

Maunakea Education & Outreach Plan

Maunakea Comprehensive Management Plan
Management Action EO-1

FOR BOARD ACTION

This plan represents the collaborative efforts of representatives of 'Imiloa Astronomy Center, Maunakea Observatories, Visitor Information Station and the Office of Maunakea Management.

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1. INTRODUCTION

1.1 HISTORY

In August 2000, the Office of Maunakea Management (OMKM) was established to responsibly steward the land use and activities on UH managed lands on Maunakea. *Its mission is to achieve harmony, balance and trust in the sustainable management and stewardship of the Maunakea Science Reserve through community resources of Maunakea while providing a world-class center dedicated to education, research and astronomy.*

The 2009 Maunakea Comprehensive Management Plan (CMP) provides a management framework for the University of Hawai'i (UH) to fulfill this mission. According to section 7.1.3 Education and Outreach (EO) of the CMP, Management Action EO-1 identifies that a plan should be developed in order to "address visitor and user education; Mauna Kea as an educational and scientific resource; outreach activities; and implementation". Management Action EO-3 discusses the development of education materials, EO-5 discusses the development of interpretive features, EO-6 discusses outreach and partnerships with schools, EO-7 discusses community input, and EO-8 discusses provision of opportunities for community members to participate in stewardship. This plan also addresses planning for and implementation of these five management actions. Other education and outreach management actions (orientation-related and sign plans) are more explicitly addressed in dedicated plans as prescribed by the 2009 CMP.

1.2 PURPOSE

The Purpose of the Maunakea Education & Outreach Plan is to identify and guide development of programs which generate visitor and user awareness about Maunakea's cultural, natural, and scientific resources, health and safety awareness on visiting high altitudes, and

inform the public about the Office of Maunakea stewardship efforts. .

More specifically, this plan is written to:

- Contribute to the protection and conservation of State of Hawai'i owned lands on Maunakea, including cultural, natural, and scientific resources.
- Significantly increase the knowledge of University-supported interpretive opportunities— on-site, within the community, and through partners – regarding the heritage, resources, and stewardship of Maunakea.
- Increase public support and strengthen the constituency for University management of State lands on Maunakea in general, and more specifically the management of a Science Reserve.
- Guide the development and implementation of education and outreach programs by the Office of Maunakea Management.

The plan recommends actions that should occur approximately during the next 10 years, or two revision cycles of the Maunakea CMP. The plan identifies the collective vision, core values, and visitor experience goals that represent an array of interpretive services, media, programs, and outreach activities to communicate the University's mission in accepting stewardship of lands on Maunakea. Adaptations to this plan may occur if amendments to the CMP are made or if there are updates to services, programming, staffing, funding, technology, infrastructure, changes in resources conditions, or significant new scientific discoveries. Further efforts will be required to implement the goals and recommendations in this plan.

It is intended that readers of this plan be better prepared and able to educate and generate awareness of the significance of Maunakea from

a cultural, natural resources and scientific perspective, and how to visit Maunakea safely and responsibly.

