Operations, Monitoring, and Maintenance Plan

Maunakea Comprehensive Management Plan
Management Action IM-1

Purpose

The purpose of this Operations, Monitoring, and Maintenance Plan (OMMP, Comprehensive Management Plan IM-1) is to identify maintenance needs, strategies, and protocols that minimize impacts to the resources, and ensure that permittees comply with their Conservation District Use Permits (CDUP), subleases, and State of Hawaii regulations including Conservation District Rules. An OMMP also serves as a reporting mechanism documenting CMP implemented management actions. The plan ensures regular monitoring through annual updates to Observatory 5-year outlooks, OMKM oversight, and OMKM, Maunakea Management Board, and State approvals as appropriate.

As identified in the 2009 Comprehensive Management Plan:

> *The OMMP is a document that coordinates all maintenance plans, activities and schedules. It identifies personnel necessary to conduct tasks, monitoring requirements to ensure compliance, and reporting procedures to document the actions that were implemented. The OMMP should address existing maintenance tasks carried out by MKSS and the observatories, as contained in their CDUP, along with new recommendations presented in the CMP.*

This plan was initiated by soliciting a "5-year outlook" from all Observatories and Maunakea Support Services (MKSS), collectively referred hereinafter as observatories. Observatories were requested to provide a list describing in general all activities that alter or modify the exterior of a facility, interior projects with exterior impacts, the outdoor storage of materials for a prolonged period of time (more than 30 days), or use of heavy equipment over the next 5-years. For observatories that have ceased astronomy operations and stated their intent to decommission, their decommissioning-plan documents are used. Observatories and MKSS will be required to update their 5-year outlooks annually.

Review Process

All proposed observatory activities that alter or modify the exterior of a facility, interior projects with exterior impacts, the outdoor storage of materials for a prolonged period of time (more than 30 days), use of heavy equipment, or otherwise require a permit undergo a review process.

- Office of Maunakea Management (OMKM) reviews each 5-year outlook for clarity and completeness, then makes preliminary assignments of each activity into one of two review categories (see below).
- KKMC reviews OMKM's recommendations and either concurs or makes adjustments to an activities' category assignments.
- Observatory submits its final detailed proposal for a project(s) listed in the 5-year outlook. If the project was categorized Minimal Impact or Routine, OMKM completes a final review and submits it to MKMB for its review and approval.
- When a project classified as In-Depth Consultation is submitted to OMKM, it is first taken to KKMC for consultation before submitting to MKMB for approval.

Regardless if a project is categorized "Minimal Impact or Routine" or "In-Depth Consultation", State approval and/or permitting may be required in accordance to Conservation District Rules, Department of Health and other agency regulations. These reviews also address CMP management action IM-3: "conduct historic preservation review for maintenance activities that will have an adverse effect on historic properties". The OMKM/KKMC/MKMB review process, a community vetting process, is generally completed before submission to DLNR for final review and approval. Identification of a project in the 5-year outlook does not alter or reduce observatory or OMKM compliance requirements under existing CDUPs, State law, and Conservation District rules.

The two review categories are:

1) **Minimal Impact or Routine Activities**. These projects are typically lease-compliance actions requiring observatories to keep their facilities in good working order and condition, such as painting and physical building appearance. Minimal and routine projects include augmenting remote environmental monitoring, like-to-like replacement, instrument or facility maintenance and repair, activities required by the sublease, etc. OMKM will review the proposed project details for consistency with KKMC's initial consultation and review; if there is no substantive changes to the project it is forwarded to MKMB for final review and approval. State approval is sought following MKMB approval.

2) **In-Depth Consultation Activities** are projects that warrant separate, in-depth Council consultation because the scope of activity have potential long-term implications. These may include ground disturbance, new physical infrastructure footprints, potential for public concern, or substantive facility renovations or upgrades. Following KKMC consultation, the project is forwarded to MKMB for its review and approval or recommendation to the President/BOR. State approval and/or permit may be sought prior to UH's final approval.

A s*ummary* of typical projects, the Kahu Kū Mauna Council consultation recommendation, and OMKM monitoring and mitigation is provided at the conclusion of this plan.

Maunakea Observatory Five-Year Outlook – Content Guidelines

Consistent with the 2009 Maunakea Comprehensive Management Plan, and Kahu Kū Mauna Council (KKMC) consultation, each Observatory and Maunakea Support Services annually submit a 5-year outlook of projects as outlined below. These 5-year outlooks shall include all activities that alter or modify the exterior of a facility, interior projects with exterior impacts, the outdoor storage of materials for a prolonged period of time (more than 30 days), or use of heavy equipment. Plans do not need to identify work that is limited to the existing interior of a facility, or routine maintenance and replacement in-kind of outdoor items that otherwise would not require OMKM, State, or MKMB approval.

