



MEMORANDUM

January 6, 2026

TO: Maunakea Management Board
FROM: Greg Chun, Executive Director, Center for Maunakea Stewardship (CMS)
SUBJECT: CMS Fire Mitigation Plan and Site Plan application

- Proposal rec'd: 9/4/2025
- Type A **B**/ C
- CMS project #360
- ED review: 9/8/2025
- EC: 9/11/2025, 10/9/2025
- KKM: 12/4/2026
- MKMB: 1/6/2026
- MKSOA: 1/8/2026

I. Project Description

CMS requests to implement fire mitigation measures in and around the Halepōhaku parcel to enhance fire resilience and mitigate wildfire risk in the area. The proposed land use seeks to reduce vegetation growing against or near structures by pruning back or removing these potentially hazardous fuel loads, in fulfillment of the Hawaii Wildfire Management Organization’s “6 Principles of Firescaping.” CMS also requests approval of its Fire Mitigation Plan, attached to the site plan application. HP was originally approved under Conservation District Use Permits (CDUP) HA 1430 and 1819.

The project includes selective removal of trees identified as fire risks due to their location within the fire buffer zone. New seedlings will be replanted on at least a one-to-one basis for those removed. The work includes elements of each of the following land uses under HAR §13-5-22. CMS submits the attached site plan application and Fire Mitigation and Resilience Plan for Halepōhaku to the Office of Conservation and Coastal Lands for a final determination of the appropriate land use:

- HAR §13-5-22, P-11, Tree Removal (A-2), Removal of trees that pose a hazard to public safety, provided, however, that the landowner shall be required to provide documentation for the need to remove the trees;
- HAR §13-5-22, P-11, Tree Removal (B-1), Selective removal of individual trees... provided that each tree is replaced on a one-to-one basis; and/or
- HAR §13-5-22, P-13, Land and Resource Management (B-3), Clearing land for fire pre-suppression and prevention, under a fire buffer plan approved by the department. CMS notes that all vegetation removal will be done by hand with minimal soil disturbance. In addition, all pruned/removed native plant species will be piled and dry-stacked onsite, while non-native vegetation will be removed for green waste disposal at the Hilo transfer station.

II. Historical and Cultural Resources Identified

The project site is within the Mauna a Wākea Traditional Cultural Property, listed in 2023 as a State Inventory of Historic Places (SIHP) site #50-10-23-31382. In addition, the nearest identified historic properties include:



- State Inventory of Historic Places (SIHP) sites #50-10-23-9074, 9075 and 9076 (respectively, the two stone cabins and comfort station) which comprise the HP rest camp. These sites are all at least 60 feet from the nearest affected vegetation.
- A lithic scatter or stone tool workshop, formerly SIHP site #50-10-23-10310 (2009 Cultural Resources Management Plan for the University of Hawaii Management Areas on Mauna Kea, Appendix C) and renamed as the Pu'ukalepeamoia Complex SIHP #16244, is over 100 feet south/downslope from a māmane that is growing beside a former “Subaru construction” cabin and which will be pruned.
- An ahu-lele within the DLNR-managed silversword enclosure. The nearest affected plant is an āweoweo over 130 feet from the enclosure fence and on the opposite side from the VIS from the fence.

III. Impacts Identified

The project occurs within previously-disturbed land continuously used since at least the 1920s. CMS does not anticipate any impact on cultural resources including viewplanes, nor impacts to any historical, hydrological, geological, or recreational resources. The removal or pruning of māmane and āweoweo, performed in accordance with prior US Fish and Wildlife Service guidance, may have impacts that are minimized with careful pruning of the subject plants and planting new saplings on at least a one-to-one basis to those removed. The project will not extend or enlarge the HP footprint and does not change the permitted use of the facility.

IV. Recommended Mitigation

CMS recommends Best Management Practices and other project conditions be adhered to in carrying out this work. The project will not proceed unless and until the Office of Conservation and Coastal Lands (OCCL) issues Site Plan Approval. CMS will comply with any and all conditions issued by OCCL.

V. Comprehensive Management Plan Compliance

The request is consistent with the 2022 Comprehensive Management Plan (CMP), approved by the Board of Land and Natural Resources. In fulfillment of the CMP's community review requirements, the proposed use was presented to the Environment Committee at its regular meetings on September 11, 2025 and October 9, 2025. At the September meeting, an EC member expressed concern about the proposed removal of māmane trees, particularly if any are ‘old growth’ māmane. Suggested alternatives to removal included only limited pruning of trees; transplanting smaller trees; and installing an exterior sprinkler system. CMS staff noted that water availability may be an issue precluding sprinklers and that some trees are already touching the buildings, creating a higher fire risk if allowed to continue growing. CMS staff also described the ongoing threat of wildfire: Besides recurrent fires along Mana Road, in April 2025 motorists



stranded overnight at HP started an illegal campfire in the adjacent Forest Reserve. Firefighters were needed to extinguish the fire when it grew out of control. The EC expressed support for the proposal at its October meeting. Kahu Kū Mauna consultation occurred on December 4, 2025, to no objections. The request will next be reviewed by the Mauna Kea Stewardship and Oversight Authority (MKSOA) prior to submittal to the Office of Conservation and Coastal Lands (OCCL). The proposed land is also consistent with UH's General Lease for Halepohaku (S-5529).