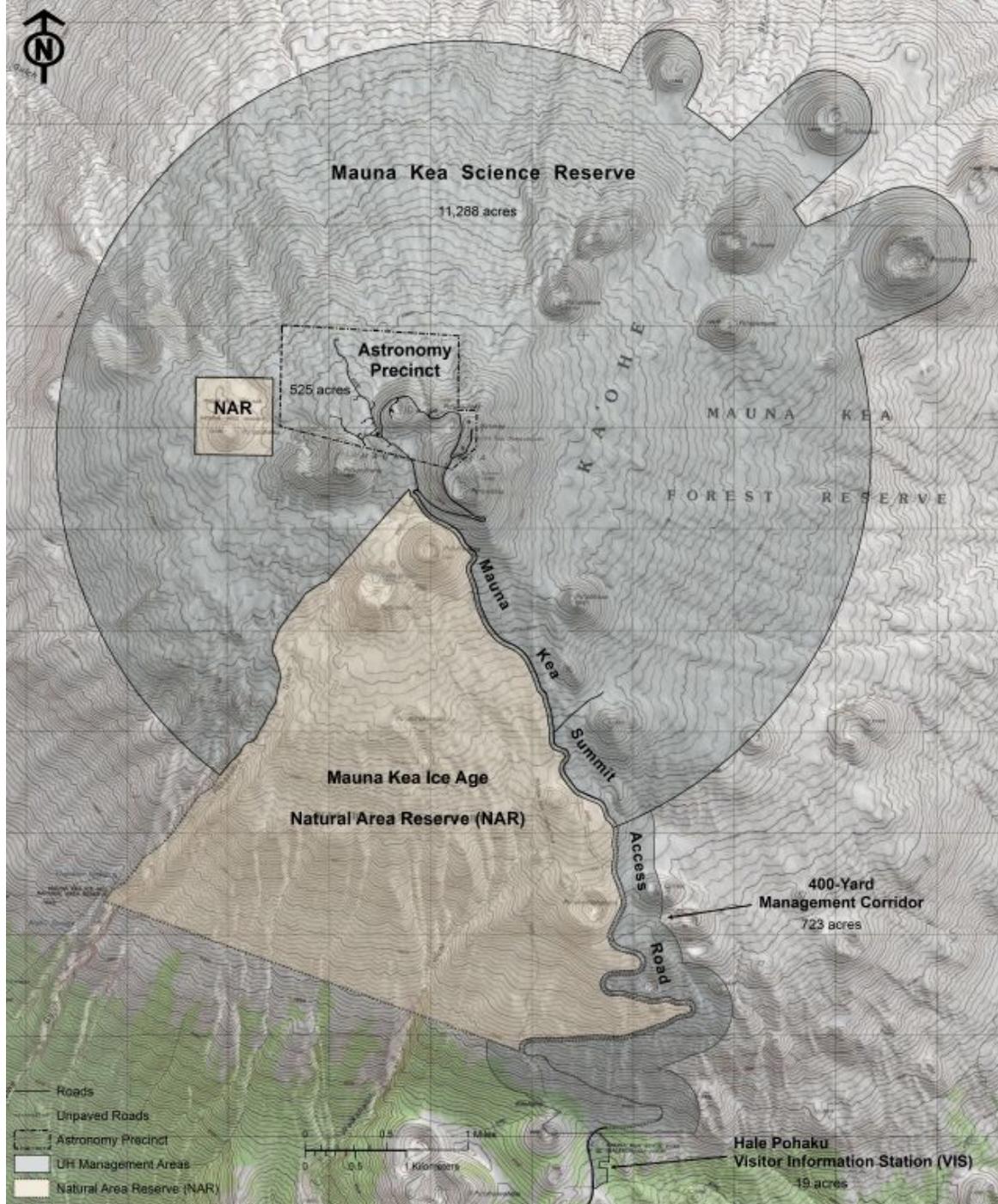
1.2 PLACE

“Maunakea kuahiwi kū ha’o I ka mālīe” (Maunakea is the astonishing mountain that stands in the calm) expresses the sentiment that Maunakea is a source of awe and inspiration. Kepā Maly, a respected researcher and cultural historian, relates “the mountain is a respected elder, a spiritual connection to one’s gods.” To many, Maunakea is more than a mountain; it is a landscape that provides a connection—genealogically, physically, and spiritually to ancestral realms.

Maunakea is also a place from which we honor Hawai‘i’s legacy of exploration and innovation. Maunakea is an exceptional location to connect with and learn about our origins, from the unique geologic features forged by fire and ice to native flora and fauna. With this connection to our origins, Maunakea is also ideally situated to help inform our future. Through innovative, progressive, and highly collaborative international partnerships, there now exists some of the world’s most advanced observatories for optical, infrared, and sub-millimeter astronomy at Maunakea’s 4,200-meter high summit, as well as being the center of research that aids the stewardship efforts of this place. These include research studies of genetics, restoration ecology, climate change, geology, and biodiversity.

This plan applies specifically to the University’s managed lands on Maunakea, most of which are above 3,500 meters in elevation. The stewardship of University-managed lands on Maunakea is guided by the 2000 “Mauna Kea Science Reserve Master Plan (Master Plan) and Board of Land and Natural Resources approved Comprehensive Management Plan.

UH Management Areas



University-managed lands on Maunakea.

1.2.1 VISITORS

Visitors are defined as individuals not working under the auspices of a land-use permit on Maunakea. The primary visitor focus for this plan are in-state residents.

