacific Island Network Vital Signs Monitoring Plan: Phase III* (draft) report, by L. HaySmith, F. L. Klasner, S. H. Stephens, and G. H. Dicus. Hawai‘i National Park, HI: National Park Service, Pacific Island Network.

Diaz, G. E., O. Elbadawy, J. C. Hughes and J. D. Salas

1995 “In Search of Hydrologic Similarity: A Case Study on Molokai, Hawaii.” In *Proceedings of the Summer Symposium, American Water Resources Association*, edited by R. Herrmann, W. Black, R. C. Sidle, and A. I. Johnson. Honolulu, HI.

Fornander, Abraham

1916–17 “Hawaiian Antiquities and folk-lore.” *Bishop Museum Memoirs* 4, Honolulu, HI.

Greene, Linda W.

1985 *Exile in Paradise: The Isolation of Hawai‘i’s Leprosy Victims and Development of Kalaupapa Settlement, 1865 to Present*. Historic Resource Study, prepared for the National Park Service, Denver Service Center, Denver, CO.

Hawai‘i Natural Heritage Program

1989 "Pu'u Ali'i Natural Area Reserve Resource Information, Notebook 1." Prepared for State of Hawaii, Natural Area Reserves System. Hawai'i Heritage Program, The Nature Conservancy of Hawai'i, Honolulu, HI.

Kirch, Patrick V.

2002 From the 'Cliffs of Keōlewa' to the 'Sea of Papaloa': An Archaeological Reconnaissance of Portions of the Kalaupapa National Historical Park, Moloka'i, Hawaiian Islands. Oceanic Archaeology Laboratory Special Publication No.2. Archaeological Research Facility, University of California at Berkeley.

McCoy, Mark D.

2007 "A Revised late Holocene Culture History for Moloka'i Island, Hawaii." *Radiocarbon* 49.3 (2007): 1273-1322.

National Park Service

1996 "Baseline Water Quality Data Inventory and Analysis: Kalaupapa National Historical Park." Water Resources Division. Technical Report NPS/NRWRD/NRTR-96/81 Fort Collins, CO.

1998-99 *Kalaupapa Water Supply System*. Historic American Engineering Record: HAER No. HI-42. Washington, DC: Library of Congress.

2006 Field Notes on Kuka'iwa'a, Jennifer Cerny.

2017 Foundation Statement: Kalaupapa National Historical Park. Kalaupapa, Moloka'i, HI: Kalaupapa NHP.

2008 Field Notes on Kuka'iwa'a, Erika Stein.

Polhemus, D. A.

1996 "The Orangeblack Hawaiian Damselfly, *Megalagrion xanthomelas* (Odonata: Coenagrionidae): Clarifying the Current Range of a Threatened Species." *Bishop Museum Occasional Papers* 45: 30-53.

Pukui, Mary Kawena and Samuel H. Elbert

1986 Hawaiian Dictionary: Hawaiian-English, English-Hawaiian. Revised and Enlarged Edition. Honolulu, HI: University of Hawai'i Press.

Puna, D.

1877 "Sad Sights of the Enclosed Kingdom." *Ka Lahui Hawai'i*, December 6, 1877. Ms. translation by M. K. Pukui.

Remy, M. Jules

1893 *L'Île de Molokai avant la léproserie: journal de M. Jules Remy*. Arcissur-Aube, France: Imprimerie Léon Frémont. Translated by Mildred M. Knowlton for C. C. Summers, Oct. 1975, copy in Bishop Museum Library, Honolulu, HI. Transcribed by Sam 'Ohukani'ōhi'a Gon III, March 2008.

State of Hawai'i, Department of Land and Natural Resources, Division of Aquatic Resources

2008 Freshwater Database.http://www.state.hi.us/dlnr/dar/streams/streams_survey_data.htm>.

State of Hawai'i, Department of Land and Natural Resources, Commission on Water Resource Management

1990 "Hawai'i stream assessment: A preliminary appraisal of Hawai'i's stream resources," by the National Park Service, Hawai'i Cooperative Park Service Unit, Western Region Natural Resources and Research Division, Report R84. Honolulu, HI.