Further, CMS' review of the project fulfills the following CMP actions:

- Natural Resources
 - NR-1: Limit threats to natural resources through management of permitted activities and uses.
 - NR-10: Incorporate mitigation plans into project planning and conduct mitigation following new development.
 - NR-12: Create restoration plans and conduct habitat restoration activities, as needed.
 - NR-13: Increase communication, networking, and collaborative opportunities, to support management and protection of natural resources.
- Education and Outreach
 - EO-2: Require orientation of users.
 - EO-7: Continue and increase opportunities for community members to provide input to cultural and natural resources management activities on Maunakea, to ensure systematic input regarding planning, management, and operational decisions that affect natural resources, sacred materials or places, or other ethnographic resources with which they are associated.
- Astronomical Resources
 - AR-1: Operate the UH Management Areas to prohibit activities resulting in negative impacts to astronomical resources.
- Permitting and Enforcement
 - P-1: Comply with all applicable federal, state, and local laws, regulations, and permit conditions related to activities in the UH Management Areas.
 - P-2: Strengthen CMP implementation by recommending to the BLNR that the CMP conditions be included in any Conservation District Use Permit or other permit.
 - P-4: Educate management staff and users of the mountain about all applicable rules and permit requirements.

VI. CMS Recommendation, with Mitigation Measures

CMS recommends MKMB approve this request proceed to MKSOA and Office of Conservation and Coastal Land (OCCL) review with the standard project conditions in the attached list. The project will not proceed unless OCCL issues Site Plan Approval. CMS will comply with any and all conditions issued by OCCL.



SITE PLAN APPROVAL APPLICATION (SPA)

File No:

Acceptance Date:

30-Day Expiration Date:

Assigned Planner:

for DLNR Use

Pursuant to Hawai'i Administrative Rules (HAR) §§13-5-22 through 24, identified land uses beginning with letter (B) require a site plan approval by the department.

PROJECT NAME: Halepohaku Fire Mitigation

Conservation District Subzone: Resource

Identified Land Use: HAR §13-5-22, P-11 Tree Removal, (A-2) Removal of trees that pose a hazard to public safety; provided, however, that the landowner shall be required to provide documentation for the need to remove the trees; HAR §13-5-22, P-11, Tree Removal (B-1), Selective removal of individual trees... provided that each tree is replaced on a one-to-one basis...; and/or HAR §13-5-22, P-13 Land and Resource Management (B-3) Clearing land for fire pre-suppression and prevention, under a fire buffer plan approved by the department.

(See Hawai'i Administrative Rules (HAR) §13-5-22 through §13-5-25)

Project Address: Halepohaku, Maunakea midlevel facilities

Ahupua'a, District, Island: Ka'ohe mauka, Hamakua, Hawaii Island

Tax Map Key(s): 3-4-4-015:012, Hale Pohaku Mid-level Facilities (por.)

Proposed Commencement Date: Mid-January 2025, pending all required approvals

Proposed Completion Date: Six months, pending worker availability

Estimated Project Cost: \$1,000 for handheld and personal protective equipment; no additional cost expected as CMS staff will conduct the work as part of work duties

Total area of proposed use: Approximate total surface area affected by trimming or removing potential organic fuel sources is 0.52 acres

ATTACHMENTS

- \$50 application fee (*ref §13-5-32 through 34*)
- Location map
- Site plan

Construction, grading, site restoration, landscaping, or fire buffer plans, as applicable

Note: The application fee for State projects is waived pursuant to HAR §13-5-32.

REQUIRED SIGNATURES

Applicant

Name: University of Hawai'i at Hilo, Center for Maunakea Stewardship (CMS)

Title; Agency: Center for Maunakea Stewardship

Mailing Address: 200 W. Kawili Street, Hilo, HI 96720

Contact Person & Title: Greg Chun, Executive Director, CMS

Phone: 808-933-0734

Email: cmshilo@hawaii.edu

Interest in Property: Lessee; area encumbered by General Lease S-5529

Signature: Gregory C Chun Date: 9/8/2025

Signed by an authorized officer if for a Corporation, Partnership, Agency or Organization

Landowner (if different than the applicant)

Name: State of Hawai'i, Land Division

Title; Agency: Candace Martin, Land Agent

Mailing Address: Hawaii District Land Office, 180 Kalanikoa Street, Hilo, HI 96720

Phone: 808-974-6203

Email: candace.m.martin@hawaii.gov

Signature: _____ Date: _____

For public lands, the government entity with management control shall sign as landowner.

Agent or Consultant

Agency: N/A

Contact Person & Title: Click or tap here to enter text.

Mailing Address: Click or tap here to enter text.

Phone: Click or tap here to enter text.

Email: Click or tap here to enter text.

Signature: _____ Date: _____

For DLNR Managed Lands

Chairperson, Board of Land and Natural Resources

P.O. Box 621

Honolulu, Hawai'i 96809-0621

Signature: _____ Date: _____

PROPOSED USE

Total size/area of proposed use (indicate in acres or sq. ft.): 0.52 acres

Please provide a detailed description of the proposed land use(s) in its entirety. Information should describe what the proposed use is; the need and purpose for the proposed use; the size of the proposed use (provide dimensions and quantities of materials); and how the work for the proposed use will be done (methodology). If there are multiple components to a project, please answer the above for each component. Also include information regarding secondary improvements including, but not limited to, grading and grubbing, placement of accessory equipment, installation of utilities, roads, driveways, fences, landscaping, etc.

The Center for Maunakea Stewardship (CMS) requests to trim or remove specific, individual plants identified as potential, fire-spreading vectors within the Halepohaku midlevel parcel ("HP"). These measures are in accordance with risk reduction guidelines specific to HP, as provided in the Hawaii Wildfire Management Organization's (HWMO) report (see attached) to CMS based on its site visit to HP. The HP facilities around which the proposed land use will occur were originally permitted pursuant to Conservation District Use Permits HA 1430 and HA 1819.

Risk reduction measures will focus on a two-layer, thirty-foot buffer surrounding built structures. The buffer is composed of "the Immediate zone," a priority area from the base of building structures and their attachments (decks, stairs, fences etc.) outwards five (5) feet, in which all dead and dying vegetation, or any material supporting glowing combustion, shall be removed. Tree canopies will be removed or trimmed to avoid coming within at least ten (10) feet of other trees or improvements and to maintain at least six (6) feet of separation between ground vegetation and the lowest tree branches.

