Maunakea Sign Plan

Maunakea Comprehensive Management Plan
Management Action EO-4

Maunakea’s shadow, September 2016. Photo OMKM/Waltjen.
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1. PURPOSE

The purpose of this sign plan is to guide and improve signage throughout the UH Management Areas. It is also in fulfillment of management action EO-4 of the 2009 Maunakea Comprehensive Management Plan (CMP). The plan provides guidance for the placing and maintenance of permanent and temporary signs on UH managed lands including the Maunakea Science Reserve, the Maunakea Summit Access Road and the 400-yard corridor on either side of the road (excluding the Maunakea Ice Age Natural Area Reserve), the Mid-Level facilities at Halepōhaku, and all improvements, including, but not limited to, all observatories, facilities within the Halepōhaku area, and roadside structures, such as guardrails and uprights. This plan does not apply to signs inside buildings or other structures.

These policies are intended to keep signage to the minimal level necessary and to comply with the Office of Maunakea Management policies, the Department of Land and Natural Resources Conservation District rules, and other applicable laws and policies on signage.

The CMP provides the following guidance on this plan:

EO-4. Development of a signage plan

The education and outreach plan should include development of a signage plan, which should address sign development and design and installation requirements.

Sign development addresses needs for “Do Not” signage, health and safety information, trail markers, and interpretive signs. “Do Not” signage provides information on prohibited activities such as alcohol consumption, tampering with historical sites, littering, or hiking off-trail. Condition 13 of the 1995 Management Plan stipulates that “There shall be signs about the protection of historic sites as well as discouraging people from making ahus, subject to funding”. Signage pertaining to historic sites within the UH Managed Areas should reference HRS §6E-11, indicating that “it is a civil and administrative violation for any person to take, appropriate, excavate, injure, destroy or alter any historic property or aviation artifact located upon lands owned or controlled by the State.”

Health and safety signage should include signage in the summit area to reinforce awareness of safety issues and hazards (e.g., speeding, using 4-wheel drive and low gear, underage children, pregnant women and persons in poor health, proper clothing); providing safety signs or information posters at the VIS in English, Hawaiian, and Japanese languages and including universal symbols for health and safety issues.

Interpretive signs include trail markers for primary trails; signage alerting people to areas of sensitive cultural and natural resources and instructing them to stay on trails; and educational signage providing information to the visitor on what they are seeing. Consideration should be given to the development of educational areas (such as pull-outs along the Summit Access Road), with interpretive signage informing visitors about unique geological, meteorological, biological, and cultural features and ways to protect them. Another use of interpretive signage would be the labeling of key native and invasive plant species near the VIS and within the DLNR botanical enclosure.

Sign design considerations: Signs must be made from materials that can withstand severe weather (wind, snow, sun). Signage should use traditional Hawaiian place names and, whenever possible, include the Hawaiian language along with English. A subset of the signs should also contain Japanese translations. Consideration should be given to producing brochures summarizing the information provided on signage in a variety of languages.
Sign installation: Sign installation must comply with applicable rules and contain appropriate references to rules, including the requirements in HAR §13-277-7. The natural and cultural setting should be considered when locating signs. Establishing signage and trail markers in the UH Management Areas may lead to an increase in visitor use both on- and off-trail. There are cultural sensitivity concerns relating to continued disturbance of the summit environment and impacts on sacred land resulting from the installation of structures and visual distractions. Any signage installed in the summit region must be sensitive to cultural concerns and coordinated with Kahu Kū Mauna. It is possible that improving interpretive information at the VIS will eliminate the need for interpretive signage in the summit region.

The University signage program will consider the threats to specific historic properties that could inadvertently be created by the inappropriate or excessive use of information signage. Accordingly, rather than attempting to guide visitors to each historic property, the focus of the signage program will be on alerting visitors entering the UH Management Areas to the presence of protected historic properties and measures they should take to prevent damaging those resources. In general, signage actually marking historic properties will only be considered when there is a defined risk to a site, such as may occur near marked trails or in areas likely to be frequented by visitors.