1.2.1.1 In-Person

Tourism and private recreational activities have increased at Maunakea over the past several decades due to improved access. In 2015 approximately 224,000 people visited Halepōhaku. Approximately 28% of these visitors were part of a commercial tour. Currently the maximum number of people allowed by permit per commercial tour, cannot exceed 15, including the driver.

Summer is the busiest time of year. An hour before and after several hours after sunset are the busiest times of day. There may be more than 200 vehicles present at the Visitor Information Station (VIS) on stargazing nights.

A 2004 survey identified that a majority of the Island of Hawai'i residents were well-informed about scientific activities, but had limited understanding of cultural activities, unique species, and key geological features. A follow-up 2012 survey determined that visitors consist largely of tourists from the United States or other countries and seek star gazing and sunset viewing opportunities. It was also determined that many visitors are unaware of or do not take safety precautions seriously, but become more familiar with such concerns when stopping at the VIS.

1.2.1.2 Online

OMKM receives approximately one hundred website visits per month (2016); the majority originating in the United States. The most common web topics, in descending order include: Home Page, Comprehensive Management Plan, Contact-us, Library References, and the Master Plan. Cross-linked Instagram, Facebook, and Twitter accounts provide additional resources for disseminating information.

The VIS website receives approximately 19,000 visits per month (2016); with the majority originating in the United States.

1.2.1.3 Community Events

OMKM, the VIS, and Maunakea Observatories currently emphasize community engagement through:

- School groups (either at their school or another location).
- Events arranged for other purposes (such as existing community gatherings or presentations to organizations).
- Dedicated events focused on Maunakea (i.e. open houses, Journey Through the Universe, etc.).

Astronomy related community and education activities are coordinated through the Maunakea Astronomy Outreach Committee. Comparable statistics for such visits are not maintained.

1.2.1.4 Visitor Orientation

Visitor orientation (CMP management action E0-2) is addressed under a separate plan approved by the Department of Land and Natural Resources, as specified in the 2009 CMP.

1.2.2 USERS

Users are defined as individuals working under the auspices of a land-use permit on Maunakea. Examples of users include observatory employees, observatory vendors, University support staff, and other public agency employees. On a typical work-week day approximately 50 vehicles will go above Halepōhaku. Most vehicles will have 2 individuals present for safety reasons.

All users attend a mandatory user-orientation at least once every three years, more frequently if required by their permit. As of November 2019 over 1,500 users maintain a current orientation. This orientation content and implementation is addressed in a separate plan approved by the Department of Land and Natural Resources, as specified in the 2009 CMP.

1.3 EXISTING CONDITIONS

1.3.1 OMKM

OMKM does not have a physical facility for visitors. OMKM's website serves as a central resource for information on Maunakea management, resources, and scientific activities other than astronomy. OMKM produces hard-copy and electronic newsletters that provide regular updates about management activities, ongoing research, planning efforts, and other information related to Maunakea.

OMKM Rangers assist with management on the mountain, focusing on protecting resources and ensuring public safety. In addition, they monitor and communicate concerns regarding the Department of Land and Natural Resources' Mauna Kea Ice Age Natural Area Reserve (NAR) by reporting violations, picking up trash, photo documenting the water level of Lake Waiau, educating visitors and participating in search and rescue operations.

Informational brochures include two safety handouts ("Mauna Kea Hazards" and "Visiting Maunakea Safely and Responsibly"), a Heritage and Natural Resources Guide, resources poster, and a pamphlet on the purpose of the OMKM. Most of these have been developed over the past few years and are available online and at the VIS. Youth-focused outreach materials include activity books, trading cards, postcards, temporary tattoos, insect collections, natural history handouts, and coloring sheets.

1.3.2 VIS

The VIS opens at 9 am 365 days a year, with hours adjusted as needed based on operational concerns. There are telescopes available for public use. The VIS website provides directions to points of interest and information about facilities, health and safety, VIS programs, volunteer programs, hiking, tours, astronomy, and the natural and cultural resources of Maunakea.

The VIS provides both static and interactive educational resources, much of which focuses on the observatories. One of the most up-to-date and useful sources of information is the set of videos on safety, natural resources, cultural resources, and astronomy, some of which are available in Japanese. Cultural programs and evening stargazing presentations are presented by staff and volunteers.

