University of Hawai'i at Hilo
CENTER FOR MAUNAKEA STEWARDSHIP

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UNIVERSITY of HAWAI'I® HILO

MEMORANDUM

- Proposal rec'd: 3/25/2025
- Type A / B / C
- CMS MIP #357
- ED review: 3/31/2025
- EC review: 4/10/2025
- KKM review: 4/3/2025
- MKMB review: 5/6/2025

May 8, 2025

TO: Mauna Kea Stewardship and Oversight Authority

FROM: Greg Chun, Executive Director, CMS

SUBJECT: Informational, Request for Concurrence, IRTF Erosion and Safety Measures

I. Project Description

The NASA Infrared Telescope Facility ("IRTF") requests to complete the following minimal-impact modifications to address erosion and safety concerns at its Maunakea observatory:

- Install diverter pipe on east side of building. All but the last few inches of the pipe will be covered over by fresh cinder. No digging or trenching is involved.
- Use locally-sourced cinder to replace cinder that has eroded from between the building's eastern face and parking lot.
- Install a safety railing near the exhaust building. Paint finish will be flat brown/beige.
- Install three, OSHA-compliant electrical conduit boxes, one on each of the southwest, southeast, and east sides of the building.

In-house staff and contractors expect to complete the work during the summer months of 2025. The action addresses various maintenance concerns and is expected to have either minimal or no significant adverse effects and

II. Resources Identified

Although the project area is located within the following identified historic properties, project activity is limited to the IRTF sublease parcel in which no identified cultural resources have been identified:

- Mauna Kea Summit Region Historic District, State Inventory of Historic Places (SIHP) Site #50-10-23-26869;
- Mauna A Wākea Traditional Cultural Property and District, SIHP Site 31382; and
- Kūkahau'ula Traditional Cultural Property, SIHP Site 21438.

Sparse lichen and/or moss may occur at the project site. No rare, threatened, or endangered species have been documented at the site. Recreational visitors stop by, primarily during the day and at sunset for sightseeing. The facility may observe astronomical resources at any time of day.

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III. Impacts Identified

As the work is limited to existing infrastructure, will not extend or enlarge IRTF's footprint, and does not change the permitted use of the facility, the applicant does not anticipate any impacts to any identified historic properties or cultural resources, nor to any natural (geological and hydrological), biological, recreational, or scientific resources.

IV. Recommended Mitigation

CMS identifies the land use as 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.* A request for concurrence will be sought from the Office of Coastal and Conservation Lands (OCCL), following presentation to KKM, the Environment Committee, Maunakea Management Board, and the Mauna Kea Stewardship and Oversight Authority. The project will not proceed unless all applicable reviews are completed and approvals obtained. Standard Best Management Conditions, applicable CMS approval conditions, and OCCL approval conditions will be complied with.

V. Compliance with Maunakea Comprehensive Management Plan

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 project was reviewed by Kahu Kū Mauna Council (KKM) on April 3, 2025 and Environment Committee on April 10, 2025; the sole concern raised was from KKM, which requested the safety railing be painted brown to blend in with the landscape, in agreement with the 2022 Master Plan. IRTF will paint accordingly. CMS will share with MKSOA any concerns from the May 6, 2025 Maunakea Management Board meeting as the latter meeting is after the MKSOA's posting deadline. The proposed land is also consistent with UH's General Lease for the Science Reserve (S-4191) and IRTF's sublease. Further, CMS' review of project requests like this complies with the following CMP Actions:

- NR-1: Limit threats to natural resources through management of permitted activities and uses. Habitat alteration and disturbance will be minimized via implementation of Construction Guidelines detailed in the CMP's six Permitting and Enforcement Actions, including:
    - 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 that compliance with the CMP be a condition of permits and agreements.
    - P-4: Educate management staff and users of the mountain about all applicable rules and permit requirements

- IM-5: Develop and implement a Debris Removal, Monitoring and Prevention Plan, particularly that "All incidental rubbish and debris shall be secured in a windproof rubbish bin or kept indoors."

