



University of Hawai'i at Hilo

640 N. A'ohoku Place, Room 203, Hilo, Hawai'i 96720

Telephone: (808) 933-0734 Fax: (808) 933-3208

Mailing Address: 200 W. Kawili Street, Hilo, Hawai'i 96720

**Minutes  
Regular Meeting**

Mauna Kea Management Board  
Wednesday, June 4, 2014

W.M. Keck Observatory  
Hualalai Learning Theater  
65-1120 Mamalahoa Hwy.  
Kamuela, Hawaii 96743

**Attending**

- MKMB:** Chair Gregory Mooers, 1st Vice Chair Herring Kalua, Patricia Bergin, Gregory Chun and Hannah Kihalani Springer
- BOR:** Eugene Bal, III
- Kahu Kū Mauna:** Tom Chun
- OMKM:** Fritz Klasner, Stephanie Nagata and Dawn Pamarang
- Others:** Brenda Case, Clarence Ching, Andrew Cooper, Sandra Dawson, E. Kalani Flores, Leslie Kissner, Tim Lui-Kwan, Patricia McCarre, Megan Moseley, Hāwane Rios, Bill Stormont, Barry Taniguchi, and Don Thomas

**I. CALL TO ORDER**

Chair Mooers called the meeting of the Mauna Kea Management Board (MKMB) to order at 10:00 a.m.

**II. APPROVAL OF MINUTES**

Upon motion by Herring Kalua and seconded by Patricia Bergin the minutes of the February 12, 2014, meeting of the MKMB were unanimously approved.

**III. DIRECTOR'S REPORT**

**A. Thirty-Meter Telescope (TMT) Conservation District Use Permit Appeal**

On April 2, 2014, Judge Greg Nakamura issued a judgment in favor of the University. The court ruled that the Board of Land and Natural Resources' (BLNR) decision to grant a Conservation District Use Permit (CDUP) should not be reversed because the BLNR did not render a final decision until after the conclusion of the contested case. The court also ruled there was no violation of the conservation district rules because the rules allow astronomy development on conservation district use lands. Finally, the CDUP is subject to a sufficient management plan. The Judge ordered the University to draft a final decision and order, which he accepted on May 5. The appellants filed an appeal which will now go to the Intermediate Court of Appeals.

**B. Outreach**

Wally Ishibashi is working with several immersion schools in Hilo, Hamakua and Milolii engaging the students and teachers to participate in volunteer weed pull activities. He has been accompanying Dr. Ryan Perroy, principal investigator of an erosion study on Maunakea (see below), to some of these schools where Dr. Perroy is working with the students on a robotics program using UAV – or unmanned aerial vehicles. Both Wally and Fritz Klasner will be working on developing an outreach curriculum to take to the schools introducing topics such as invasive species, geology, botany, archaeology, and astronomy. One of the goals of this program is expose the young

students to different educational opportunities that smaller schools do not have the resources or exposure to. It is hoped that they will gain a valuable lesson about caring for the aina, as well as passing it on to future generations and giving back to the community.

Amber Stillman, GIS technician, will be assisting the UH Hilo Spatial Data and Visualization Lab which is working with intermediate school age students in developing 3D maps and virtual tours. This project is in collaboration with the Maui Economic Development Board, Women in Technology, STEM Works, Summer Software Camp being held today in Kealahou.

### **C. Maunakea Spelling**

At the last meeting it was reported that the spelling of Maunakea would be changed from two separate words to one word. Since that meeting we learned that the Hawaii Board of Geographic Names reversed its decision to combine the multi word spelling of place names. Larry Kimura, professor of Hawaiian language at UH Hilo, participated in a telephone conference call along with Fritz and Amber to explain that the spoken use of place names is the basis for determining the spelling of proper names. The Board requested that Larry submit comments on their style guide regarding the spelling of place names to help them in their decision making. OMKM will continue to spell Maunakea as one word based on the research by Dr. Kimura, but historical spellings, such as in published or legal documents, where Mauna Kea appears as two words, we will continue to spell it as two words. .