Stokes, John F. G.

1909 *Molokai, Survey of Heiau*. On file at Bishop Museum Archives, Honolulu.

Summers, Catherine C.

1971 "Moloka'i : A Site Survey." *Pacific Anthropological Records* 14. Honolulu, HI: Bishop Museum Department of Anthropology.

Takasaki, K. J.

1986 Results of Exploratory Drilling for Water in Waihānau Valley, Moloka'i, Hawaii. USGS Water-Resources Investigations Report 85-4332, Honolulu, HI.

The Nature Conservancy

2003 *Pelekunu Preserve Long-Range Management Plan, Fiscal Years 2004– 2009*. Moloka'i, HI: Submitted to the Department of Land and Natural Resources, Natural Area Partnership Program.

U.S. Fish and Wildlife Service

2010 "Listing the Flying Earwig Hawaiian Damselfly (*Megalagrion nesiototes*) and Pacific Hawaiian Damselfly (*Megalagrion pacificum*) As Endangered Throughout Their Ranges." *Federal Register* 75: 35990–36012.

2008 "Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions." *Federal Register* 73(238): 75176-75244.

SOURCES

Aruch, S.

2006 Appendix A: Kalaupapa National Historical Park resource overview. In: HaySmith, L., F. L. Klasner, S. H. Stephens, and G. H. Dicus. Pacific Island Network vital signs monitoring plan. Natural Resource Report NPS/PACN/NRR—2006/003 National Park Service, Fort Collins, Colorado.

Bishop Museum

2008 Offshore Islet Project. www2.bishopmuseum.org/HBS/islets/index.asp?faID=957347526.

Brasher, A. M.

2003 "Impacts of human disturbances on biotic communities in Hawaiian streams." *BioScience* 53(11): 1052–60.

Brown, E., K. Kageyama, and R. Watanuki

2008 "Biological Assessment of Marine Resources in Kalaupapa Harbor, Moloka'i, Hawai'i." Natural Resource Report NPS/MWR/HTLN/ NRR—2008/001. Prepared for the National Park Service, Omaha, NE.

Canfield, J. E.

1990 "Description and Map of the Plant Communities of the Northeast Coastal Spray Zone of Kalaupapa National Historical Park." Cooperative National Park Resources Studies Unit Technical Report 71. Honolulu, HI: University of Hawai'i at Manoa.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe

1979 "Classification of wetlands and deepwater habitats of the United States." Prepared for the U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. (Version 04DEC98).

Cullinane Thomas, C., L. Koontz, and E. Cornachione.

2018 2017 National Park Visitor Spending Effects: Economic Contributions to Local Communities, States, and the Nation. Natural Resources Report NPS/NRSS/EQD/NRR-2018/1616. National Park Service, Fort Collins, CO.

Donachie, S. P., R. A. Kinzie III, R. R. Bidigare, D. W. Sadler, and D. M. Karl

1999 "Lake Kauhakō, Moloka'i, Hawai'i: biological and chemical aspects of a morphoectogenic meromictic lake." *Aquatic Microbial Ecology* 19: 93–103.

Duvall, F.

2000 "Report on 2-day biological survey Huelo Islet: Vertebrates." Draft report prepared for the Department of Land and Natural Resources, Kahului, Maui, HI.

Evenhuis, N. L. and L. G. Eldredge, eds.

1999 "Records of the Hawai'i Biological Survey for 1998: Part 2: Notes." *Bishop Museum Occasional Papers* 59: 1–55.

Firing, Yvonne L. and Mark A. Merrifield

2004 "Extreme sea level events at Hawai'i: Influence of meso-scale eddies." *Geophysical Research Letters* 31(24): L24306, doi:10.1029/2004GL021539.