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- C-9: Inspection of construction materials. Shipping containers and crates will be inspected by a DLNR-approved biologist or by Department of Agriculture personnel prior to arriving at Maunakea. Identified mitigation measures will be complied with.

- EO-2: Require orientation of users. All project workers will be required to successfully complete the Maunakea Resource Orientation prior to working onsite.

- AR-2: Prevent light pollution, radio frequency interference (RF) and dust. Contractors and staff will be informed to keep within posted speed limits to minimize dust.

VI. Center for Maunakea Stewardship Recommendation

CMS recommends the project proceed to OCCL for concurrence review and approval with the standard project conditions in the attached list, should the project be approved.

Facility Project Proposal for the UH-Managed Lands

for projects anticipated to be classified as having "Minimal Impact"

Proposals due by the 15th monthly

Please mark all that apply to your project

_X_ Project was reviewed in a 3-Year Plan
_X_ Project is a CMP, lease, or sublease compliance measure (e.g., keeps the site in safe working order)
_X_ Project involves heavy machinery
___ Project requires ground disturbance such as digging or trenching
___ Project will result in a change to the facility footprint
___ Project affects a viewplane (e.g., starline or oceanic gridline)

Facility Name

NASA Infrared Telescope ("IRTF").

Brief Descriptive Title of Project

Erosion and safety maintenance measures at IRTF.

Project Description

IRTF proposed the following minimal impact exterior modifications in its 2025-2027 Three Year Outlook. Collectively, the project components will maintain site safety and reduce erosion:

- Install diverter pipe on east side of building. All but the last few inches of the pipe will be covered over by fresh cinder. No digging or trenching is involved.
- Use locally-sourced cinder to replace cinder that has eroded from between the building's eastern face and parking lot.
- Install a safety railing near the exhaust building. Finish will be flat brown / beige
- Install three electrical conduit boxes, one on each of the southwest, southeast, and east sides of the building.

Identified Land Use (see HAR § 13-5-22 through 13-5-25)

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…*

Identify the existing CDUP this proposal alters or affects, if any

CDUP HA 653.

Identify University of Hawai'i exemption per HAR § 11-200-8(a), if any

The cinder-replenishment is considered maintenance of existing topographical features. Due to the use of heavy machinery to replenish eroded cinder, the proposed land use considers the

following exemptions to apply, noting, however, that there will be **no** expansion or change of use beyond that previously existing and IRTF only seeks to restore the cinder level:

HAR § 11-200.1-15 (1*) Operations, repairs, or maintenance of existing structures, facilities, equipment, or topographical features, involving minor expansion or minor change of use beyond that previously existing;*

HAR § 11-200-8, Exemption Class #1: *Operation, repair or maintenance of existing structures, facilities, equipment or topographical features, involving negligible or no expansion or change of use beyond that previously existing, (1) Operation, repair or maintenance of (m) Roads, walkways, parking lots, bike paths, and vehicular ramps.*

Proposed Commencement Date

June 2, 2025, or as soon as all necessary approvals are obtained.

Proposed Completion Date

August 1, 2025

Estimated Project Cost

$2,000 for diverter pipe installation.
$9,000 for railing fabrication and installation.

Total size / area of proposed use

Area to replenish cinder is approximately 110 ft^2 and 110 ft^3 in volume

Project Purpose and Need

The project components have specific and separate purposes:

- Diverter pipe: Install pipe to direct rainwater and snowmelt from the rooftop and dissipate this across the paved parking to reduce erosion in the area.
- Parking lot cinder: Replace cinder that has eroded from between the building's eastern face and parking lot. This replenishment will assist to improve drainage, protect the foundation from moisture damage, and reduce the risk of falls by providing a more level surface between the parking area and entrance patio.
- Safety railing: This installation is needed to prevent or reduce the fall risk from height, similar to CMS safety installation permitted under HA 23-174, installation of safety railing on a parking lot wall. To date, no falls have been observed. Railing will be mounted to an existing half-wall which visitors have been observed to walk, sit, and stand upon. Warning signage currently posted to the adjacent exhaust building may not be an effective deterrent to this unsafe behavior.
- Electrical box and conduit: This measure is necessary to meet current electrical NFPA 70E code standards.