### **D. Volunteer Activities**

The volunteer stats for 2013 included 8 volunteer days, 225 volunteers for a collective 1,747 hours. A total of 363 bags of weeds were pulled and over 200 silverswords were planted. This compares to 112 volunteers, 872.5 hours and 205 bags of weeds pulled in 2012, the first year of the program which began in March. The first volunteer day for 2014 was February 1 where 58 bags were pulled by 44 volunteers.

Since our last meeting there have been two volunteer events. On March 1, 26 volunteers from Ke Ana La'ahana immersion school and members of the UH Hilo Sociology club collectively pulled and filled 29 bags of invasive weeds. On May 13, 32 volunteers from Waiakea High School Interact Club and Hawaii Island Chamber of Commerce help pull and fill 47 bags of weeds. We are awaiting word from DLNR to see if they need volunteers to help plant silversword seedlings again this year. Our next volunteer event is this Saturday, June 7.

### **E. Geocaching**

From time to time we receive reports of geocaching on UH managed lands. Clues are given over the internet about the location of physical items hidden or placed all over the world, including Maunakea. Items are left for others to find or directed to visit locations via a website (most commonly [www.geocaching.com](http://www.geocaching.com)). Rangers recently found and removed a geochach from the summit ahu. In keeping with Kahu Kū Mauna's discussion, OMKM rangers will periodically review common geocaching websites directing locations on UH's managed lands. They will locate and remove the hidden objects.

### **F. Capitol Improvement Projects (CIP)**

The University is in the process of securing the services of Kober, Hanssen and Mitchell, an architecture and planning company to assist with the study and design of facility needs and construction to safely accommodate the increase in vehicular traffic and visitors to the Visitor Information Station. They will also be conducting a review road maintenance needs for the summit region.

### **G. Department of Hawaiian Home Lands (DHHL)**

The Office hosted a site visit for representatives from the Department of Hawaiian Home Lands which has agreed to assist with the overflow of vehicles and congestion at the Visitor Information Station (VIS). In particular, commercial tour operators who serve their guests dinner at the VIS prior to heading to the summit to view the sunset. DHHL is looking into providing a sit down picnic area where commercial tour operators can stop to feed their guests prior to arriving at the VIS. Due to limited parking at and near the VIS, DHHL is planning on developing a parking area on their lands and shuttle guests to the VIS for stargazing.

### **H. Stargazing at Waikoloa**

The Visitor Information Station, on behalf of 'Imiloa will be starting a stargazing program at the Waikoloa Queens Marketplace. The purpose is to help 'Imiloa establish a presence at Waikoloa as part of a long term project and provide an alternate site for stargazing in an effort to deter visitors from venturing to the mountain. A test run was held on March 29. Stargazing at Waikoloa is in some ways superior to the VIS because of the wider expanse with fewer obstructions blocking the views of the sky. The conditions are considerably warmer resulting in more comfortable conditions for stargazing, no interference from vehicular headlights, and smooth, level viewing areas.

## **I. Administrative Rules**

A preliminary draft of the rules is nearly complete. Before completing it though, the Office plans to go out and engage community groups for their input and comment. Community engagement is planned to begin this month.

## **IV. KAHU KŪ MAUNA COUNCIL (KKMC)**

Tom Chun reported the Council is in the process of transitioning some of its leadership and are looking for new members. This is a good time for the Council to re-focus and re-affirm the purpose of this Council. The Council will be planning to meet at various sites other than Hilo to accommodate members on the west side.

## **V. Committee Reports**

### **Environment Committee – Fritz Klasner**

Fritz Klasner announced two summer interns - Margaux Mellott and Darcy Yogi. Ms. Mellott will be working with Dr. Ryan Perroy on the erosion study and Ms. Yogi will be working with Dr. Cas Vanderwoude of the Hawaii Ant Lab and will be helping with finalizing OMKM's invasive species plan.

The annual surveys of wēkiu bugs and alien arthropods is scheduled to start this coming Friday. The survey will cover the area from Halepōhaku to the summit.

No new invasive species threats have been found on the mountain. We are, however, paying attention to yellow-jacket wasps. We have been working with United States Geological Survey (USGS) staff who work closely with Hakalau and Hawaii Volcanoes National Park to develop monitoring methods and the placement of traps.

Amber Stillman has been developing 3D maps which was presented to this Board about a year ago. Her maps are just about done. The next challenge is to figure out how to use these in a way that help communicate what is up on the mountain without encouraging visitors to actually go up the mountain.