The signage program will consider the threats to specific sensitive habitats that could inadvertently be created by information signage. Rather than trying to guide visitors to all sensitive habitats, the signage will focus on alerting visitors entering the UH Management Areas to the presence of sensitive species and their habitats and advising them of the measures they should take to prevent damaging those resources. In general, signage actually marking sensitive habitats will only be considered when there is a defined risk to a habitat, such as may occur near marked trails or in areas likely to be frequented by visitors.

Legal & Policy Requirements

Manual on Uniform Traffic Control Devices (MUTCD)

MUTCD (http://mutcd.fhwa.dot.gov/) is the national standard for all traffic control devices (TCD) and will be used consistent with State and County regulation and policy. TCD are signs, markings, pavement markings, and other devices used to control traffic on all roads open to public travel. TCD shall be constructed, located, installed, and maintained according to the standards contained in the MUTCD.

Occupational Safety and Health Administration (OSHA)


Hawai‘i Revised Statutes – Historic Preservation

HRS §6E-5.5 (b) (7) states that the Hawai‘i Historic Places Review Board shall “Develop policies on signage in historic districts.” As of December 2016, no known policies of the Hawai‘i Historic Places Review Board have been identified during the preparation of this plan.

Hawai‘i Department of Land and Natural Resources - Historic Preservation Division

HAR §13-277-7, Interpretation requirements, applies to historic preservation related interpretive and educational signs:

Interpretation requirements. (a) When using interpretive text for signs, brochures, etc., the text shall be reviewed and approved by SHPD [State Historic Preservation Division].

(b) Interpretive signs shall be:

(1) Of sufficient quality to enhance public understanding of the site;
(2) Culturally sensitive, based on consultation with appropriate organizations and individuals; and
(3) Located so as not to adversely affect the site visually.
(c) Any data recovery work to improve the interpretation of the site shall meet the standards set forth in Chapter 13-278.

Hawai‘i Department of Land and Natural Resources - Office of Conservation and Coastal Lands
Land uses on lands zoned Conservation District are governed by the Department of Land and Natural Resources’ (DLNR) Conservation District Rules, Hawai‘i Administrative Rules (HAR), Title 13, Chapter 5. Pursuant to §13-5-22 (b) P-7, signs are an allowable land use subject to a site plan approval from DLNR:

Signs, including safety signs, danger signs, no trespassing signs, and other informational signs. No signs shall exceed twelve square feet in area and shall be non-illuminated. All signs shall be erected to be self-supporting and be less than or equal to eight feet above finished grade.

Exceptions to the above require approval from the Board of Land & Natural Resources. These permitting requirements apply to all signs located outdoors on Maunakea, including those painted on existing buildings or attached to other infrastructure.

The requirements and policies of Chapter 3, Signs (http://www.hawaiicounty.gov/lb-countycode/) are superseded by State of Hawai‘i law, administrative rules (Conservation District), and policies. The County code related to signs is complementary to State of Hawai‘i, Conservation District rules however; and addresses natural beauty, public health and safety, and indiscriminate erection and improper maintenance and illumination of signs. Substantive conflicts are not anticipated.

Maunakea Comprehensive Management Plan (CMP)
The 2009 Maunakea CMP states that signage pertaining to historic sites within the UH Managed Areas should reference HRS §6E-11, indicating that “it is a civil and administrative violation for any person to take, appropriate, excavate, injure, destroy or alter any historic property or aviation artifact located upon lands owned or controlled by the State.” It also identifies that Hawaiian and English languages should both be used for interpretive signs, when appropriate. [The use of “when appropriate” was added following consultation with Kahu Kū Mauna.]

Standards
This signage plan follows many of the norms and standards identified in the following publications, listed in approximate order of frequency of use:

   https://www.nps.gov/hfc/accessibility/
   http://mutcd.fhwa.dot.gov/

These documents can be used for clarification of terminology, principles, and intent as needed.