Frasher, H. R., V. Parker-Geisman, and G. R. Parish

2007 "Hawai'ian Hoary Bat Inventory in National Parks on the Islands of Hawai'i, Maui, and Moloka'i." Pacific Cooperative Studies Unit Technical Report 140. Honolulu, HI: University of Hawai'i at Manoa.

Fung Associates Inc. and SWCA Environmental Consultants

2010 "Assessment of Natural Resources and Watershed Conditions for Kalaupapa National Historical Park." Natural Resource Report NPS/NPRC/WRD/NRR—2010/261. Prepared for the National Park Service, Fort Collins, CO.

Funk, E. J.

1991 "Vegetation Map of Kalaupapa National Historical Park, Moloka'i, Hawai'i." Technical Report 77, Cooperative National Park Resource Studies Unit. Honolulu, HI: University of Hawai'i at Manoa Department of Botany.

Gagné, W. C. and F. G. Howarth

1982 "Assessment of endangered and threatened status of Hawai'ian arthropods." Report to the U.S. Fish and Wildlife Service, Honolulu, HI.

G K & Associates

1991 "Environmental Assessment for Boulder Removal Project, Waihānau Stream, Kalaupapa National Historical Park, Moloka'i, Hawai'i." Prepared for Edward K. Noda and Associates, Inc., Honolulu, HI.

Halliday, W. R.

2001 "Caves and cavernous features of Kalaupapa Peninsula," Hawai'i Speleological Survey of the National Speleological Society, Report #01-1.

Hawai'i Natural Heritage Program

1989 "Pu'u Ali'i Natural Area Reserve Resource Information, Notebook 1." Prepared for State of Hawaii, Natural Area Reserves System. Hawai'i Heritage Program, The Nature Conservancy of Hawai'i, Honolulu, HI.

Hughes, G. D., K. R. Wood, M. L. Wysong, and E. K. Brown

2007 "Kalaupapa National Historical Park, Vascular Plant Inventory, Kalawao, Moloka'i, Hawai'i." Report for the National Park Service Inventory and Monitoring Program, Pacific Island Network, Hawai'i Volcanoes National Park, HI.

Kondratieff, B. C., R. J. Bishop, and A. M. Brasher

1997 "The life cycle of an introduced caddisfly, *Cheumatopsyche pettiti* (Banks) (Trichoptera: Hydropsychidae) in Waikolu stream, Moloka'i, Hawai'i," *Hydrobiologia* 350: 81-85.

Kraus, F.

2005. "Inventory of Reptiles and Amphibians in Hawai'i Volcanoes, Haleakala, and Kalaupapa National Parks." Contribution No. 2005-013 to the Hawai'i Biological Survey. Prepared for Pacific Cooperative Studies Unit, University of Hawai'i, Honolulu, HI.

LeGrande, M.

2002 "Survey of Kukaiwaa Peninsula, Kalaupapa National Historical Park, Moloka'i, Hawai'i." Special Report Prepared for Kalaupapa National Historical Park, Molokai, HI.

Linney, G.

1987 "Botanical survey of Kauhakō Crater, Kalaupapa National Historical Park, Moloka'i." National Park Service, Kalaupapa NHP files, Molokai, HI.

Maciolek, J. A.

1975 "Limnological ecosystems and Hawai'i's preservational planning," *Intl. Ver. Theor. Angew. Limnol. Ver.* 19:1461-67.

1982 "Lakes and lake-like waters of the Hawai'ian archipelago," *Occasional Papers of Bernice P. Bishop Museum* 25:1-14.

Marshall S., G. Hughes and K. Kozar

2008 "Small, Non-native Mammal Inventory in Kalaupapa National Historical Park," Technical Report 158, Pacific Cooperative Studies Unit. Honolulu, HI: University of Hawai'i at Manoa.