5-Year Plan Content:

1. Decommissioning: Does your observatory anticipate starting the decommissioning process during this period?
2. Remaining content is to be organized by broad categories of:
    - Environmental Monitoring (GPS, cameras, weather, etc.).
    - Facility Maintenance and Safety Improvements (repainting [note any intended color changes], dome ladder modifications for staff safety, repaving, sidewalk/foundation-apron alterations, etc.). Typically, these activities reflect CDUP or sub-lease requirements.
    - Renovations & Infrastructure (HVAC upgrades, Photovoltaic systems, new dome vents, modifications that are not maintenance related, etc.)
    - Upgrades (upgrades to scientific capacity or capabilities that would require permitting either because the facility exterior will be altered or otherwise impact the CDUP or sub-lease.
    - Other (not addressed elsewhere in these categories).
3. Within each broad category complete project details need not be identified, rather an outline of what is anticipated must be provided. If uncertain as to a timeframe or if an activity will occur please include it in the 5-year outlook with the understanding that this is a best estimate of activities. Not including something does not mean it will not be considered for consultation by the Council, but consultation may require additional time. Within each broad category, details to summarize include:
    - Brief description of likely action.
    - Purpose.
    - Estimated project date (year, month), when known.
    - Duration of activity and duration of installation or modification (i.e. a sensor deployed on the roof for 1 year or a concrete pad for the duration of the facility).
    - Infrastructure (i.e. cranes, specialized equipment, transportation), staff, and ground disturbance involved in installation or modification.
    - Visibility to the public (i.e. physical size, visual profile, etc.) when completed.

Frequency:

Updated yearly by each observatory and MKSS, submitted to OMKM by 1 December of each year; always forward-looking for a period of 5-years.

5-Year Outlook Annual Reviews:

1) Reviewed by OMKM for clarity and completeness prior to submission to Kahu Kū Mauna Council.
2) Reviewed by Kahu Kū Mauna Council. The Council may request clarification, addition, or removal of detail. The Council will assign a review category for each activity listed in the 5-year Plans. Those identified as “Minimal Impact or Routine Activities” are deemed to have sufficient detail such that further consultation is not anticipated. Those categorized as “In-Depth Consultation” require additional consultation.
3) Every detailed project request received (process outlined at http://www.malamamaunakea.org/science/science-projects) is reviewed by OMKM according to KKMC’s consultation on the 5-year outlook. The project will be forwarded to the MKMB without additional KKMC consultation (Minimal Impact and Routine Activities) or following additional KKMC consultation (In-Depth Consultation). OMKM will make consistency determinations and inform the KKMC of all projects at KKMC meetings (regardless of review category). Projects that are inconsistent with the 5-year outlook or not included will be submitted to the KKMC for in-depth consultation before proceeding to the MKMB for review and approval. These actions in no way alter State permitting requirements or reduce OMKM’s role in reviewing and coordinating projects.

Typical Consultation Designation, Monitoring, & Mitigation Considerations

Kahu Kū Mauna Council assigns projects to either 'Minimal Impact or Routine Activities' or 'In-Depth' Consultation designations. OMKM reviews the detailed project proposal upon receipt to ensure the project details are consistent with Kahu Kū Mauna's designation. If there are discrepancies or uncertainty following the initial consultation, the KKMC is consulted 'In-Depth'.

Monitoring is accomplished through OMKMs project approval and tracking, daily Ranger Activity Reporting, State permitting, and comparison of detailed project proposals with existing 5-year outlooks. Mitigation considerations are identified in Maunakea Management Board approvals, State permits, and below.

Typical 'Minimal Impact or Routine activities' after initial Council consultation	
Environmental	**Mitigation Considerations**
Security Cameras	OMKM and the Observatory shall work with the 'Maunakea Observatory Support Services Oversight Committee to ensure installed cameras are necessary, eliminate potential redundancy, comply w/policy, prior to submitting to MKMB for approval.
Cloud/Sky Cameras	Same as security cameras
Weather masts, sensors & other environmental monitoring	Typically sensors are only useful for astronomy observations and weather forecasting (but not suited for long-term climate monitoring). OMKM will work with observatories to maximize utility to the potential user community.
Facility Maintenance & Safety	**Mitigation Considerations**
Safety	Generally inconspicuous hardware or signs outside of buildings for fall protection, de-icing, alarms, etc.
Painting	Repainting with same color. Color change would entail in-depth consultation.
Dome Hardware	Repair or replace with like-to-like materials.
Renovations & Infrastructure	**Mitigation Considerations**
Resurface Concrete pads	Minimize color change to the extent possible.
Equipment movement & Mirror maintenance	No permanent land use.
Photovoltaic Systems	Reduce energy use.
Dome Vents	No substantive change in visible profile.
HVAC repair and renovations	No change in facility footprint.
Fiber Optic Conduit	No change in facility footprint.
Projects Requiring 'In-Depth' Consultation	
Includes all 'Upgrades'	**Mitigation Considerations**
CFHT renovation, including soils testing and UST removal	Major scientific upgrades and potential for visibility impacts, along with ground disturbance.
UH88 renovation	Major maintenance and interior upgrades. Include laser astronomy and environmental instruments in consultation.
VIS & HP renovations	Improve public facilities, more clearly define limits for Astronomy Support and road maintenance purposes. Ground disturbance.
Consolidate storage at HP	Includes (potential for) ground disturbance.
VIS ingress/egress	Public access
Slope Stabilization of Summit Access Road	Ground disturbance on pu'u near the summit.
New or replaced pavement	Includes (potential for) ground disturbance.
Moving or Backfilling cinder	Incudes ground disturbance.
Septic or other Underground Tanks	Includes ground disturbance. Evaluate closed-system for liquid waste if updating septic system.
Electrical transformer relocation	Includes (potential for) ground disturbance.
Trail or parking delineation	Includes (potential for) ground disturbance.
New sign posts, gates, etc.	Includes (potential for) ground disturbance.
Decommissioning	Includes (potential for) ground disturbance.