The next weed pull volunteer event is this Saturday, June 7. There is still space for anyone interested in volunteering. The next resource orientation will be June 18 at Halepōhaku. The resource brochure is done and will be available soon.

## **VI. NEW BUSINESS**

### **A. Thirty-Meter Telescope Decommissioning Funding Plan**

#### **I. Background and Purpose**

Pursuant to the Decommissioning Plan for Mauna Kea Observatories (DP), a Decommissioning Funding Plan (DFP) is required as part of any new or renegotiated sublease with the University. The DFP is a financial plan for the eventual decommissioning of an observatory's dome and support facilities.

The DP requires the MKMB to review and recommend approval of the DFP, in this case, the DFP for the Thirty Meter Telescope project. Specifically the MKMB should review whether TMT developed a cost estimate for decommissioning based on documented and reasonable assumptions and assurances for funding the eventual decommissioning of the project at the end of its useful life. A review should consider the following:

1. Accuracy and appropriateness of the methods used to estimate the costs of decommissioning.
2. Acceptability of the sublessee's financial assurance mechanism.
3. Means identified for adjusting the cost estimate and associated funding level over the life of the facility.

#### Requirements of the DFP

The DFP should contain the following: 1) a cost estimate for decommissioning; 2) description of the method for assuring funds for decommissioning through one or more financial instruments; 3) description of the means for adjusting both the cost estimate and funding level over the life of the sublease; and 4) a certification of financial assurance that may include, but not be limited to, signed originals of the financial instruments provided as financial assurance. The amount secured should be based on a conceptual cost-estimate, and should be sufficient to adequately perform the decommissioning.

#### Conceptual Costs Estimates, Updates and Review

The DFP and associated cost estimates will be reviewed and updated periodically on an agreed upon term (at a minimum of every 15 years) by the sublessee to current costs and submitted to UH in the form of an update to the DFP.

The conceptual cost estimate should provide for the removal of the facility and restoration of the site to the “full” level of restoration. There are three levels a site can be restored: minimal (grading the site); moderate (minimal plus enhancing the physical habitat structure to benefit native arthropod community); and full (moderate plus restoration to the original pre-construction topography and restoring arthropod habitat.) In all three levels, man-made materials are to be removed unless it is determined that removal would cause irreversible damage to the resources.

#### Financial Assurance Mechanisms

The DP recognizes there are various mechanisms for assuring funds for decommissioning. The DP lists some examples from pre-payment, surety, insurance or guarantee, sinking funds, and asset collaterals.

## **II. Proposed TMT Decommissioning Funding Plan**

### Cost Estimate

TMT prepared a conceptual cost estimate that includes estimated costs to deconstruct the facilities and restore the site at the three different site restoration levels described in the DP. TMT refers to the three levels as Sub-estimate 1 (minimal), Sub-estimate 2 (moderate) and Sub-estimate 3 (full). The estimates in 2013 dollars are:

Sub-estimate 1	\$14 million
Sub-estimate 2	\$16 million
Sub-estimate 3	\$17.1 million

The estimated costs for each sub-estimate are based on line-by-line, detailed evaluation of costs to decommission individual components of the facility, including building elements, dome mechanical and electrical installations, and base and support facility mechanical and electrical installations plus earthwork to restore the site.

### Financial Instrument

TMT will be establishing a sinking fund which will fully fund the cost of decommissioning, including the cost to fully restore the site before the end of the TMT’s expected useful life. This method allows TMT to gradually prepay the cost of decommissioning and restoration over the life of the project. Funding shall commence with \$1 million per year payments beginning with the first year of operations. Payments will be adjusted annually for inflation and the fund would be maintained for the 50-year life of the observatory.

### Inflation adjustment rate

TMT’s DFP sinking fund shows annual payments using an inflation rate of 3%. As the DFP is updated the costs and funding level shall be adjusted to current dollars which will then be used as the basis for future estimates.

For example, using an inflation rate of 3%/year, at the end of 50 years the estimated inflated cost to decommission will be \$87.4 million (\$17.1 million in 2063 dollars). At a deposit rate of \$1 million annually (adjusted annually at 3%) into the sinking fund, the estimated available funds will be \$87.5 million in 2063 dollars.