McKeown, Sean

1996 A Field Guide to Reptiles and Amphibians in the Hawaiian Islands. Los Osos, CA: Diamond Head Publishing, Inc.

Medeiros, A. C., C. G. Chimera, and L. L. Loope

1996 "Kauhakō Crater Botanical Resource and Treat Monitoring, Kalaupapa National Historical Park, Island of Moloka'i, Hawai'i." Technical Report 110, Pacific Cooperative Studies Unit. Honolulu, HI: University of Hawai'i at Manoa.

National Oceanic and Atmospheric Administration

2018 Protected Resources Division: Hawaiian Monk Seal.
http://www.fpir.noaa.gov/PRD/prd_hms_learn_about.html (accessed 9-7-18).

National Park Service, U.S. Department of the Interior

1990 *Resource Management Plan*. Kalaupapa, Molokai, HI: Kalaupapa NHP.

2010 Impacts of Visitor Spending on the Local Economy: Kalaupapa National Historical Park, 2010. Natural Resource Program Center, Fort Collins, CO.

2018 State of the Park Report for Kalaupapa National Historical Park.
http://www.fpir.noaa.gov/PRD/prd_hms_learn_about.html accessed on 9-17-18.

Pacific Island Climate Change Cooperative Culture and Communities Working Group

2016 <http://piccc.net/project/resilient-hawaiian-communities-initiative/> accessed on 10-12-18.

Poland, R. and P. Hosten

2018 How collaborative research has helped define Hawaiian hoary bat activity in Kalaupapa National Park, thus better informing park management strategies. Hawaiian Conservation Conference. 25th Annual Hawai'i Conservation Conference, Honolulu.

Polhemus, D. A.

1992 "A Preliminary Report on the Aquatic Insect Fauna of Waikolu Stream, Moloka'i, Hawai'i." Unpublished report prepared for Division of Aquatic Resources, Department of Land and Natural Resources, Honolulu, HI.

Rivera, M. A. J., F. G. Howarth, S. Taiti, and G. K. Roderick

2002 "Evolution in Hawaiian cave-adapted isopods (Oniscidea: Philosciidae): Vicariant speciation or adaptive shift." *Molecular Phylogenetics and Evolution* 25:1-9.

Santo, L. T.

2001 "Assessment and improvement recommendations for the Molokai Irrigation System." Hawai'i Agriculture Research Center report submitted to Molokai Irrigation System, Aiea, HI.

State of Hawai'i, Department of Land and Natural Resources, Commission on Water Resource Management

1990 "Hawaii stream assessment: A preliminary appraisal of Hawai'i's stream resources," by the National Park Service, Hawai'i Cooperative Park Service Unit, Western Region Natural Resources and Research Division, Report R84. Honolulu, HI.

State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife
1991 *Pu'u Ali'i Natural Area Reserve Management Plan*. Natural Area Reserves System Program, n. p.

2005 *Hawai'i's Comprehensive Wildlife Conservation Strategy* by C. Mitchell, C. Ogura, D. W. Meadows, A. Kane, L. Strommer, S. Fretz, D. Leonard, and A. McClung.

2009 *Moloka'i Forest Reserve Management Plan*. Honolulu, HI: Forest Management Section.

Swenson, C.

2008 Offshore Islet Restoration Committee. <<http://www.Hawaiiirc.org/OIRC-ISLETS.htm>>.

U.S. Census Bureau

2010a "2010 Census: 2010 & 2011 Population Estimates." <<http://www.census.gov/>>.

2010b "2010 Kalawao County Fact Sheet."

U.S. Fish and Wildlife Service

1998. Recovery Plan for the Hawaiian Hoary Bat. U.S. Fish and Wildlife Service, Portland, OR.
https://ecos.fws.gov/docs/recovery_plan/980511b.pdf

2007 Candidate assessment and listing priority assignment form *Magalagrion pacificum*. U.S. Fish and Wildlife Service, Pacific Islands Office.