Has professional peer-review occurred

The project has been developed and refined by IRTF staff.

Are there any related ongoing, pending, or planned projects associated with this submission?

No.

Description of the Project

Location

IRTF is located at an elevation of about 13,450 feet, in the summit area of Maunakea. The climate and ecosystem and climate are considered arid alpine desert. All work activity will be limited to IRTF infrastructure (dome building, exhaust building, and parking lot).

Description of the process of completing the project

The project has three components:

1. Erosion control via installation of a diverter pipe (Figure 1) and replenishment of cinder (Figure 2). Diverter pipe: 4" diameter PVC pipe to be securely attached to IRTF building. Estimated total length = 18' from building wall to asphalt. Cinder: Approximately 110 cubic feet of replacement cinder will be obtained from Batch Plant/Park 3 by CMS Utilities staff and delivered to IRTF.

Figure 1. **PVC pipe will not be 'buried,' but covered over by fresh cinder** between the building to the beginning of the asphalt (flush with rear end of vehicle to right of image).

Figure 2. Area to be re-cindered, without conceptual diverter pipe.

2. Safety railing: 18’ long by 42” high, schedule 40 steel pipe.

Figure 3. Railing depicted here in bright yellow for conceptual purposes only. Actual railing will be painted flat beige/grey.

3. Electrical box and conduit: Cut the existing conduit that goes through the wall and install one electrical junction box at each location to meet current electrical codes. Box measurements not to exceed 6” long x 6” deep x 6” wide.

Figure 4. Southwest corner needing conduit box.

Figure 5. Southeast corner needing conduit box.