The following policies and practices will be phased-in as existing signs require replacement or maintenance.
2. **SIGN POLICY**

**Signs on Maunakea will**

- Comply with legal statutes, policy requirements, and administrative rules (as adopted).
- Implement actions identified in plans and permits for administration, protection, management, and use of University-managed lands on Maunakea.
- Provide information to all for the safe enjoyment of lands on Maunakea.
- Provide information about the cultural, historic, and natural resource features of Maunakea.
- Communicate native Hawaiian cultural concepts regarding appropriate use and activities on Maunakea.

**Criteria for Sign Design, Installation, Siting, and Maintenance**

- Should be used conservatively; excessive signs and posters tend to lose their effectiveness.
- Should be retroreflective (reflect light back to its source with a minimum of scattering).
- May be light-emitting, but never illuminated.
- Should be installed on the right-hand side of the travel-way except where topography or other considerations, such as where the road curves to the right, would dictate that a sign be placed on the left side.
- Should be designed and made with materials that can withstand severe weather conditions.
- Demonstrate consistency with this plan and existing signs, in a manner that is (appropriately) visible and the message is clear.
- Meet accessibility requirements (i.e. Federal or State accessibility standards such as the “Architectural Barriers Act Accessibility Standards” (ABAAS)).
- Should consider the needs of non-English speaking users when and where appropriate. Other languages (i.e. Japanese, Mandarin Chinese, etc.) may also be warranted in very limited circumstances. Graphic content, as opposed to text, is recommended when possible in lieu of multiple languages.

![Example of multiple languages used in signs, in an area frequented by Japanese language speakers (OMKM photo February 2008).](image)

- Should be in both Hawaiian and English, when appropriate. Proper Hawaiian (place) names should always be used.
- Should match visitor and travel information found in current paper and electronic media maps or other sources of visitor information.
- Made-by-hand signs are not permitted except in emergency circumstances.
• May require modification from identified standards due to extreme weather conditions, cinder substrate, or other approved justification.

![Sign designed to be a) legible in a variety of climatic conditions and b) stable given frequent high winds and loose substrate for mounting (OMKM photo November 2014).](image)

**Office of Maunakea Management Review**

All proposed signs will be reviewed by the Office of Maunakea Management to ensure that signs will:

- Address policy and design criteria identified above.
- Fulfill a legal requirement or address concerns.
- Command attention.
- Convey a clear, simple meaning.
- Command respect.
- Provide key information concerning the accessibility of programs and facilities.
- Factor in costs, planning, fabricating, installing, maintaining, and replacing as an ongoing commitments.
3. SIGN TYPES
Signs used on University-managed lands can be identified within the following categories.

Traffic Control Devices
The Manual on Uniform Traffic Control Devices (MUTCD) is the national standard for all Traffic Control Devices (TCD), which are defined as all signs, markings, and other devices used to regulate, warn, or guide traffic on roads or highways by authority of the public agency having jurisdiction. When MUTCD, State, or County guidance is unavailable or does not address circumstances on Maunakea, the U.S. Forest Service “Sign and Poster Guidelines for the Forest Service” standards will be consulted. The current road status reference terminology of “Open” (4x4 ONLY) and “Closed” should be evaluated for consistency with similar State and County of Hawai’i uses, for liability concerns, and with the U.S. Forest Service recommended usage of “Open”, access is “Restricted”, or “Closed”. Changes that may occur based on this review should be incorporated into future revisions of this plan.

Temporary Traffic Control
Temporary traffic control includes construction, maintenance, utility operations, and similar circumstances on roads as well as signs for incident management operations for fires, law enforcement, and other incidents. Consult the MUTCD for additional information.
Placement and installation standards and guidelines will follow the MUTCD, State, or County guidance; and refer to “Sign and Poster Guidelines for the Forest Service” when other guidance is unavailable.

**Accident Prevention and Safety Signs**
Signs associated with accident prevention and safety programs at facilities and general health and safety best practices on Maunakea are necessary. Signs should include messages that reinforce awareness of safety issues and hazards (e.g. use 4-wheel drive low gear, underage children, pregnant women, persons in poor health, proper clothing, etc.).

Signs must fulfill the requirements of the laws, policies, and rules as adopted by Federal (including OSHA), State, County, and University entities. It is the responsibility of each authorized observatory (or University of Hawai‘i in other areas) to ensure such safety requirements are satisfied with any proposal submitted to OMKM.