2018 North Florida Ecological Services: Green Sea Turtle.
<https://www.fws.gov/northflorida/seaturtles/turtle%20factsheets/green-sea-turtle.htm> accessed on 10-1-18.

Way, C. M, A. J. Burky, J. M. Harding, S. Hau, W. K. L. C. Puleloa

1998 "Reproductive biology of the endemic goby, *Lentipes concolor*, from Makamaka'ole Stream, Maui and Waikolu Stream, Moloka'i." *Environmental Biology of Fishes* 51(1): 53–65.

Wood, K. R.

2001 "Pritchardia Coastal Forest on Huelo Islet, Moloka'i, Hawai'i." Biological report prepared for Kalaupapa National Historical Park, Molokai, HI. Unpublished report.

2008 Vegetation descriptions of the offshore islets, Kalaupapa, Moloka'i, Hawai'i and Kukaiwa'a Peninsula. Special Report prepared for Kalaupapa National Historic Historical Park. Unpublished report.

Wood, K. R. and M. LeGrande

2002 "Personal observations of Okala Islet, Moloka'i, Hawai'i, including a regional checklist of vascular plants, Pritchardia coastal forest on Huelo Islet, Molokai, Hawai'i." Special report prepared for Kalaupapa National Historic Historical Park Molokai, HI. Unpublished report.

Wyban, C. A.

1993 *Report on the Kalaupapa Fishpond*. On file at Kalaupapa NHP.

PREPARERS AND CONSULTANTS

Joseph Balachowski, Former Historical Architect, Pacific West Region – Historical architecture, facilities, sustainability

Jean Boscacci, Outdoor Realty Specialist, Pacific West Region – Public involvement, cost estimates, maps, management zones, overall planning direction

Eric Brown, Former Marine Ecologist, Kalaupapa NHP – Marine resource management

Sharon Brown, Former Historian, Kalaupapa NHP – Interpretation, education, and visitor use

Sue Buchel, Former Museum Curator, Kalaupapa NHP – Cultural resource management

Jennifer Cerny, Former Chief of Cultural Resources, Kalaupapa NHP – Cultural resource management

Lester Delos Reyes, Park Ranger, Kalaupapa NHP – Visitor protection

Tom Fake, Former Landscape Architect, Pacific West Region – Facilities management, cost estimates

Cathy Gilbert, Former Historical Landscape Architect, Pacific West Region – Cultural landscapes

Wil Hashimoto, Former Historical Architect, Kalaupapa NHP – Historical architecture, facilities management, cost estimates

Paul Hosten, Chief of Natural Resources, Kalaupapa NHP – Natural resource management, Waikolu Stream analysis, floodplains analysis

Guy Hughes, Former Chief of Natural Resources, Kalaupapa NHP – Natural resource management

Lionel Kaawaloa, Former Utility System Operator, Kalaupapa NHP – Facilities management

Clarence (Boogie) Kahilihiwa, Subject Matter Expert and President of Ka 'Ohana O Kalaupapa – Kalaupapa history and community

Leslie Kanoa Naeole, Management Assistant, Kalaupapa NHP – Park management, administration and coordination, planning support

David Kaupu, Chairman, Kalaupapa Citizens' Advisory Commission – Subject matter expert, Kalaupapa history and community

Cari Kreshak, Former Pacific Islands Cultural Resource Program Manager, Pacific West Region – Cultural resource management, compliance

Melia Lane-Kamahele, Pacific Islands Office Manager, Pacific West Region – Planning direction

Kaleo Manuel, Planner, State Department of Hawaiian Home Lands – State agency representative

Sandy Margriter, Cartographer, Pacific West Region – GIS, maps

Gloria Marks, Chair, Kalaupapa Patients' Advisory Council – Subject matter expert, Kalaupapa history and community

Mike Maruyama, Former Hansen's Disease Program Manager, Hawai'i Department of Health– State agency representative