The buffer's outer layer is the "Intermediate zone," an area from five (5) to thirty (30) feet around buildings. In this zone, CMS will remove ladder fuels to prevent surface fires from reaching tree crowns by pruning trees six (6) to ten (10) feet from the ground. CMS will also maintain spacing between tree canopies by removing trees or pruning branches.

Based on HWMO guidance, CMS staff conducted onsite verification and identified approximately fifty-nine plants affected within the thirty-foot buffer zone: four aweoweo (two cut, two trim) and fifty-five mamane (twenty-seven cut, twenty-eight trim). Most of the mamane to be removed are seedling/saplings that are very small in height and not mature trees that would serve as potential foodsources for native arthropods and birds. CMS will continue its efforts of native plant restoration, replacing on at least a one-to-one basis of new seedlings for each plant removed.

CMS will implement other, minor measures to reduce the risk of fire. Due to the negligible impact to any resources, these measures are considered to meet the land use as defined by HAR §13-5-22, P-8, Structures and land uses, existing, (A-1) Minor repair, maintenance, and operation to an existing structure, facility, use, land, and equipment, whether it is nonconforming or permitted, that involves mostly cosmetic work or like-to-like replacement of component parts, and that results in negligible change to or impact to land, or a natural and cultural resource. Specifically, these minor repairs include, among other recommendations:

- Replace unrated or Class C-rated roof material with fire-rated material;
- Install corrugated roof gap fillers;
- Cover other openings with 1/8-inch metal mesh;
- Clean out debris from roof structures such as gutters, plumbing vents and chimneys;
- Replace any cracked or single-pane windows with double-pane, as feasibly possible.

The overall scope of work for these fire mitigation measures does not include use of heavy machinery nor any land-clearing such as grading or grubbing, nor the installation of utilities including firebreaks.

PROPOSED EXEMPTION

An exemption from needing an environmental assessment (EA) refers to specific situations or projects that are not required to undergo the standard EA process due to their minimal potential impact on the environment.

Government agencies should use the appropriate exemption list as concurred by the Environmental Advisory Council as found at planning.hawaii.gov/erp/agency-exemption-list

Private parties should use DLNR's Exemption List as concurred by the Environmental Council on November 10, 2020 as found at files.hawaii.gov/dbedt/erp/Agency_Exemption_Lists/State-Department-of-Land-and-Natural-Resources-Exemption-List-2020-11-10.pdf

No heavy machinery is involved and the following exemptions are considered to: HAR §11-200.1-15 (c)(4) Minor alterations in the conditions of land, water, or vegetation; and HAR §11-200-8(a), Exemption Class #4, Minor alterations in the condition of land, water, or vegetation, (2) Planting of trees, others plants, and sod; and (3) Pruning of trees and shrubs.

EXISTING CONDITIONS

Please describe existing conditions on the parcel (geology, ecology, cultural and recreational resources, historic resources, structures, landscaping, etc). Provide information regarding existing buildings and structures as well as infrastructure and utilities as applicable.

The proposed land uses would occur within the University of Hawai'i's Maunakea General Lease S-5529 for the Hale Pohaku Mid-level Facilities ("HP"). Relevant Conservation District Use Permits include HA 1430 and HA 1819.

Geology and hydrology: HP is located at an elevation of approximately 9,200 feet. The ground surface consists of volcanic rock, cinder and ash, and deep, well- to excessively-drained soils formed in volcanic ash and 'a'a lava. HP is also located within the Onomea aquifer system. Groundwater levels are assumed to be at significant depth, likely more than 3,000 feet below ground surface. Water-quality analyses have not detected any levels of bacterial or other pollutants in Maunakea water resources.

Ecology: The ecosystem is considered subalpine, with vegetation a mixture of abundant non-native grasses, native mamane (*Sophora chrysophylla*) and xeriphitic scrub. Of native plant species, the most abundant are the mamane and native grasses. There are no federally listed threatened or endangered plant species within the HP parcel itself, although numerous planted *Argyroxiphium sandwicense* subsp. *sandwicense*, *ahinahina*, are found within the silversword enclosure adjacent to the HP parcel in the Mauna Kea Forest Reserve. No impact to any silverswords, silversword habitat, or visitors to the enclosure is anticipated.

Cultural: The nearest identified cultural resource may be the 'ahinahina shrine, located over 40 meters northeast from the nearest vegetation to be cut or trimmed (an aweoweo near the VIS patio). Project activity will be limited to plants identified and will not have any impact on the 'ahinahina shrine.

Historical: The project area is located within an historic district identified on the State Inventory of Historic Places (SIHP), the Mauna A Wakea Traditional Cultural Property and District, SIHP #50-10-23-31382, and within the Pu'ukalepeamoia Complex, SIHP #16244. CMS identifies the following historic properties or specific sites near the proposed land use:

- a) State Inventory of Historic Places (SIHP) sites #50-10-23-9074, 9075 and 9076 (respectively, the two stone cabins and comfort station) which comprise the Halepohaku rest camp. The nearest affected vegetation is approximately 60 feet from any of these sites.
- b) A lithic scatter or stone tool workshop formerly SIHP site #50-10-23-10310 (2009 Cultural Resources Management Plan for the University of Hawaii Management Areas on Mauna Kea, Appendix C) and renamed as the Pu'ukalepeamoia Complex SIHP #16244, is over 100 feet south/downslope from a māmane that is growing beside a former "Subaru construction" cabin and which will be pruned.
- c) An ahu-lele within the DLNR-managed silversword enclosure. The nearest affect plant is an 'āweoweo over 130 feet from the enclosure fence and on the opposite side of the VIS from the fence.