### Financial Assurance

The authorized representatives of the TMT partners have signed statements of intent committing their governments and/or organizations to provide decommissioning funds to satisfy their obligations to contribute sufficient cash in a timely manner to fund the cost to decommission the TMT observatory.

## **III. Proposed TMT sublease**

The proposed TMT sublease contains a clause obligating the TMT International Observatory to execute the decommissioning obligations of the DP, including the development and execution of the DFP. The clause also includes the provision that if at any time the University determines the DFP is insufficient, TMT shall consult with the University and negotiate in good faith to determine the amount of additional funding needed and shall provide the additional funding assurance mechanisms.

## **IV. Kahu Kū Mauna**

Kahu Kū Mauna was consulted on May 12, 2014. The Council felt the University should be commended for taking and following up on this course of action. They considered the DFP a movement in the right direction,

as well as setting a precedent for future projects and for renegotiating subleases. They recommended approval of the DFP.

#### V. **OMKM Recommendation**

OMKM proposes MKMB recommend approval of the DFP. TMT met the requirements of the DFP by:

- a) providing a detailed cost estimate prepared by an independent globally (and locally based) cost management firm that includes an estimate for “full” site restoration as required by the DP;
- b) providing a mechanism for assuring the financing for decommissioning by establishing a sinking fund into which \$1million/annually, adjusted for inflation, is deposited for 50 years. Each partner of the TMT International Observatory has signed a letter of intent committing their respective governments and organizations to fund the decommissioning funding plan;
- c) identifying a means for adjusting the cost estimate, and a review for adjusting the funding level over the life of the facility.

#### Discussions

Hannah Springer asked for clarification between the difference of the \$10 million plus cost (page 9 of 9) and the estimated \$17 million cost. Does this just cover demolition? Director Nagata apologized as there should have been one more page. It should also include the cost for site restoration. Gregory Chun referred to page 1 - Margins and Adjustments.

Chair Mooers stated he was very impressed with the details and work that Rider Levett Bucknall (RLB) performed. It is pretty extensive and gives him the confidence that the numbers they prepared are accurately presented. RLB has done a number of proposals for demolition before and he has never seen anything quite so detailed.

Gregory Chun asked about the process for determining the level of actual restoration. He is aware they have estimated in the DFP a full restoration, but that does not necessarily mean that is what the level of restoration will be. Also, what happens to the funds in the DFP if less than a level 3 restoration occurs? Lastly, he assumes in these demolition numbers the cost to dispose of the material is included. He is assuming stuff will end up in the landfill.

Director Nagata responded when TMT gets ready to decommission, there will be a convening of a committee to look at all the environmental aspects of decommissioning. If the committee believes it will be more detrimental to do full restoration, they may recommend a lower level of restoration. That will be determined in the future; we cannot make that determination now. If a lower level of site restoration is recommended, remaining funds in the DFP will go back to the TMT International Observatory (TIO). As to the landfill question, Director Nagata could not answer that. TMT may have a better idea, but as with many of these projects they may try to recycle or resell some of the usable materials.

Sandra Dawson clarified TMT has a policy that everything is done in the most environmentally responsible way given where you are. It would be the responsibility of TIO at that time to dispose of it responsibly.

Ms. Springer asked if the restoration covered under the General Conditions line under Margins and Adjustments on page 1 of 9 is accurate. She suggested putting “restoration” in parentheses so the lay reader of the report would be better able to comprehend the information. Director Nagata replied yes, the \$10 million is the same for all of the other estimates. The additional costs between the sub-estimates 1, 2, and 3 are in the Margins and Adjustments.

Chair Mooers thought the question was that the General Conditions refers to the site restoration. Director Nagata apologized and thought the site restoration was the site earthwork. Dr. Chun thought the \$10.8 million is the entire site restoration. The Margins and Adjustments are contingencies.