1.3.3 ROADSIDE EXHIBITS

Health and safety signage is prominently featured on the approach to Halepōhaku, along the Summit Access Road, and at the VIS. Posted on the outside of the VIS is text-intensive information on:

- Winter hazards.
- General hazards related to altitude when traveling above Halepōhaku.
- A map with location information.
- Information about littering and not disturbing the landscape.

Other than at the VIS, there are no "interpretive" signs in the UH Management Areas. Signage identifying the boundary of the Mauna Kea Ice Age NAR is visible from the roadway.

1.3.4 TRAILS

There are no existing interpretive (educational) trail guides or signs.

1.3.5 OBSERVATORIES

The observatories have numerous outreach events typically pertaining to astronomy. One particular program associated with summit education is offered by the Maunakea Astronomy Outreach Committee (MKAOC) named the Kama'aina Observatory Experience (KOE). In this program, Hawai'i residents are invited to register for a free, hosted tour of two observatory facilities.

The W.M.Keck facility has a visitor gallery and viewing room for inside their dome.

Subaru offers a periodic tour of their observatory advertised on their website.

2. VISITOR PROGRAMS

The following recommendations are designed to further define, support, and communicate: the cultural significance of Maunakea, the mission and purpose of OMKM, the significance of, and threats to resources, the scientific and exploration value of Maunakea. Implementation of these recommendations will help ensure that all visitors are well prepared and informed.

Interpretive themes represent a key to helping visitors gain an understanding of the significance of University of Hawai'i's managed lands on Maunakea and its resources. These themes, based on the Maunakea Comprehensive Management Plan and OMKM's mission, provide the foundation. The themes do not include everything that may be interpreted, but they do address those ideas that are critical to understanding and appreciating the mountain's importance. All interpretive efforts, through both personal and non-personal services, should relate to one or more of these themes. Similarly, each theme should be addressed by some part of any overall interpretive program. Effective interpretation is achieved when visitors are able to connect the concepts with the resources and derive something meaningful from their experience.

All programs should provide personal safety information and identify the potential hazards of visiting the mountain. This information should be available in all venues and included in any visitor orientation (including commercial tours, independent travelers, local visitors, and observatory workers).

Hawaiian and English languages may both be used for signs, pamphlets, videos and other material developed for the general public when practical. Other languages may be appropriate dependent upon visitor profiles and the method of information dissemination.

One approach to developing educational and outreach programs is outlined below. Detailed

examples for regular use will be added over time. These will be identified in Appendix A, which can be updated more frequently than the main plan and with review by Kahu Kū Mauna as warranted.

2.1 AN EXAMPLE: MANA'Ō HO'OKŌ¹

To sustain a legacy of stewardship and exploration that is positive, respectful, and transformative for both Maunakea and those who share a connection to it.

To achieve this legacy, experiences are framed with *mana'o nui*, a concept or significant idea connected to the content of each experience. The topics, contents, or skills we aim to have each visitor experience through instruction and activities are referred to as *kumuhana ha'awina*.

Kumuhana Ha'awina

- A. *Ho'okama'āina*, to orient
Through authentic and inspiring experiences we orient our visitors and users to the unique heritage of Maunakea.
- B. *Ho'omākaukau*, to prepare
As stewards of our place and people, we prepare our visitors and users to conduct themselves in a manner that is safe and respectful.
- C. *Mālama*, to demonstrate care
Visitors and users increase their connection to and appreciation for the land, sea, sky, and kanaka and demonstrates at least one way to mālama Maunakea.
- D. *Ho'oilina*, to entrust
We illuminate our commitment to mālama Maunakea by sustaining a legacy that honors one's relationships to land, sea and sky & past, present and future.

2.1.1 HO'OKAMA'ĀINA, TO ORIENT

Local and global visitors are introduced to the unique heritage of Maunakea. Interpretive themes under this goal may include:

- Natural History

¹ It is important to note that Hawaiian terms and phrases can have different meanings depending on context and use. They may also

Tropical Alpine Biota
Stone Desert Climate

- Hydrology
- Historic Properties
- Cultural history
- Astronomy

2.1.2 HO'OMĀKAUKAU, TO PREPARE

Visitors learn to conduct themselves in a manner that is safe and respectful.