Work is expected to be temporary, with no anticipated impacts to any cultural activities, cultural resources, or historic resources.

Recreational: Visitors utilize the HP area to acclimate, sightsee and rest while visiting the UH-managed lands. Project activity may be visible to visitors; however, the project is anticipated to have negligible, if

any, impact upon recreational resources and also is not anticipated to negatively affect public access to any recreational resources.

Infrastructure and Landscaping: The existing buildings at HP include the Onizuka Center for International Astronomy Visitor Information Station, Warehouse, Halepohaku astronomy support facilities, Utilities/Maintenance shop, historic stone buildings, greenhouse, and various paved and unpaved parking areas. Utilities in the area include electricity, telecommunications, fuel storage tanks, water tanks, septic system, culverts, and earthen swales. Other minor improvements include street lights, informational signage, VIS pipe gate, guardrails, and safety railings. CMS has worked to restore the natural landscape through invasive species monitoring and removal and native plant restoration efforts at HP.

EVALUATION CRITERIA

The Department or Board will evaluate the merits of a proposed land use based upon the following eight criteria (*ref §13-5-30(c)*)

1. **The purpose of the Conservation District is to conserve, protect, and preserve the important natural and cultural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety, and welfare. How is the proposed land use consistent with the purpose of the conservation district?** (*ref §13-5-1*)

The proposed land use has been reviewed to ensure alignment with the conservation, protection, and preservation of the State's natural and cultural resources. The project is expected to lower the spread of fire, thereby helping to protect resources and improve the long-term sustainability of the resources. In addition, by reducing the spread of fire beyond the UH lease boundaries, the project will assist protection of adjacent Conservation District lands.

2. **How is the proposed use consistent with the objectives of the subzone of the land on which the land use will occur?** (*ref §13-5-11 through §13-5-15*)

The objective of the Resource subzone, where the proposed use is located, is "...to develop, with proper management, areas to ensure sustained use of the natural resources of those areas." The proposed land use is an allowable use within the Conservation District Resource subzone, pursuant to HAR 13-5-24, R-3, Astronomy Facilities, (D-1), under an approved management plan. The approved management plan is the 2022 Maunakea Comprehensive Management Plan Supplement. In addition to the proposed project being an identified use, UH is committed to managing the natural and cultural resources of the UH Management Areas in a way that fulfills the objective of the Resource subzone of the Conservation District. The project will facilitate sustained use of the site for existing, approved uses. No change in type or intensity of use will occur as a result of this project. Cultural, historical, and natural resources will not be negatively impacted.

3. **Describe how the proposed land use complies with the provisions and guidelines contained in chapter 205A, HRS, entitled "Coastal Zone Management" (see 205A objectives on p. 7).**

The site of the proposed use is over 20 miles from the coast and is not connected to shoreline resources. The project will have no effect on any of the coastal resources identified in HRS 205A, including, but not limited to, recreational opportunities, historic resources, scenic and open space, ecosystems, economic uses, beach and coastal dune protection, and/or marine and coastal resources. The project is also not a coastal development. Consequently, the project complies with the objectives of HRS 205A.

4. **Describe how the proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region.**

The project area within the HP midlevel parcel has experienced continuous human activity and development, particularly in the past century, since the construction of two rest houses, comfort station, and minor other improvements (SIHPs 9074, 9075, 9076) in the 1930s by the Civilian Conservation Corps. In that time, human activity has primarily occurred in the form of infrastructure construction, routine management (building and grounds maintenance), research and educational site visits, hunting, and recreational use. Given the existing human activity in the area, and the intent of the proposed land use to protect resources, the project is not anticipated to present a

substantial adverse impact to existing natural resources in the surrounding area, community or region.

- 5. Describe how the proposed land use, including buildings, structures and facilities, is compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels.**

The project seeks to reduce the risk of fire and protect natural resources, public safety, and built infrastructure. This is compatible with the locality and surrounding area as the parcel has already been developed with infrastructure and the project will maintain the capabilities of the parcel. Mitigative measures such as replacing plants removed as part of the risk-reduction will help ensure the project will not adversely affect natural resources.

- 6. Describe how the existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon.**

No noticeable or detectable changes will occur to the existing physical and environmental aspects of the land.

- 7. If applicable, describe how subdivision of land will not be utilized to increase the intensity of land uses in the Conservation District.**

No new subdivision of land will occur.

- 8. Describe how the proposed land use will not be materially detrimental to the public health, safety and welfare.**

The project bears no material detriment to public health, safety and welfare and will improve those areas of concern by reducing fire risk.

CULTURAL IMPACTS

Articles IX and XII of the State Constitution, other state laws, and the courts of the State, require government agencies to promote and preserve cultural beliefs, practices, and resources of Native Hawaiian and other ethnic groups.

Please provide the identity and scope of cultural, historical, and natural resources in which traditional and customary native Hawaiian rights are exercised in the area.

Please see prior sections for additional discussion on the identity and scope of historical and natural resources in the area. The proposed land use is anticipated to have no effect on any historical resources and will mitigate effects on natural resources (vegetation) that will need to be relocated or pruned.

The 2009 CMP Cultural Resources Management Plan (CRMP) describes cultural practices and beliefs that may occur on the UH-managed lands; citing Maly and Maly 2005: 494-502, 505, the CRMP refers to 'ahu on the pu'u in the lowlands' of Maunakea; however, it is unclear what specific area this refers to. In recent years, cultural practitioners and others have constructed rock stackings in prominent locations in the Mauna Kea Forest Reserve and UH-managed lands. These ahu have been used as places to gather for worship and other practices. Within the HP area, cultural practices include offering of ho'okupu, prayer, chant, mele and hula. Other, more discreet practices that have not been documented, may also occur.