*Existing Accident Prevention / Safety Sign in need of repair (Falling Ice, Keep Back) (OMKM photo, January 2016).*

**Visitor Information**
Visitor information and interpretive signs – including bulletin boards, posters, fees, and registration requirements – assists visitors in understanding natural, cultural, and historic features and management practices. Visitor information signs will be of consistent style and design, such as those, for example, identified in the “Sign and Poster Guidelines for the Forest Service”, unless content display warrants alteration (i.e. wayside or interpretive exhibits).

**Interpretive & Wayside Exhibits**
The National Park Service (NPS) Wayside Exhibits guide emphasizes best practices and good examples of site-specific outdoor interpretation based on visitor-use data ([https://www.nps.gov/hfc/pdf/waysides/Wayside-Guide-First-Edition.pdf](https://www.nps.gov/hfc/pdf/waysides/Wayside-Guide-First-Edition.pdf)). Waysides may appear simple in form and function, but their development can be complex. The NPS guide supplements professional-level knowledge and skills for graphic design, interpretive writing, research, and other disciplines applicable to Maunakea and will be consulted for signs that provide visitor information.
Trail Signs
Trail signs will follow the State of Hawai‘i “Na Ala Hele” program or State Park’s guidance, if none is available the U.S. Forest Service “Sign and Poster Guidelines for the Forest Service” or similar standards will be consulted. Detailed navigation-related trail signs on University managed lands are not anticipated to be necessary given the extremely limited extent of designated trails.

Trailheads will include identification signs (orientation waysides as identified in guidance associated with the NPS Wayside Exhibits guide). Trailhead signs will be coordinated with any adjacent land managers affected by the trail.

Prohibitions & Resource Protection
Signs that identify prohibited activities or guidance about appropriate practices may be required. Signs identifying a prohibition will not be used without an underlying authority and understanding of enforcement options. Universal imagery (pictograms) should be considered for such signs. Balancing the desire for such signs while limiting the use of signs to the minimum necessary will require deliberate evaluation of the impacts and risks of inappropriate behavior with the benefits of a sign. Such evaluation will be part of the approval process and include consideration of alternate education strategies as opposed to signs.

Any sign that directly or indirectly identifies a cultural site will be considered only after initial consultation with the Kahu Kū Mauna Council (volunteer community-based council whose members are from the native Hawaiian community). Additional consultation with the State Historic Preservation Division (SHPD) is also required to obtain sign installation approval at such sites. With previous consultation, Kahu Kū Mauna Council indicated a preference not to place signs at specific cultural sites.
Examples of prohibition and resource protection signs (OMKM photo November 2010 [left] and June 2011 [right, in the Mauna Kea Ice Age Natural Area Reserve]) of disparate style and design that should be standardized as signs to be replaced.
4. DESIGN & MANUFACTURING

- Temporary, hand-drawn signs are not permitted. Signs, even temporary in nature, must be professionally printed and installed. Emergencies may dictate exceptions and Maunakea Rangers will be immediately notified in such instances.

- Unnecessary signs should be removed. Cover, hinge, or remove signs when signs are needed intermittently over a long period of time. The advantage of a hinged sign is that it is already in place and can be made usable easily when needed, but its message is covered when not needed.

- All signs will be designed and installed to withstand the severe weather conditions on the mountain. Typical engineering specifications include the ability to withstand sustained 120 mph winds, resistant to fading with intense solar radiation, with a durable finish given abrasive properties of blowing cinder, etc.

- Signs may be mounted to or painted on existing infrastructure when appropriate. Otherwise, mounting posts will generally be metal for TCD and safety signs. Mounting posts for visitor information signs (wayside, trail, and prohibitions) will generally be metal but not necessarily suited to TCD flexibility/breakaway standards. Temporary traffic control sign mounts will vary depending upon the use.

- Signs need to be designed to convey a simple, clear message that is appropriate to the user setting.

- Visitor Information signs will typically have a brown background with white or yellow lettering and use pictograms when possible, excluding interpretive and wayside exhibits.