Visiting Safely is Your Responsibility

In the early days, native Hawaiian *mo'olelo*, stories, spoke to the remoteness and desolation of Maunakea's summit region. These stories and sayings instructed commoners that they may access the summit only for gathering purposes.

In modern times, Maunakea's extreme and high-altitude environment still poses many hazards, which we may now have more specific information about. Visitors should have a basic understanding of natural and human-related hazards, their expected conduct, and general preparedness to the area to minimize risk to self and others.

Natural or Environment-related

- Physiological effects due to low concentration of oxygen.
- Atmospheric conditions such as very dry air and cold temperatures.
- Low visibility with clouds or inclement weather.

Human-related & Built Environment

- Vehicular problems due to altitude, steep terrain, severe switchbacks and loose, uneven surfaces.
- Communication is limited by topography.

have a deeper or hidden (kauna) meaning that differs from apparent meaning.

- Other mountain users and cultural and language differences.
- Remote location.
- Cultural and natural resource considerations of staying in appropriate areas promote safe behaviors.
- If you need help, consider your location and the quickest avenue for assistance.
- Recognize that in many special places, visits should be thought of in a host -to-guest context.
- Follow applicable laws.

2.1.3 MĀLAMA, TO CARE

Stewards and visitors alike learn to appreciate their respective roles as “caretaker” and “guest”.

Stewardship of the Land

Day-to-day activity is guided by the 2009 CMP (and sub-plans of Cultural Resource Management, Natural Resource Management, Public Access, and Decommissioning) along with oversight by the volunteer community members serving on the Maunakea Management Board and Kahu Kū Mauna Council (native Hawaiian cultural advisors).

Community engagement opportunities include volunteer opportunities assist with invasive species control, restoration program activities, (student and faculty) research, and continued dissemination of information. Ongoing traditional native Hawaiian cultural practices represent yet another venue to participate in stewardship of Maunakea.

2.1.4 HO‘OILINA, TO ENTRUST

We sustain a legacy of stewardship.

Visitors and users alike consider principles of stewardship both when present on Maunakea and when elsewhere. They:

- Recognize that places like Maunakea deserve to be treated with respect, honor, and reverence.
- Appreciate the opportunity to visit such a special place.
- Leave the land, flora, and fauna as they found it.

2.2 VISITOR INFORMATION STATION

The VIS is located on Maunakea at Halepōhaku and is open every day of the year. At the 2,800 meter level, it provides temporary shelter along with educational, health, and safety information about Maunakea.

The mission of the Maunakea VIS is:

- To generate awareness of the cultural, environmental and scientific significance of Maunakea.
- To welcome with aloha and inform visitors on how to visit the mountain safely with minimal impact to the cultural and natural landscape and with respect for Native Hawaiian culture in which this mountain possesses the deepest significance.
- To provide an experience for viewing the night skies over Maunakea and provide an understanding why it is a unique location for astronomy.
- To exemplify mālama ‘aina by demonstrating the upkeep and protection of the lands around Halepōhaku.

A committee has been established that includes representatives of cultural, resource, land management, astronomy, and VIS management. This committee would advise on all aspects of VIS activities and staffing requirements. This committee should be led by the VIS manager who both coordinates the committee’s efforts and implements recommendations.

2.2.1 INDOORS

The interior of the VIS should:

- Focus on a balanced presentation (in quantity, space, time, etc.) of the interpretive themes along with opportunities for staff-visitor interaction.
- Provide information about current or upcoming events related to Maunakea and its management, and provide

adequate space for any mandated programs (i.e. a visitor orientation).

- Address personal services needs identified below.

This focus must encompass both resident and non-resident needs while considering types of displays, flow of visitors within the building, staffing needs, and opportunity for visitor feedback.

Sale of goods, including food, should only occur inside the VIS.

2.2.2 OUTDOORS

Areas outdoors at the VIS should provide:

- Sufficient resources for independent travelers taking a brief break (restroom, driving, etc.).
- An opportunity to acclimate prior to travel to higher elevations.
- Opportunities for all visitors to learn about safety considerations on Maunakea.
- Stargazing / astronomy opportunities.
- Cultural and natural resource overviews accessible to visitors at all hours.
- Address personal services needs identified below.