CMS has been advised to consider impacts to such cultural resources as celestial viewplanes and ocean gridlines which are significant to kilo hoku practitioners. As the proposed use involves no new or installations and no heavy/large machinery, the project is not anticipated to affect any viewplanes.

Identify the extent to which those resources, including traditional and customary Native Hawaiian rights, will be affected or impaired by the proposed action.

The project site is on previously disturbed soil/cinder that is regularly accessed for normal maintenance and operation activities. Public visitors may also occasionally walk across the area. CMS does not anticipate any degree of disturbance or impacts to any traditional and customary Native Hawaiian rights, but will conduct formal consultation with Kahu Ku Mauna.

As described in previous sections, CMS anticipates no more than a negligible or minimal impact to any natural resources. CMS will outplant new native plants on at least a one-to-one basis. Pruning of branches will be kept to a minimum that still affords building protection and reduces fire risk.

What feasible action, if any, could be taken by the Board of Land and Natural Resources regarding your application to reasonably protect Native Hawai'i rights?

The applicant defers to OCCL on feasible actions to reasonably protect Native Hawai'i rights that may be affected by this proposed use.

CHAPTER 205A – COASTAL ZONE MANAGEMENT

Land uses are required to comply with the provisions and guidelines contained in Chapter 205A, Hawai'i Revised Statutes (HRS), entitled "Coastal Zone Management," as described below:

- **Recreational resources:** Provide coastal recreational opportunities accessible to the public.
- **Historic resources:** Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.
- **Scenic and open space resources:** Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.
- **Coastal ecosystems:** Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.
- **Economic uses:** Provide public or private facilities and improvements important to the State's economy in suitable locations.
- **Coastal hazards:** Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.
- **Managing development:** Improve the development review process, communication, and public participation in the management of coastal resources and hazards.
- **Public participation:** Stimulate public awareness, education, and participation in coastal management.
- **Beach protection:** Protect beaches for public use and recreation.
- **Marine resources:** Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

CERTIFICATION

I hereby certify that I have read this completed application and that, to the best of my knowledge, the information in this application and all attachments and exhibits is complete and correct. I understand that the failure to provide any requested information or misstatements submitted in support of the application shall be grounds for either refusing to accept this application, for denying the permit, or for suspending or revoking a permit issued on the basis of such misrepresentations, or for seeking of such further relief as may seem proper to the Land Board.

I hereby authorize representatives of the Department of Land and Natural Resources to conduct site inspections on my property. Unless arranged otherwise, these site inspections shall take place between the hours of 8:00 a.m. and 4:30 p.m.

Gregory C Chun

Signature of authorized agent(s) or if no agent, signature of applicant

AUTHORIZATION OF AGENT

I hereby authorize *Click or tap here to enter text.* to act as my representative and to bind me in all matters concerning this application.

Signature of applicant(s)

Project approval conditions

Prepare to Start the Project

- Identify and comply with other permit requirements, such as County of Hawai'i building permits or Department of Land & Natural Resources permits (see *both*/any applicable DLNR permit and [HAR §13-5-42 Standard conditions](#)).
- Use of real-time GPS during any surveying or equipment operation requires advance written approval from CMS and the Institute for Astronomy. GPS use should be requested at least four (4) weeks prior to the proposed activity.
- Any required Best Management Practices, Communication Plans, contract scope questions, etc. must be finalized and approved by CMS prior to final approval.
- CMS will provide a final, written notice explicitly stating whether the project is approved to commence (i.e., issue a "Notice to Proceed"). The Notice to Proceed will include any additional, project-specific conditions. **No project work may commence before this time.**
- Project approval may not be transferred or assigned without prior authorization. A copy of the approval/permit must be present on-site and available for review at all times while working on UH-managed lands.
- Applicant shall comply with all actions and measures described in the proposal, including (community) benefits, CMP compliance list, and mitigation measures.

Notifications

- Applicant may request to arrange a pre-construction meeting with CMS before work commences. These meetings review orientation content, implications of project non-compliance, project-specific concerns regarding resource protection, health and safety, visitor and/or traffic impacts, etc. Meetings may be held in person or via phone, webinar, or other means.
- Notify CMS in writing via email to cmshilo@hawaii.edu at least five (5) days prior to beginning field work on UH-managed lands (Halepōhaku, Road Corridor, Maunakea Science Reserve, or Astronomy Precinct) with the following:
 - Identify the date that onsite work will commence.
 - Identify by name-of-entity all observatories, contractors, vendors, suppliers, etc. anticipated to be associated with and substantively present on UH-managed lands for the project.
 - Identify the individual(s) who will be coordinating all invasive species inspections.
 - Attest that the observatory or relevant entity will ensure compliance with all permit conditions and communicate with CMS if there is any uncertainty.
 - Notify CMS in writing of any other entities responsible for elements of compliance.
 - Attest that all individuals anticipated to be associated with the project have completed the Maunakea User Orientation.
 - CMS is not liable or responsible for delays due to inadequate or late submissions or submissions requiring verification.

Onsite Activity

General

- Use of lighting from sunset to sunrise is prohibited unless described in the project proposal and approved.
- Use of cell-phones, other than in airplane mode, is prohibited except in case of emergency.
- Placement of permanent markers, monuments, mag nails, or survey pins, etc. is not allowed without explicit prior approval from CMS (and the State if required). ALL surveyors' work must be shared with CMS in digital format with coordinate info stored in and using a common, transferrable coordinate reference system such as "State Plane Coordinates (NAD83), Hawai'i Zone 1".
- Allow CMS Rangers to visit and monitor activities.