Signs identifying hazards and prohibitions on Maunakea at the Visitor Information Station (OMKM photo September 2016).
5. INSTALLATION & MAINTENANCE

Signs, temporary, seasonal, or event specific, (e.g. road closure signs), must be kept indoors, in approved storage locations, or left installed and covered when not in use. Signs will not be stored in culverts, ditches, or other areas not intended for material storage.

Installation

Installation of signs requires approval. Temporary signs (less than 30 days) that do not involve ground disturbance can usually be approved via coordination with OMKM. Longer term or ground-disturbing installations most likely require both OMKM and DLNR approval.

The routine installation and use of temporary barriers and signs is not permitted, except for emergencies or unanticipated public safety purposes. Where barriers and signs are currently routinely used (see next section for details) it is recommended that an application for the installation of permanent barriers and signs be filed with OMKM.

Example of use of temporary Traffic Control Devices (TCD) better suited for permanent infrastructure and resulting maintenance issues with such mis-matched use considerations (OMKM photo, June 2015 [left] and March 2016 [right]).

Maintenance

Signs are highly visible and their maintenance or lack of maintenance leaves the visitor with a positive or negative impression about the site. Well-maintained signs convey a sense of pride and reduce vandalism while poorly maintained signs may contribute to a diminished visitor experience, including disorientation of visitors.

The following best practices are employed by OMKM and Maunakea Support Services:

- Maintain a record of all signage, including location, type of sign, and photo (i.e. inventory).
• Inspect signs regularly, especially after each winter season, for weathering and visibility.
• Repair or replace vandalized, damaged, or missing signs as soon as possible.
• Secure loose or tilting signs in an upright position.
• Clear vegetation from around signs to maintain visibility.
• Remove evidence of vandalism.
• Review sign content with each inventory update to ensure continued relevance and accuracy.
• Obsolete, damaged, or surplus signs should be reused or recycled whenever possible.
• Routine and common sign maintenance needs (i.e. fading, structural stability, abrasion from blowing cinder, etc.) will inform design guidelines.

Existing new sign showing maintenance concerns that can feedback into design considerations (OMKM photo, February 2015 [left] and April 2015 [right]).
6. APPROVAL PROCESS
All signs require approval. Two approval paths are identified for signs, both are subject to the legal and policy requirements identified previously. The first path to approval is for signs involving ground disturbance or that may be used for a period of greater than 30 days (in aggregate or consecutively). The second path to approval is for replacement of existing signs with like-to-like materials or signs to be used for a period of less than 30 days. Any signs installed after approval of this sign plan, but not approved through the process identified herein, will be removed immediately.

Long-Term Sign Approval
Installation of signs must follow the project approval process outlined on the OMKM website (http://www.malamamaunakea.org/science/science-projects). Signs are assumed to fall under the “minimal impact” project criteria. In brief, OMKM staff will review the submitted sign proposal, Kahu Kū Mauna Council will be consulted, approval sought from the Maunakea Management Board, and then Site Plan Approval sought from the Department of Land and Natural Resources.

Proposals must address the specifications identified in the “Purpose” and “Sign Policy” sections of this document and will be evaluated against the criteria identified therein. Deviation from the specifications may be permitted, but reasons must be articulated and justified in the proposal. This review will include discussion of cultural appropriateness and efforts to minimize the number of signs on Maunakea. Kahu Kū Mauna Council and the Maunakea Management Board may raise other criteria in their reviews. Final approval rests with the State of Hawai‘i, Department of Land & Natural Resources. We estimate that once a sign proposal is submitted it can take six months to be processed and approved.

Replacement & Temporary Sign Approval
Replacement of existing signs with “like-to-like” signs does not require the formal review, approval, and permitting process outlined above. However, OMKM must be notified before initiating the replacement process to ensure the replacement is consistent with this plan and State and Federal requirements.

Temporary Traffic Control or other temporary signs, defined as present for less than 30 days in a single period, or cumulatively, and that do not involve ground disturbance may be used after first notifying OMKM of the sign need, location, approximate duration of use, and point of contact for inquiries.