Information kiosks should contain panels that can be changed and include an area containing information on regulations, safety information, etc. as needed. Tacked-up regulations on paper/posters often lack professionalism and should be avoided.

Stargazing is administered to provide an experience for viewing the day and night skies over Maunakea and provide an understanding why it is a unique location for astronomy.

A trail sign-in for the Humu‘ula trail (from Halepōhaku to the summit through the Mauna Kea Ice Age Natural Area Reserve [NAR]) should be available. Additional coordination with NAR and Forest Reserve staff to see if a sign at the

actual trail-head notifying hikers that there is a sign-in at the VIS should be conducted.

Any signs also must be consistent with the Maunakea Sign Plan (2016).

2.3 PERSONAL SERVICES PROGRAMS

Even with the non-personal interpretive media as identified in this plan, there is no substitute for staff to communicate resource values and management policies. Uniformed presence can also deter adverse impacts or inappropriate behaviors in regard to structures and resources. They also can improve visitor safety.

Given the high visitation at the VIS and summit, public-contact interpretation is one of the most effective interpretive tools to achieve the goals of this Interpretive Plan. Maunakea Rangers focus on resource protection and visitor safety for all individuals on Maunakea. VIS staff serve as interpreters to both reinforce the Ranger's message as well as help visitors learn about a place that is important to us all.

The following interpretive ideas are suggested to achieve the goals in this plan.

- Informal (Roving) Interpretation – provide a personal opportunity to provide interpretation to visitors one-on-one. Roving interpretation is done informally without a structured program. The role of the interpreter is to engage visitors in conversations while walking throughout the site, with the goal of making visitor contacts and assisting visitors with information or other needs. Roving interpreters increase opportunities to orient, inform and educate unit visitors. The interpreters develop positive rapport with visitors, disperse visitors, deter adverse behavior, and promote the land management mission. The interpreter can also provide important safety information. The contact can also be used as an opportunity to discuss

management issues and agency policy in an interpretive context.

- Conducted Interpretive Programs – enhance the information and roving efforts and provide more in-depth education on significant cultural and natural resources, land ethics, management concerns and policies, and the agency mission and philosophy. Conducted programs should include regularly scheduled mix of: cultural resource, natural resource, and scientific (esp. astronomy) opportunities. Such programs conducted by an interpreter should:
 - Include the themes addressed herein.
 - Go into more detail than the exhibits.
 - Relate to resource management issues and goals.
 - Be a mix of regularly scheduled (daily) and special events (weekly or monthly) opportunities across the spectrum of themes.
- Guided Tours/Walks – These are specifically developed programs conducted by an interpreter. Commercial tour providers and Maunakea Observatories both already provide guided tours that include stops at the VIS. Notice of such opportunities should be available at the VIS and other locations. If a 'nature trail' or similar is ever developed in the area, guided walks by VIS staff should be established (consistent with resources and permitting requirements) along with opportunities for self-guided tours.

Off-the-mountain education and outreach venues include online, 'Imiloa, community and schools venues, Hawai'i Island Visitor Bureau and should provide similar public information.

2.3.1 CULTURAL ENGAGEMENT

Cultural engagement includes how we a) reach diverse cultural groups and b) communicate Native Hawaiian considerations. Engagement can be accomplished through:

- Holding talk-story sessions.
- Soliciting additional information regarding traditional activities and uses.
- Promoting transmission of cultural practices to the next generation.
- Working closely with Kahu Kū Mauna Council to strengthen community relations
- Creating policies and rules with meaningful community input to ensure that Maunakea is accessible and safe for all.

Principles of engagement and consultation principles of stewardship originally identified in the 2009 CMP, and exemplified in Education and Outreach management action EO-7 include:

- Mākia (Purposeful)—listen, discuss, understand, and identify appropriate management strategies.
- Mahalo (Respectful) —importance of “asking for permission”.
- Ha’aha’a (Humility)—“listening” with attention, respect and compassion.
- Hilina’i (Trust)—truthful, open, and honest even if it means that not everyone’s viewpoint or recommendation would be incorporated
- No’ono’o (Thoughtful)—best reflects the spirit and interests of the community.
- Pono (Consistency)—actions are consistent with contents of the plan to strengthen relationships formed during the process.
- Ho’omau (Continuity)—relationships must be continually fostered and maintained to sustain the resources.