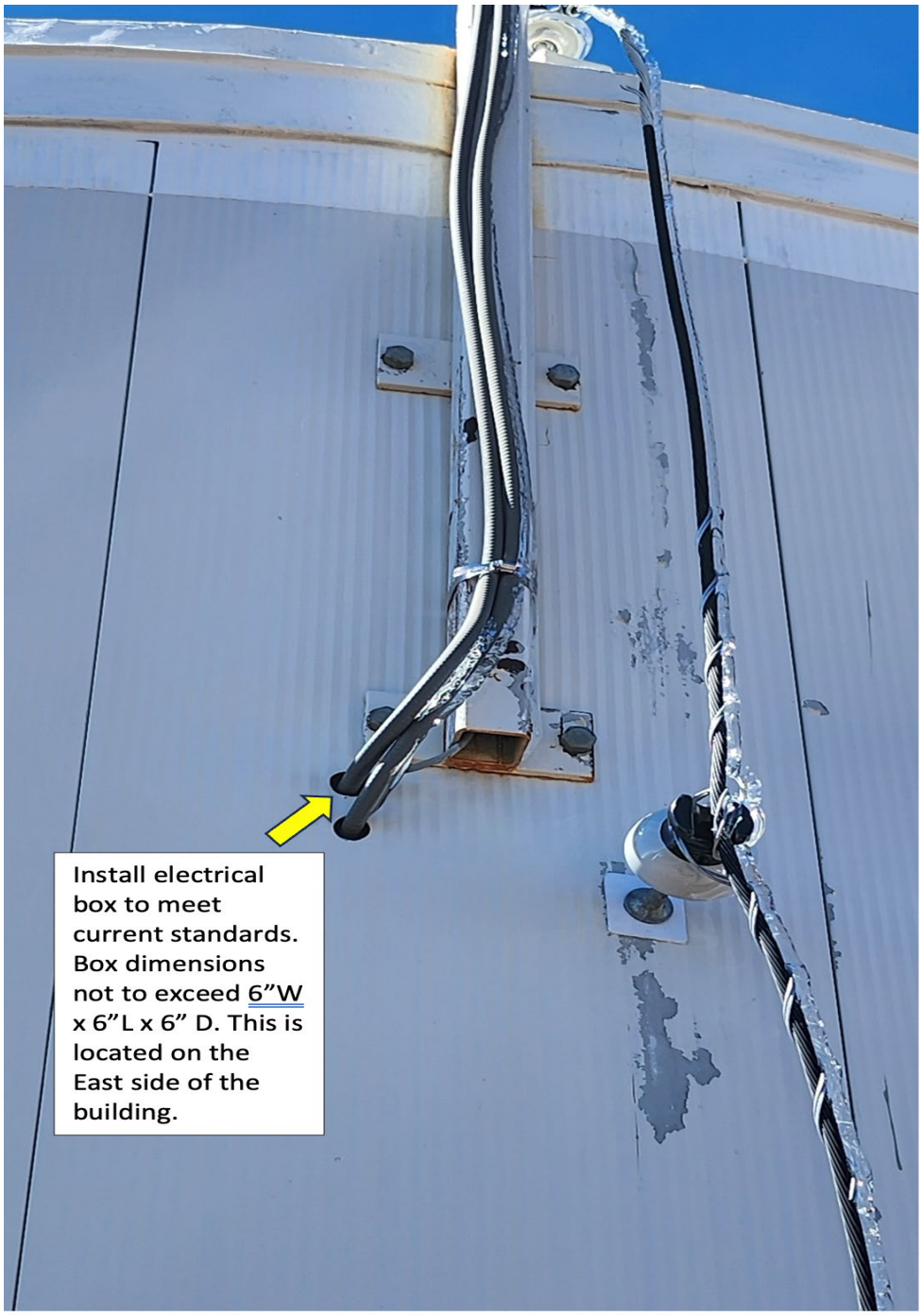

Figure 6. East side of building needing conduit box.

Who will do the work?

CMS Utilities will assist in gathering and delivering the gravel from piles at Batch Plant, as well as fabricating and installing the safety railing. Work will be completed by IRTF staff for the electrical boxes.

Equipment & Transportation

No additional or external vehicles or equipment will be involved. Only normal work vehicles utilized by IRTF and CMS staff will be used, including the CMS backhoe and front-end loader to deliver the gravel from Batch Plant to IRTF.

Measures to protect the environment and/or mitigate impacts

Impacts

Work activity will be limited to existing IRTF infrastructure. The project anticipates only negligible visual impact to existing conditions, including the addition of cinder and new electrical conduit cover. There will be no adverse or significant impact of any kind. Although a (dozer/excavator) will be used, this use is identical to that performed as part of its regular, allowed road maintenance.

Compliance with Lease, Sublease, or Comprehensive Management Plan (CMP)

The proposed works all seek to maintain IRTF compliance with its sublease by maintaining the site in safe, good working order. The project will also be reviewed to assure best compliance with the 2022 CMP Supplement.

Identify other required or associated permits

None identified.

Community Benefits

Benefits to other Maunakea entities and/or global astronomy community

None identified.

Benefits to the Hawaii Island community

A primary benefit occurs through the installation of the safety railing, which will provide improved protection for visitors and reduce the risk of accidental falls. The replenished cinder should also provide a more level surface to employees and visitors walking between the parking lot and front stoop.

Will data, publications, or other products be free and available to the public?

N/A

For internal use only by CMS

Review checklist
_X_ Staff review and report
___ Outside agency review or approval required
_X_ Environment committee, if environmental impacts are anticipated
_X_ Kahu Ku Mauna, if cultural impacts are anticipated and KKM requested consultation, or the project was not included in a 5YP or 3YP
_X_ Maunakea Management Board
_X_ Mauna Kea Stewardship and Oversight Authority

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.