Emergency signs are permitted as circumstances dictate. The Maunakea Rangers must be notified verbally and in writing as soon as possible.

Traffic Control Devices used to mark inappropriately parked vehicle on a temporary, emergency, basis. (OMKM photo October 2014).
Flow chart illustrating the approval process.

1. Signs regularly used albeit for a period of less than 30 days must be submitted to OMKM under the “long-term” approval process prior to first use.
2. Written proposal instructions and template available at http://www.malamamaunakea.org/).
7. RECOMMENDATIONS

New or updated signs are recommended at the following locations:

- Update Hazard / Safety Information Signs.
- Interpretive signs at: designated parking areas along the Maunakea Summit Access Road and in the summit area. These wayside exhibits would highlight the historic properties, cultural traditions, and natural resources of Maunakea.
- Update Visitor Information signs for consistency of style, design, and use.
- A nature trail, should one be constructed as identified in the 2009 CMP in the Halepōhaku area, would include interpretive signs as well as any trails on the summit.

Analysis of Sign Needs: With each major update of the Maunakea Sign Inventory the Maunakea Rangers and Maunakea Support Services Oversight Committee will be asked to review all signs and affirm the need for continued sign presence. The sign inventory should be updated upon acceptance of this plan.

Applications for installation of permanent barriers and signs will be submitted to OMKM and the State of Hawai‘i where temporary versions of such barriers and signs are currently routinely used.
8. INVENTORY
An inventory will be maintained that identifies all signs other than temporary or emergency signs and include a photograph of the sign, coordinates of the location, and identifies the sign category as found in this plan. Additional sub-categories may be added to help group similar signs. This inventory will be updated as needed and will include a review of the inventory hierarchy used in corresponding documents, including those in this plan. If signs are added, they will be included in future inventories.

A brief overview of the sign hierarchy used in the inventory is below, followed by summary content of signs found on Maunakea (as of 2012). Finally, is a map of signs from the most recent (2012) inventory also available in Google Earth compatible format.

Sign Inventory Hierarchy
Sign Plan Category
- Category (such as MUTCD)
  - Sub-Category (such as MUTCD series)
    - Additional detail below sub-category may be identified in the inventory

Signs Found on Maunakea
Accident Prevention and Safety
- Warning
  - Falling Ice

Prohibition and Resource Protection
- Guide
  - General Services
- Regulatory
  - Bicycles & Pedestrians

Traffic Control Devices
The portion of the sign inventory is organized based on the Manual on Uniform Traffic Control Devices (MUTCD) created by the U.S. Department of Transportation’s Federal Highway Administration (FWHA 2012) (http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf_index.htm). Although this is not the full list of categories listed in the MUTCD, these are the categories that best-fit the signs present.

- Regulatory
  - Regulatory signs act to inform highway users of traffic laws or regulations and indicate the applicability of legal requirements that would not otherwise be apparent. Regulatory signs are normally erected at those locations where regulations apply and the message shall clearly indicate the requirements imposed by the regulation and shall be easily visible and legible to vehicle operator.
    - R1 Series: Stop and Yield
    - R2 Series: Speed Limit
    - R3 Series: Lane Usage and Turns
    - R4 Series: Regulation of Movement
    - R5 Series: Exclusionary
    - R9 Series: Bicycles and Pedestrians
• R16 Series: Seat Belts and Headlight Use
  • Warning
  Signs that gives notice to road users of a situation that might not be readily apparent.
  o W1 Series: Curves and Turns
  o W2 Series: Intersections
  o W5 Series: Road Width Restrictions
  o W7 Series: Hills and Grades
  o W8 Series: Pavement and Roadway Conditions
  o W13 Series: Advisory Speeds
  o W16 Series: Supplemental Plaques
  • Guide
  A roadway sign that shows route designations, destinations, directions, distances, services, points of interest, or other geographical, recreational, or cultural information.
  o D9 Series: General services
  o D10 Series: Reference Location

Visitor Information
• Recreational and Cultural Interest
  o Hiking Trail
  o Recreational Destination
Map of signs on Maunakea from 2012 sign inventory.
9. REFERENCES