- Kuleana (Responsibility)—work in partnership to manage the resources that may be sustained for future generations.

2.3.2 SCHOOL & COMMUNITY OUTREACH

School and Community outreach needs to address all facets of the community, balanced in the same sense as the interpretive themes across community interests.

- Outreach and partnerships with schools, including curriculum integration across all interpretive themes.
- Community participation in management and with volunteer opportunities.
- Informational and educational sessions.
- Advertise openings on advisory groups and committees.
- “Artist in Residence” program or art festivals – opportunities for the public to communicate what they find to be significant, important, special, etc. about Maunakea through venues and means accessible to everyone and can occur both on Maunakea and at other sites such as the ‘Imiloa Astronomy Center.

As OMKM and others learn more about the mountain (natural history, climate, archaeology, astronomy, etc.), ensuring these insights are communicated to the public is essential.

When working with the community, ensure that outreach is consistent with the principles identified in the Comprehensive Management Plan, such as ensuring diverse community representation including:

- Local civic organizations.
- Environmental groups.
- Local experts in natural and cultural resources.
- Families with lineal and cultural connections to Maunakea.
- Kūpuna.
- Cultural practitioners.
- Office of Hawaiian Affairs.
- Other Native Hawaiian groups.

When appropriate, work with the University of Hawai‘i at Hilo and with any Legacy Lands

stewardship programs. Also consider working with the College of Education or other entities on developing (or augmenting existing) science curriculum revolving around Maunakea.

2.3.3 PARTNERSHIP OPPORTUNITIES

Numerous partnership opportunities exist to expand the impact of the visitor goals and interpretive themes. These include:

- Museums.
- Neighboring and other land managers and science groups.
- Business organizations.
- Native Hawaiian Organizations.
- Chambers of Commerce.

2.4 SIGNS AND WAYSIDE EXHIBITS

Wayside exhibits are needed to communicate information about resources. A balanced approach is needed to limit the proliferation of signs. Any signs also must be consistent with the Maunakea Sign Plan (2016), which provides additional detail on recommended signs on Maunakea, including those addressing education and outreach.

Example Signs

- Interpretive signs including trail markers for primary trails.
- Halepōhaku area: flora, fauna, and cultural practices.
- Along Road, especially parking lots: cultural and natural resources.
- Astronomy Precinct: observatories.
- Astronomy Precinct: cultural practices.

2.4.1 HISTORIC SITES

Kahu Kū Mauna Council has expressed concern regarding signs that direct visitors to cultural or historic sites. Rather, wayside exhibits that inform visitors about native Hawaiian culture and historic sites and their significance are appropriate. In addition Hawai‘i Revised Statutes §6E-5.5, (b), (7) identifies that the Hawaii Historic Places Review Board shall develop policies on signage in historic districts and these

policies would generally be applicable to any signs in the Maunakea Science Reserve.

2.4.1 DLNR LANDS

Since the boundaries between the lands leased and managed by the University of Hawaii and surrounding lands of the Natural Area Reserve (NAR) and the Forest Reserve are not marked; consistency among neighbors and supporting education and outreach of adjacent land managers is essential.

2.5 PUBLICATIONS

A succinct suite of brochures addressing management, heritage, resources, safety, and other issues should be freely available in paper and digital formats. Periodic newsletter(s), social media postings, and should address the full scope of interpretive themes.

Publications, in the broadest sense, should also include content that adheres to the following principles.

- (OMKM and the VIS) websites should be updated regularly, communicate consistent messages as appropriate, and be streamlined or coordinated to

simplify user access that might be found on either site.

- Websites should contain video or printable versions of brochures, entrance requirements, newsletters, public announcements, rules and regulations, etc.
- Podcasts, web-casts, blogs, or other media could be periodically added to highlight Maunakea's unique resources and stewardship, educational, visitor, and other opportunities.

2.6 LIBRARY & COLLECTIONS

The OMKM maintained library should maintain its physical home as well as provide digital access to the extent allowed by law. The scope of collection should include bibliographic information from books, planning documents, environmental impact statements, and journal articles. Any new information on Native Hawaiian culture will be directed to the University's Hawaiian library collection.