Kalani Flores stated the estimate of \$17 million seems a little under the potential cost of removal based upon previous estimates that other observatories have given for their removal. For example, Subaru in 2008 gave a \$10 million estimate for removal of their site. Subaru is much smaller than the TMT. \$10 million and \$17 million - it seems that the estimate is quite under the potential of decommissioning of the site. When you look at decommissioning of a site you should also be looking at the cost for construction of the site. If the construction of the site is \$1.2 - \$1.5 billion, how can the decommissioning cost be just \$17 million. He questioned the accuracy of the figures as provided. Secondly, the potential of removing the concrete slab and hauling of the materials off the mountain and the requirement of specialized equipment to remove the dome - have all those cost estimates been taken into consideration? Lastly, when you say bring the site to full restoration, what does that exactly mean? You cannot fully restore a pahoehoe lava field. The proposed TMT site is within a former glacial pahoehoe field. At the

end, if this site was to be decommissioned, you would have a large five acre scar on the surface of that site. How is that supposed to be restored? The statement about full restoration has to be clearly explained to that extent.

Legal Counsel Tim Lui-Kwan replied we have to rely on RLB to come up with the estimates. They are the experts. We have looked at it and reviewed it and there was nothing we thought that was unusual. They were surprised at the thoroughness and detailed work put into it. We have to presume they actually did their job. Again, this is for the DFP and not the Decommissioning Plan itself. That will be something that comes up in 2063. We are not talking about \$17 million in 2063. We are talking about \$87 million plus in 2063.

Mr. Flores stated he knows we are looking at 2063, but in reality you should only be looking at 2033. Because isn't the sublease subject to the master lease? We are all going on the assumption that a master lease is going to be renewed. The decommissioning plan set forth by the Comprehensive Management Plan (CMP) is supposed to be based upon the end of the Master Lease in 2033. So putting figures out for 2063 is a little inaccurate. You should be prepared to take it out in 2033. You cannot go under the assumption of a new master lease. So what is the figures in 2033 as far as the final decommissioning plan?

Mr. Lui-Kwan stated that is in RLB's report - \$36 million.

Ms. Springer stated Mr. Flores' concern is similar to a concern discussed in the Kahu Kū Mauna Council and what constitutes full restoration. She wondered if the language could be adjusted to give a more realistic expectation for readers of the document as to what is going to be on the ground. Full restoration might not be achievable as described by Mr. Flores given the geologic conditions of the mountain prior to the installation of the facility.

Mr. Lui-Kwan thought that was a good point. Full restoration is an impossibility.

Ms. Dawson stated TMT has taken photos of the area so that one would know what it looked like before construction. When it is time to decommission and restore we can get it as close to the original state.

Ms. Springer commented when discussing the site earthwork she hopes the amount of subterranean work that goes into anchoring those buildings will be discussed and a careful consideration be done on how to treat the sub surface. The discussion at Kahu Kū Mauna was how much excavation might be done to remove a cement block or the rebar posts that go into the ground. This has been a concern with Kahu Kū Mauna. She wondered what would happen if TMT's decommissioning funding plan was not approved.

Director Nagata replied when TMT is ready to start considering decommissioning its facility, the issue of how much needs to be excavated to remove the underground subterranean components will be addressed at that time. That is part of the process in determining if it will be a full restoration, moderate, or etc.

This Board will make a recommendation to approve. This Board's recommendation is then considered by the other decision makers.

Patricia Bergin commented there have been a number of suggestions from board members for softening or being more specific in the document. How can we move forward and approve the document and yet still have an opportunity to provide that input? Or, are we even qualified or authorized to make those suggestions at this point?

Director Nagata replied all of our Plans are adaptive. We are in the fifth year of the Comprehensive Management Plan and will be looking into evaluating the CMP and making necessary changes to it. The Decommissioning Plan would also go through the same review. At that point, we would be able address issues on the language. The purpose for today is for the Mauna Kea Management Board to review the sufficiency of the DFP, not to make a determination on what a full restoration is.

Mr. Flores called to attention page 25 of the DP and the three definitions given for site restoration: minimal, moderate and full restoration. Mr. Flores quoted: "Full restoration would return the site to its original pre-construction topography, as well as restoring arthropod habitat." This definition of what is being proposed cannot occur. Is the DFP in alignment with the DP?

Chair Moers appreciated the comment and stated he did review the proposed plan and compliance with the DP. Staff also reviews compliance with every element of the CMP, not with just this proposal, but with all proposals that come through the Office. We do take those plans seriously.