Ka'ohulani McGuire, Cultural Anthropologist, Kalaupapa NHP – Cultural resource management, historical background

Mark Miller, Former Kalaupapa Settlement Administrator, State Department of Health – State agency representative

Brad Phillips, Outdoor Recreation Planner, Pacific West Region – document production

Steve Prokop, Former Superintendent, Kalaupapa NHP – Park management and policy analysis

Mark Rentz, Former Chief of Facilities, Kalaupapa NHP and Haleakala National Park – Facilities management

Amy Sakurada, Law Enforcement Ranger, Kalaupapa NHP – Visitor protection

Erika Stein Espaniola, Former Superintendent, Kalaupapa NHP –Cultural resource management, Waikolu Stream analysis, park management and policy analysis

Anna Tamura, Landscape Architect, Pacific West Region – Project manager, overall project organization and document production

Tim Trainer, Former Chief Ranger, Kalaupapa NHP – Visitor protection

Meli Watanuki, Subject matter expert, Kalaupapa history and community

Joanne Wilkins, Former Historical Architect, Golden Gate National Recreation Area) – Historical architecture

Scott Williams, Former Archivist, Kalaupapa NHP – Collections management

Rose Worley, Former Management Assistant, Kalaupapa NHP – Park management, administration

Other Contributors and Consultants

Betsy Anderson, Former Landscape Architect, Pacific West Region – Editing, project planning

Gary Barbano, Former Park Planner, Pacific West Region – Planning history and direction

Sara Bodo, Former Outdoor Recreation Planner, Denver Service Center – Cost estimates, socioeconomics

Kerri Cahill, Planning Branch Chief, Denver Service Center – User capacity

Martha Crusius, Program Manager, Park Planning and Environmental Compliance, Pacific West Region – Project Oversight

Keith Dunbar, Former Chief of Planning and Environmental Compliance, Pacific West Region– Planning history and direction

Glen Fickbohm, Facility Management Systems Specialist, Pacific Islands Network – Facilities management, cost estimates

Bryan Harry, Former Pacific Island Regional Director – Planning history and direction

Ron Giblin, Former FMSS/Project Coordinator, Kalaupapa NHP – Facilities management, cost estimates

Amanda Kaplan, Former Environmental Planner, Pacific West Region – Facilitation

Rosa Key, Chief of Administration, Kalaupapa NHP – Administration

Stacy Lundgren, Former Chief of Cultural Resources, Kalaupapa NHP – Cultural resources

Trung Nguyen, Former Architect/Project Manager, Pacific West Region – Facilities management, cost estimates

Ericka Pilcher, Former Visitor Use Specialist, Denver Service Center – User capacity

Rose Rumball-Petre, Environmental Protection Specialist, Pacific West Region – Compliance

Meredith Speicher, Outdoor Recreation Planner, Pacific West Region – Facilitation, planning assistance

Megan Truebenbach, Former SCEP Outdoor Recreation Technician – Socioeconomics

Katelyn Walker, Former Outdoor Recreation Planner, Pacific West Region – Cost estimates, document layout

Randall Watanuki, Marine Resources Specialist, Kalaupapa NHP – Kalaupapa history and community

GLOSSARY

accessibility: The provision of NPS programs, facilities, and services in ways that include individuals with disabilities, or makes available to those individuals the same benefits available to persons without disabilities.

‘āina: land

ethnographic resource: A site, structure, object, landscape, or natural resource feature assigned traditional, legendary, religious, or other significance in the cultural system of a group traditionally associated with it.

floodplain: The area surrounding a stream subject to flooding on some interval (10, 20, 50, 100, or 500 years).

foundation document: A document that begins a national park unit’s planning process and sets the stage for all future planning and decision-making by identifying the unit’s mission, purpose, significance, special mandates, and broad mission goals. It is incorporated into a unit’s GMP but may also be produced as a stand-alone document for a unit.