Transportation and Motorized Equipment

- No use of mechanized equipment is allowed unless authorized by this permit.
- 4-wheel-drive required for travel above Halepōhaku.
- Large, heavy, non-4-wheel-drive or oversized loads must submit notification to the Maunakea Road Conditions listserv, MK-ROAD-CONDITIONS@lists.hawaii.edu, at least one day prior to transit. Loads requiring an escort on public roadways must have this escort accompany them to the final destination. Projects failing to submit notification or arrange for escort to the summit may be denied entry to Halepōhaku or above.
- During public closures of the Summit Access Road, vehicle access above Halepōhaku is limited to explicitly-marked observatory, CMS, federal, or state of Hawaii vehicles. Vehicles must be operated by approved employees or representatives on official business and possessing requisite orientation, training, safety, and rescue supplies.
- Motorized equipment, when stationary, must have a drain-pan in place suitable for catching fuel or fluid leaks.

Debris Prevention and Severe Weather Concerns

- Ensure that any debris, tools and equipment are secured to avoid becoming windblown and are properly stored at the end of each day.
- Projects occurring in the summit region must verify that temporary and permanent infrastructure and improvements can sustain 120 MPH winds and severe weather.

Environmental Concerns

- All perishable items including food, food wrappers, and containers must be removed from the site daily and properly disposed of.
- Remove and properly dispose of all waste material.
- Nēnē (*Branta sandvicensis*) may be present. If a nēnē appears within 100 feet (30.5 meters) of ongoing work, all activity shall be temporarily suspended until the animal leaves the area of its own accord. Federal law prohibits feeding or any "taking" (e.g., harassing, harming, killing) of nēnē.
- Best Management Practices for seabirds, including the endangered Hawaiian petrel (*Pterodroma sandwichensis*)
 - Use red light bulbs outside to the maximum practicable extent.
 - Fully shield outdoor bulbs so the light is only visible from below.
 - Install motion sensors or turn off lights when human activity is not occurring in the area.

- September-December: Avoid nighttime construction.
- Best Management Practices for the endangered Hawaiian Hoary Bat (*Lasiurus cinereus semotus*)
 - No barbed-wire fencing allowed.
 - June-November: Do not trim, remove, or disturb trees over 15 feet tall.

Invasive Species Prevention

- Employ invasive species prevention best practices, including inspections of materials by a DLNR-approved biologist, as identified in the Maunakea Invasive Species Management Plan prior to entering UH-managed lands.
 - Inspections can only occur at locations where landowners have given permission (i.e. facilities, baseyards, and vendor locations).
 - Inspections shall not occur on UH-managed lands on Maunakea, at State or County parks, along public roadsides, or on Department of Hawaiian Homelands lands.

Upon Project Completion

- The project must be completed within the time frame specified in the proposal and, when applicable, as specified by DLNR. Projects that cannot be completed within this timeframe are not allowed to continue (or commence) without explicit prior written approval from CMS.
- Notify CMS in writing when field activity associated with the project is completed.
- Unless otherwise stated in the proposal, copies of all data, field notes, photos, log books, collected specimens, and other forms of documentation will be shared with CMS for future, unrestricted use by CMS or its designee. All geospatial data, metadata or applications must be in a format compatible with CMS GIS software or other industry standard identified in advance.
- Collected specimens that are not consumed in analysis will be returned to CMS unless otherwise specified.
- Provide CMS with electronic and paper copies of all publications resulting from the work. When applicable, annual, final reports must be submitted to CMS.
- When applicable, a brief, approximately 1-page, non-technical summary suitable for public outreach (school groups, community meetings, newsletter articles, etc.) must be provided to CMS within 90 days of project completion or publication. Photos and illustrations are encouraged.

Fire Mitigation and Resilience Plan for Maunakea Facilities

I. Introduction & Purpose

This plan outlines a strategy to enhance fire resilience and mitigate wildfire risks for the Maunakea Visitor Information Station (VIS), Halepōhaku, and Mid-Level Facilities. It integrates specific structural and vegetation management recommendations from the HWMO site visit report with the University of Hawai'i's established management actions and principles.

Guiding Principles: The plan will be guided by HWMO's "6 Principles of Firescaping":

1. **Be Ember Aware:** Address ignition from embers.
2. **Think "Lean, Clean, and Green":** Reduce fuel loads around structures.
3. **Make a Break:** Create non-combustible fuel breaks.
4. **Manage and Mitigate:** Implement site-specific risk reduction strategies.
5. **Get in the Zone:** Apply tailored strategies for the Immediate (0-5 ft), Intermediate (5-30 ft), and Extended (30-100+ ft) Zones.
6. **Plant Pono:** Use appropriate, well-maintained, and ideally native, fire-resistant plants.

II. Immediate Actions: Structural Hardening & Retrofitting

These actions focus on modifying facilities to reduce their vulnerability to ignition from embers and radiant heat. For any construction or modification activities, UH's Construction Guidelines (C-# management actions) will apply, requiring Best Management Practices (BMPs) and potentially independent construction monitors.

A. Peak to Eaves (Roofs):

- **Visitor Information Station (VIS):**
 - Monitor for and remove debris from skylights [HWMO Recs].
 - Clear gutters and screen them with 1/8-inch metal mesh [HWMO Recs].
 - Screen rooftop penetrations (plumbing stacks, attic fans, HVAC vents) with 1/8-inch or 1/16-inch metal mesh [HWMO Recs].
- **Makai Buildings (Lower-Level):**
 - Regularly monitor for and remove debris from roofs [HWMO Recs].
 - Screen rooftop penetrations with 1/8-inch metal mesh [HWMO Recs].
 - Clear and screen gutters with 1/8-inch metal mesh [HWMO Recs].
- **Mauka Buildings (Mid-Level Support Facilities, Halepōhaku, and Māmane Greenhouse):**
 - Monitor rooftop penetrations (plumbing vents, solar PV/thermal panels, chimneys) for debris removal [HWMO Recs].