(Clarence) Ku Ching commented on the finances of the DP. He noted it is very difficult to plan out 50 years. If there are cost overruns at the time of demolition, who pays the balance if the participant does not come up with the funds?

Mr. Lui-Kwan replied the proposed sub lease and DP commit the sublessee to pay the full cost of decommissioning. The sinking fund is a means by which we can see money being deposited. If it costs more than that, then they pay more. All of the partners have signed written commitments. They have guaranteed this expense and liability of the entity for the future.

Dr. Chun sensed the sinking fund mechanism is the best way to assure the right amount of funding will be there at the end. From the perspective of the responsibility of this Board to recommend for approval the DFP, his sense is this is the most accurate and reasonable mechanism of assurance.

## **VI. Action**

It was moved by Herring Kalua and seconded by Gregory Chun to recommend approval of the DFP.

Ms. Springer believes the value of moving forward on planning for decommissioning is tremendously important and appreciates the details of the funding plan. Ms. Springer will be voting in favor of the motion but with reservations given her concern over the implications of "full restoration" as she does not believe that is achievable. She does believe, however, that the CMP would be responsive to conditions when the time comes to implement the decommissioning process.

Chair Mooers called for a vote in favor of the motion made by Mr. Kalua and seconded by Dr. Chun to recommend the approval of the DFP for the TMT. The motion was carried unanimously.

## **B. Baseline Study on Surficial Geomorphology & Erosion Monitoring on Maunakea**

### **I. Background and Purpose**

The purpose of this project is to study erosion and cinder movement along the Summit Access Road corridor in the Science Reserve and in the Astronomy Precinct (summit region).

The Comprehensive Management Plan (CMP) infrastructure and maintenance management action includes development and implementation of an erosion inventory and assessment plan (IM-6). This project addresses this goal. It also addresses natural resource management actions pertaining to baseline inventories and monitoring (NR15, NR16), while incorporating outreach and partnership actions (EO-6).

The project will collect baseline, as well as repeat high resolution topographic, spatial imagery, and soils field data that can be used to:

1. Quantify topographic changes over time relating to natural and anthropogenic disturbance and erosion events (establishing baseline erosion rate).
2. Improve a habitat suitability model for the wēkiu bug and other arthropod species (in conjunction with ongoing work by Dr. Jesse Eiben, UHH).
3. Document site stability and change at known archaeological sites.
4. Contribute to other ongoing and new research efforts within the MKSR.

### Proposed Activity

The project will occur over a period of 4 years. Initial efforts will be limited to non-intrusive photography and terrain scanning, as well as accompanying entomology field workers to identify potential cinder characterization methods associated with existing, approved, studies. Subsequent field work will include sample collection and analysis.

- Terrestrial Laser Scanning (TLS). At approximately 40 locations, over half along the road or other existing infrastructure, a tripod will be used to measure surface terrain elevation with a laser scanner. Sites will be visited twice, those with active erosion visited 3-4 times.
- Five (5) time-lapse cameras will be placed within weather-resistant, camouflaged housings mounted along the summit access road and directed towards actively eroding regions. Images will be used for identifying areas of active erosion and disturbance, mapping likely wēkiu bug habitat, and creating 3-dimensional datasets.
- Cameras mounted on unmanned aerial vehicles (UAV) will provide detailed overview data of the study area while limiting disturbance by decreasing foot-traffic in culturally or ecologically sensitive regions. All flights would be conducted under Federal Aviation Administration regulations and in full compliance with any observatory restrictions. If UAV-based data collection is not approved, or as a

supplementary dataset, ground-based cameras mounted to vehicles or carried on foot could be substituted.

- Sample collection from approximately ten shallow (typical maximum depth of 0.75 m) pits to collect data on cinder, ash, and clay substrate composition and particle size. Approximately 2.5 kg of materials from a 0.25 m<sup>2</sup> opening will be removed from each pit location for analysis in the laboratory at UH-Hilo and returned to the collection location on Mauna Kea. Final site selection criteria will include analysis of preliminary time-lapse camera results, and be submitted to Kahu Ku Mauna for review. Additional compliance, such as State Historic Preservation Division review, may also be required.
- Installing five (5) dust traps consisting of an angel-food cake pan partially filled with marbles, painted black on the outside, and mounted about 2 m above the ground on a fence post or similar material. Locations chosen based on a) not viewable for common visitor to facilities or frequently visited historic properties, and b) elevation and landscape position gradients.
- A sponsored UH Hilo graduate student (Master's Degree) will be engaged.
- UH Hilo undergraduate summer student interns will be engaged during summers through the Pacific Internship Programs for Exploring Science (PIPES) program.
- Local primary school-aged student involvement will be through robotics program activities, specifically in working with Unmanned Aerial Vehicles (UAVs), and more generally with developing student capacity in science and engineering.
- Data will be public and made available to Observatories and MKSS for future facility planning.
- Recommendations to OMKM for potential future management action and monitoring will also be public.