Hansen’s disease: A chronic infectious disease caused by the slow-growing bacteria *Mycobacterium leprae*, which affects the nerves, skin, eyes, and limbs. Also known as leprosy.

heiau: temples, shrines.

historic district: A geographically definable area, urban or rural, possessing a significant concentration, linkage, or continuity of sites, landscapes, structures, or objects, united by past events or aesthetically by plan or physical developments.

historic property: A district, site, structure, or landscape significant in American history, architecture, engineering, archeology, or culture; an umbrella term for all entries listed or eligible for listing in the National Register of Historic Places.

indigenous: A species that occurs naturally in an area; a synonym for native species.

kama‘āina: native-born Hawaiians and long-time Hawai‘i residents, regardless of their ethnic background.

ko‘a: shrines dedicated to fishing.

kōkua: to help, give aid or assistance.

kula: dry land.

lightscape: A natural lightscape is defined as those natural resources and values that exist in the absence of human-caused light.

lo‘i: pond fields.

mālama: take care of, tend, care for, preserve.

mana: divine power, authority.

National Environmental Policy Act (NEPA): An act of Congress passed in 1969 declaring a national policy to encourage productive and enjoyable harmony between people and the environment, to promote efforts to prevent or eliminate damage to the

environment and the biosphere and stimulate the health and welfare of people, and to enrich the understanding of the ecological systems and natural resources important to the nation, among other purposes.

National Historic Landmark: The highest level of distinction for a cultural property listed in the National Register of Historic Places.

National Natural Landmark: NNLS are nationally significant natural areas designated by the Secretary of the Interior. To be nationally significant, a site must be one of the best examples of a type of biotic community or geologic feature in its physiographic province.

NPS *Management Policies 2006*: Guiding principles and procedures that set the framework and provide direction for National Park Service management decisions. National Park Service policies are guided by and consistent with the U.S. Constitution, public laws, executive proclamations and orders, and regulations and directives from higher authorities. Policies translate these sources of guidance into cohesive directions. *Management Policies 2006* (NPS 2006) are applicable throughout the National Park Service.

'ohana: family, relative, kin group.

Ōhi'a (*Metrosideros polymorpha*): native Hawaiian tree that plays an important role in Hawai'i's forest ecosystems and in Hawaiian culture.

pali: cliff, precipice.

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

Section 7: Refers to Section 7 of the Endangered Species Act of 1973, which requires federal agencies to consult with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service if a proposed action might affect a federally listed species or its critical habitat.

Section 106: Refers to Section 106 of the National Historic Preservation Act of 1966, which requires federal agencies to take into account the effects of their proposed undertakings on properties included or eligible for inclusion in the National Register of Historic Places and give the Advisory Council on Historic Preservation a reasonable opportunity to comment on the proposed undertakings.

state historic preservation officer (SHPO): An official in each state appointed by the governor to administer the state historic preservation program and carry out certain responsibilities relating to federal undertakings in the state (NPS DO-28).

traditionally associated peoples: Social and cultural entities such as tribes, communities, and kinship units exhibiting a continued identity and associated with a specific park unit, area, or resource.

traditional cultural resource: 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.

traditional cultural property: Traditional cultural resources eligible for or listed in the National Register of Historic Places. They are resources to which American Indian tribes attach cultural or religious significance and may include structures, objects, districts, geological and geographical features, and archeology.

user capacity: The type and level of use that can be accommodated while sustaining the quality of park resources and visitor opportunities consistent with the purposes of the park unit. It is not necessarily a set of numbers or limits, but rather a process involving establishing desired conditions, monitoring, evaluation, and actions (managing visitor use) to ensure values are protected.

viewshed: The visible areas seen from identified viewpoints.

Back cover: Patients' suitcases in the collections stored at Hale Malama.
NPS photo.



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

August 2021

Kalaupapa National Historical Park General Management Plan and Environmental Assessment