3. IMPLEMENTATION

3.1 RESEARCH NEEDS

Information and knowledge gaps that, if filled, will facilitate implementation of this plan. Such research needs include:

- Studies or surveys that identify visitor demographics (age, gender, resident/non-resident, visit purpose, language(s) spoken, destination(s) on Maunakea, also visit 'Imiloa, etc.).
- Identify carrying capacity of visitors at Halepōhaku, along the road, and at the summit.
- Improved regular data collection and regular reporting on visitors across facilities for example, (VIS, and Observatories) and at events. Results should be publicly available, i.e. on a website.

3.2 PLANNING & PERMITTING NEEDS

Planning needs could include plans needing to be written, permits required, as well as routine (as opposed to research) data available for plan preparation.

- Identify legal impediments to implementing the recommendations identified herein. For example, can the VIS as currently structured sell items such as a poster or trading cards created by UH staff, or is a non-profit partner needed?
- Additional VIS planning for both improved (including potentially larger) facilities and exhibits, staff training, etc.
- Determine the priority of implementation. For example, should any recommendation that improves safety on the mountain be enacted first.
- Ascertain which, if any recommendations need to be synthesized into the Comprehensive Management Plan or any of the sub-plans.

- Scope of Sales: a policy needs to be drafted by the VIS staff with guidance from a committee.

3.3 CHRONOLOGICAL CONSIDERATIONS

A logical progression to implement this plan follows.

1. Prioritize Recommendations.
2. Legal research regarding any recommendations.
3. Form any committees or groups to facilitate implementation.
4. Determine which recommendations need to be included in the Comprehensive Management Plan and prepare to integrate these recommendations into the Comprehensive Management Plan during the update.

Implementation of this strategy needs to be coordinated with the partners identified herein. Many of the tasks identified will require simultaneous leadership from each of the partners.

3.4 STAFFING CONSIDERATIONS

A single individual should be assigned responsibility for coordinating and communicating implementation of this strategy.

An Interpretive Resource Manual, if prepared, would lay the foundation for conducting and evaluating all public contact activities. Such a manual is not intended to limit creativity; rather its purpose is to ensure consistent, high quality visitor services, accurate resource information, and Agency messages. New staff will have a framework upon which to build and individualize their interpretive programs while maintaining accuracy and consistency in message, information, and resource information. The interpretive portions of the VIS manual could be adapted to this purpose and shared. (Interpretive) Contents should include:

- Narrative research supporting all interpretive themes.
- Standard operating procedures for visitor services and interpretive programs.
- Agency mission and management practices.

All staff that work with the public should have at least basic training in protected lands management focused on enhancing the quality of natural, cultural, and recreational experiences; as well as training or personal/familial experience in native Hawaiian traditions and culture (as identified in the Maunakea “Employee and Volunteer Training Plan”). Sources of such training include Eppley Institute for Parks & Public Lands - ProValens Learning

(<http://provalenslearning.com/courses>), National Association for Interpretation (<https://www.interpnet.com/>), University of Hawaii at Hilo (<https://hilo.hawaii.edu/>), Hawaii Community College (<https://hawaii.hawaii.edu/>), and others. National Association for Interpretation Interpretive Guide Training or equivalent would benefit all full-time education and outreach staff. Details should be identified in the Maunakea Employee & Volunteer Training Plan (CMP Management Action OI-2, 2016).

Evaluation and monitoring should be conducted regularly to ensure the high quality visitor service indicative of the agency.

Potential staffing sources include:

- Volunteers.
- OMKM staff.
- Possible interpretive personnel: regular hires, interns, local teachers, college professors, volunteers, Student Conservation Association interns, college work-study students, concessionaire personnel, chamber of commerce members, club members, guest speakers, etc.

3.5 FUNDING

A dedicated, long-term, secure funding source is essential for sustained education and outreach activities. The interpretive program should strive to be partially self-sustaining. This will help ensure the survival of interpretation in lean budget years.

Current VIS funding models rely on Observatory contributions, commercial tour operators, and bookstore revenues to sustain staffing levels. Changes identified herein will both have financial cost as well as potential impacts to revenue that must be considered. In addition, any major facility upgrades and renovations are beyond the scope of such routine funding consideration.

OMKM funding is assumed to be in a long-term transition to receive a portion of sub-lease income once/if a new Master Lease is issued and could contribute to the goals of this plan.

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