**II. No Board Action Required** - For information and discussion only.

**III. Kahu Kū Mauna**

Kahu Kū Mauna was consulted at its May 12, 2014 meeting. The Council raised concerns about the potential for unanticipated discovery of burials (bones). The importance of and need to immediately cease work and contact the State Historic Preservation Division was stressed, if unanticipated burials are encountered or suspected. Existing road maintenance activities which involve movement of cinder were identified as one potential mechanism for obtaining field data without eliciting concern of sampling impacts.

The Council re-affirmed their interest in having any samples removed for analysis returned to the original site of collection. The community benefit of the student robotics program was discussed, as well as both undergraduate and graduate student research. The Council was appreciative of the project, specifically its application to maintenance activities, natural resources, and historic sites. They also liked the idea of the student robotics outreach efforts. The project will periodically update Kahu Kū Mauna as well as review potential sample collection and dust monitoring sites prior to proceeding with these phases.

**IV. DLNR Rules**

Pursuant to administrative rules pertaining to the Conservation District (HAR 13-5-22, P-1, Data Collection), a permit or site plan is not required. The rules state: *Basic data collection, research, education, and resource evaluation that is temporary (less than thirty days) and results in negligible ground disturbance (small gages or monitoring devices) and does not involve a land use (e.g., botanical, archaeological, faunal surveys).* And where a site plan is required, the rules state: *Basic data collection, research, education, and resource evaluation that results in a minor disturbance to natural resources or land (e.g., corings, excavations, etc.).*

An inquiry will be made by OMKM and UHH Geography with DLNR (including the NAR and SHPD) to confirm if a permit, site plan, or other consultation is required.

**V. CMP Compliance**

The proposal was reviewed for compliance with the Comprehensive Management Plan.

**VI. OMKM Review and Project Requirements:**

As this project represents a CMP-identified management action, OMKM reviewed a draft project proposal and will work with the project staff to ensure the following:

1. There are no archaeological sites in the immediate surroundings where the team plans to do its surveys involving potential ground disturbance. (Surface elevation data will be collected using photography and surface scanning for archaeological sites.)
2. Any collection and characterization of cinder substrates will be conducted away from archaeological

- sites.
3. UAV use is subject to review and approval by observatories.
  4. Notify OMKM in writing when it plans to conduct field activities.
  5. Ensure that no tools or equipment are left in the field and collection sites are left in a natural condition.
  6. Work with OMKM on identifying and mapping individual locations for data and specimen collection using GPS and.
  7. Work with OMKM on determining the quantities of materials to be collected at each site.
  8. Compliance with all actions and measures described in the proposal including the CMP compliance actions.
  9. Allow OMKM rangers to visit and monitor activities.
  10. Rock samples are to be returned to the collection location upon conclusion of analysis.

**VII. OLD BUSINESS**

**A. Update on Groundwater Resources - Dr. Don Thomas**

Dr. Don Thomas gave a PowerPoint presentation on his ongoing project up in the Saddle region to develop a better understanding of the hydrology within Maunakea and the island as a whole. Dr. Thomas gave a brief history of how the project came about, and presented a broad look at some of the new information they are gathering on the hydrology and groundwater resources within the island.

**VIII. ANNOUNCEMENTS**

There were no announcements at this time.

**IX. NEXT MEETING**

The Board will be polled to determine the next meeting date.

**X. ADJOURNMENT**

There being no further business Chair Mooers adjourned the meeting at 11:55 a.m.

Respectfully submitted:

Submitted by Herring Kalua  
Herring Kalua, 1st Vice Chair

September 16, 2014  
Date