- Screen rooftop penetrations with 1/8-inch metal mesh [HWMO Recs].
- **Halepōhaku (historical stone building):** Suggest replacement of the aged and rusted corrugated metal roof if fire resistance and ember prevention are primary goals [HWMO Recs].

B. Eaves, Vents & Openings:

- **Visitor Information Station (VIS):**
 - Monitor and clear nooks in roof framing, near electrical boxes, conduits, and lights; consider screening with 1/8-inch metal mesh [HWMO Recs].
 - Seal all conduit penetrations of fascia or rafters for gaps [HWMO Recs].
- **Makai Buildings (Lower-Level):**
 - Consider cleaning, sanding, priming, and repainting peeling fascia with flame retardant or weather-resistant paint [HWMO Recs].
 - Fill gaps between metal roofs and rafters, along fascia, and within soffits to prevent ember entry and ignition [HWMO Recs].
 - Monitor and clear open valleys or abutments against exterior walls of debris [HWMO Recs].
 - Screen all crawlspaces with slats down to the ground with 1/8-inch metal mesh [HWMO Recs].
- **Mauka Buildings (Mid-Level Support Facilities, Halepōhaku, and Māmane Greenhouse):**
 - Screen vents, slats, lattice, and crawlspaces under structures and decks with 1/8-inch metal mesh [HWMO Recs].
 - Screen open risers on stairs that connect to a structure's entryway with 1/8-inch metal mesh [HWMO Recs].
 - Screen gable vents on Halepōhaku's exterior wall with 1/8-inch metal mesh [HWMO Recs].
 - Screen the Māmane Greenhouse's lattice walls from roof to ground with 1/8-inch metal mesh [HWMO Recs].

C. Windows & Doors:

- **Visitor Information Station (VIS):**
 - Verify if windows are double-pane; if feasible, replace single-pane windows with double-pane [HWMO Recs].
 - Replace cracked glass panels in the large multi-paneled enclosure [HWMO Recs].
 - Install door seals on the First Light Store entry doors [HWMO Recs].
 - Close all doors and windows to the station when not open or when wildfire is nearby [HWMO Recs].
- **Makai Buildings (Lower-Level):**
 - Inspect windows for double-pane; if single-pane, remove all flammable materials and vegetation near them [HWMO Recs].

- Consider screening windows with a minimum of 1/8-inch metal mesh [HWMO Recs].
- Remove flammable materials placed directly inside windows [HWMO Recs].
- Close all doors and windows when wildfire is nearby [HWMO Recs].
- **Mauka Buildings (Mid-Level Support Facilities, Halepōhaku, and Māmane Greenhouse):**
 - Check seals on closed doors to ensure tightness [HWMO Recs].
 - Store flammable materials inside the station before closing all doors and windows if wildfire is nearby [HWMO Recs].
 - Seal openings around metal window panels on Halepōhaku [HWMO Recs].

D. Decks, Fences & Walkways:

- **Visitor Information Station (VIS):**
 - Remove all combustible materials stored under the restroom walkway and relocate to the extended zone or beyond [HWMO Recs].
 - Seal the opening in the walkway floor near the gutter drain [HWMO Recs].
 - Regular upkeep, debris clearance, and screening with 1/8-inch metal mesh can temporarily help for wooden walkways [HWMO Recs].
- **Mauka Buildings (Mid-Level Support Facilities, Halepōhaku, and Māmane Greenhouse):**
 - If feasible, replace sections of wooden stairs, landings, decks, and railings (up to 5 feet from structures) with non-combustible materials [HWMO Recs].
 - Remove debris and other combustible materials from under decks and store them in the intermediate zone or beyond [HWMO Recs]. Specifically, remove household combustible materials (furniture, lumber, oil, paint, cardboard, pallets, crates, insulation) from under decks and store them in closed, sealed metal containers in the extended zone or beyond.
 - Regular upkeep, debris clearance, and screening with 1/8-inch metal mesh for wooden walkways can help temporarily [HWMO Recs].

III. Vegetation Management & Fuel Reduction (Defensible Space)

This section focuses on creating and maintaining defensible space around all facilities. This aligns with CMP NR-3, which aims to minimize the loss of native biodiversity by preventing threats.

A. Noncombustible Area (Immediate Zone: 0 to 5 Feet - "Fire-Free Zone"):

- Remove all combustible materials (storage, wood piles, furniture) from this zone and relocate to the extended zone or beyond [HWMO Recs, 389].

- Monitor, maintain, or remove vegetation and debris near the ground along exterior walls that could support glowing combustion [HWMO Recs]. Replace with stone mulches where appropriate [HWMO Recs].
- Trim tree canopies to maintain 10 feet of clear space from structures or other trees [HWMO Recs].
- Bring in temporary combustibles (signs, chalkboards, displays, rugs/mats, barricades, trash cans) near entrances inside the store or structure when closing or when wildfire is nearby [HWMO Recs].
- Cut grass next to exterior walls to a maximum of 4 inches in height [HWMO Recs].
- Remove any "ladder fuels" (low grasses that allow fire to spread vertically) [HWMO Recs].

B. Intermediate Zone (5 to 30 Feet):

- Create fuel breaks with non-combustible materials such as driveways, walkways, catches, paths, patios, lanais, fences, walls, and decks [HWMO Recs, 390].
- Keep lawns mowed to a maximum height of 4 inches [HWMO Recs, 390].
- Use hardscapes or green breaks with horizontal and vertical spacing [HWMO Recs, 390].
- Remove ladder fuels so surface fire cannot reach treetops [HWMO Recs].
- Prune trees up to 6-10 feet from the ground, or not exceeding 1/3 of overall tree height for shorter trees [HWMO Recs].
- Maintain a minimum spacing of 18 feet between treetops, shrubs, and vegetative clumps [HWMO Recs].
- **Visitor Information Station (VIS):** Thin out clumps of trees, grass, and other vegetation in the picnic area that could act as continuous fuels [HWMO Recs].
- **Makai Buildings (Lower-Level):** Remove vegetation from pathways and trails to maintain fuel breaks [HWMO Recs]. Remove debris, thin out brush, and prune treetops to a minimum of ten feet from the structure [HWMO Recs].
- **Mauka Buildings (Mid-Level Support Facilities, Halepōhaku, and Māmāne Greenhouse):** Clear vegetation in the immediate area around the large LPG tank to specifications (within 10 feet) and ensure no smoking or parking nearby [HWMO Recs].

C. Extended Zone (30 Feet to 100+ Feet):

- Maintain trees and clumps to have a minimum of 12 feet between treetops from 30 to 60 feet from the structure [HWMO Recs, 391].
- Maintain trees and clumps to have a minimum of 6 feet between treetops from 60 to 100 feet from the structure [HWMO Recs, 391].

D. Invasive Species Management for Fuel Reduction:

- As a fire prevention measure, control weeds in key locations, especially around Halepōhaku, including roadsides, pullouts used by tour companies, unpaved parking lots, and around Halepōhaku itself, to create a firebreak.
- Continue to fully implement the **Maunakea Invasive Species Management Plan** (CMP NR-2). This includes ongoing volunteer weed pull programs, particularly in the Halepōhaku area, to reduce combustible invasive vegetation.
- Limb up and remove dead limbs from Māmane trees, as they can support canopy fires if ladder fuels are present, despite being generally fire-resistant [HWMO Recs].

IV. Operational Procedures & Long-Term Management

These actions ensure that fire mitigation is an ongoing part of UH's management responsibilities, leveraging existing CMP management actions.

A. Regular Monitoring & Maintenance (CMP IM-# actions):

- **Site Visits:** Conduct site visits every 2-3 months to check vegetation growth and assess the effectiveness of mitigation measures [HWMO Recs].
- **Fuel Reduction Prioritization:** Prioritize ongoing fuel reduction efforts, including grass, brush, and trees, with a specific focus on removing ladder fuels [HWMO Recs].
- **Landscape Maintenance:** Apply landscaping tips suitable for dry conditions prevalent in the area [HWMO Recs].
- **Operations, Monitoring, and Maintenance Plan (OMMP):** Continue to implement the approved OMMP (CMP IM-1), which outlines maintenance needs, strategies, and protocols to minimize impacts and ensure compliance. This includes annual submission of "Five-Year Outlooks" by facilities for anticipated projects and activities.
- **Debris Removal, Monitoring, and Prevention Plan:** Finalize and implement a comprehensive Debris Removal, Monitoring, and Prevention Plan (CMP IM-5) to address fugitive trash and maintain a clean environment, reducing potential fire ignitions.

B. Infrastructure Improvements & Design (CMP FLU-# & Master Plan Design Guidelines):

- **Assess Improvements:** Continue to assess road, parking, restroom, and wastewater improvements consistent with the 2022 Master Plan (CMP IM-8, IM-9, IM-10). This includes considering non-combustible materials in construction and advocating for zero-discharge wastewater systems for all facilities, which also avoids cultural landscape impacts.
- **Mitigation in New Development:** Require the incorporation of mitigation measures in plans for any new development (CMP NR-10).
- **Design Guidelines:** For any new structures or substantial modifications, adhere to the design guidelines outlined in Chapter 7 of the 2022 Master Plan and CMP FLU-1 and

FLU-7. This includes prioritizing siting new facilities in previously disturbed areas to minimize environmental impacts.

C. Emergency Preparedness (CMP OI-5):

- **Emergency Response Plan:** Update and implement the Maunakea Emergency Procedures (CMP OI-5), a comprehensive set of emergency response procedures. This plan will continue to provide support for the implementation of DLNR's 2011 Wildfire Management Plan for Maunakea.
- **Risk Assessment:** Consult historical records to determine if the area is prone to wildfire [HWMO Recs].
- **Egress Planning:** Emphasize that staff and guests should leave the area early to avoid egress challenges via the single Mauna Kea Access Road during a wildfire [HWMO Recs].

D. Education & Outreach (CMP EO-# actions):

- **Staff and Visitor Education:** Utilize the Maunakea Education & Outreach Plan (MEOP) (CMP EO-1) to generate public awareness about the importance of natural resources and fire prevention.
- **Mandatory Orientation:** Require all persons accessing the UH Management Areas to complete an orientation program (CMP EO-2) that includes information on cultural, natural resource, and safety matters, including fire risks.
- **Signage:** Provide educational signage requesting that visitors do not smoke on trails, in enclosures, or other unpaved areas. This is part of implementing the Maunakea Sign Plan (CMP EO-4).

E. Adaptive Management (CMP NR-14, MEU-2):

- **Continuous Improvement:** Apply adaptive management principles when reviewing and updating fire mitigation programs and methodologies (CMP NR-14, MEU-2). This involves learning from outcomes, collecting new data, incorporating traditional knowledge, and seeking input from experts and the community.

V. Responsibilities & Coordination

- **Center for Maunakea Stewardship (CMS):** The CMS, delegated by UH Hilo, is responsible for administering the UH Maunakea Lands and implementing the CMP management actions. This includes overseeing the fire mitigation plan.
- **Interagency Collaboration:** Coordinate closely with the Department of Land and Natural Resources (DLNR) and other relevant agencies, as emphasized in CMP NR-13 and OI-3.
- **Advisory Groups:** Involve the Maunakea Management Board (MKMB), Kahu Kū Mauna (KKM), and the Environment Committee (EC) in reviewing and providing input on fire mitigation strategies and proposals.

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