

The component plans also identify areas where management needs overlap and management actions can be shared, while still accomplishing the desired outcome of each component plan. Cross-references are made to related component plans as needed.

## 7.1 Understanding and Protecting Mauna Kea's Cultural and Natural Resources

### 7.1.1 Native Hawaiian Cultural Resources

This section provides information and management actions to protect, preserve, and enhance the cultural resources of the UH Management Areas. As described in Section 5 cultural resources include historic properties and cultural practices and beliefs. Historic properties include archaeological sites and traditional cultural properties.

CMP management actions are based on a comprehensive archaeological survey and fieldwork of the UH Management Areas conducted between 2005 and 2008 and consultation with the major stakeholders, including the Native Hawaiian community, cultural practitioners, families with lineal connections to Mauna Kea, astronomers, and other interested parties. See Section 4.3.

#### *Desired Outcome*

Increase understanding and appreciation of Native Hawaiian history and cultural practices related to Mauna Kea to ensure that these practices are protected and respected. Identify, document the condition of, and protect cultural resources and historic properties in the UH Management Areas.

#### *Current Status*

A summary of the cultural resources found in the UH Management Areas is presented in Section 5.

Mauna Kea is a culturally significant site and is considered sacred by many Hawaiians. The summit region is designated as a historic district by the SHPD and is also eligible for listing on the National Register of Historic Places. In 2000, SHPD designated two areas within the UH Management Areas, Kūkahau'ula and Pu'u Līlinoe as TCPs. Some in the Hawaiian community have suggested that the entire area above 6,000 ft (1,829 m) should be designated a TCP. There are Native Hawaiians who continue to access the UH Management Areas to exercise traditional and customary practices, including the gathering of mamake, ko'oko'olau, and māmane, and others who access through the area for contemporary cultural practices and subsistence uses, burying the *piko* of their children, religious observances, scattering of ashes and visiting of *na iwi* kupuna. Mauna Kea continues to be a living resource.

Archaeological surveys and fieldwork identified and recorded 223 historic properties, of eleven types, within the UH Management Areas – including three, possibly four sites within the boundaries of the Astronomy Precinct – and one historic site complex at Hale Pōhaku (see Section 5.4).<sup>1</sup> All of the known historic properties and their locations in the UH Management Areas have been catalogued. This information will serve as baseline documentation against which any alteration or damage can be compared. The historic properties located within the 19.3-acre parcel at Hale Pōhaku have been mitigated through detailed site recording, collection of surface artifacts, and excavations. The road corridor under UH management has not been completely surveyed for culturally significant sites. No new sites were

---

<sup>1</sup> The Astronomy Precinct is contained within the boundaries of the UH Management Areas and is further defined in Section 3.1.1. One of the sites is near a boundary line and without a surveyed boundary of the Astronomy Precinct, it is difficult to discern the exact location of the site relative to the boundary.

found in an archaeological survey of a 100-foot wide corridor on both sides of the road from Hale Pōhaku to the parking lot below Pu‘u Hau Kea (Williams 1987).

The archaeological survey and fieldwork for the UH Management Areas identified several confirmed burial sites, many other probable burials, and a large number of shrines.<sup>2</sup> How many of the burials and shrines are visited by family members is unknown, but family visitation is a cultural practice that must be protected and considered in the management of the UH Management Areas. Based upon the information gathered for the CMP, there are no known burials within the Astronomy Precinct. Treatment and disposition of previously identified Native Hawaiian burials are determined by the Hawai‘i Island Burial Council (HIBC). Chapter 6E-43.6 (HRS) and administrative rule 13-300-40 outline the procedures for dealing with inadvertently discovered human remains.

Tampering with ancient sites is prohibited under State historic preservation law. Chapter 6E, HRS, protects historic properties from alteration or destruction.

Access to areas on Mauna Kea and the right to engage in traditional and customary practices is not only accepted and supported, it is a right protected under the Hawai‘i constitution.<sup>3</sup> Traditional and customary cultural practices are taking place in the summit region as a whole, as well as at specific locations within the boundaries of the UH Management Areas (see Section 5).

Unrestricted access is one factor contributing to the degradation of cultural resources on Mauna Kea (see Section 6.3). It has been recognized that signage related to the protection of historical sites and appropriate cultural practices is needed (see Condition 13 of the 1995 *Revised Management Plan for the UH Management Areas on Mauna Kea* (DLNR 1995)). To date, these signs have not been placed.

One of the entities created by the 2000 Master Plan is Kahu Kū Mauna (Guardians of the Mountain). The nine member council advises MKMB, OMKM, and the UH-Hilo Chancellor on matters of Hawaiian culture affecting the UH Management Areas. The council comprises individuals from the Native Hawaiian community (see Section 3.3.1). Members of the council are consulted and their advice taken under strong advisement when uses or management actions are proposed for the UH Management Areas.

### *Need*

The cultural resources are subject to actual and potential degradation. Without planned protections and a commitment to implement plans, irreversible damage to Mauna Kea’s cultural resources is likely to continue. This CMP contains guidelines for long-term management of cultural resources and outlines a range of strategies and activities for their protection, identification, documentation, preservation, interpretation, and traditional use. The CMP also contains guidelines for consultation and education regarding cultural resources. These strategies reflect a series of general guidelines including:

- Recognizing that Mauna Kea is sacred to Native Hawaiians.
- Recognizing the need to continue consulting with the Native Hawaiian community, including cultural practitioners and families with lineal and historic connections to Mauna Kea, when formulating plans, protocols, and policies.
- Recognizing that cultural practices evolve over time and that management needs may change.

---

<sup>2</sup> Known Native Hawaiian burials within the UH Management Areas are, according to State historic preservation law, termed “previously identified,” in that they have been recorded either through previous archaeological surveys or by other types of site visits, or through information provided by Native Hawaiian organizations to SHPD or the island burial council (cf. §6E-43.5(e)(2) and HAR §13-300-24(B)).

<sup>3</sup> Hawaii Revised Statutes, Sections 1-1 and 7-1, and Article XII, Section 7 of the Hawaii State Constitution protect traditional and customary practices, including gathering rights and access.

## Mauna Kea Comprehensive Management Plan

- Ensuring a balanced approach between traditional customary practices related to cultural properties and the need to protect natural resources and historic properties.

A consistent theme of the CMP management component plans is that culturally sensitive and appropriate educational information is the most effective and efficient method of protecting cultural and natural resources. Visitors to Mauna Kea should be educated regarding the cultural landscape of Mauna Kea, including cultural practices, historic properties and their sensitivity to damage, and the rules and regulations regarding the protection of historic properties. For example, pointing out to visitors and cultural practitioners the impacts of leaving offerings will likely result in a reduction of this activity by those who are not engaging in it for religious practice or tradition. Section 7.1.3 describes educational and awareness needs and management actions in more detail.

Accurate and complete information is a critical component in management planning. Baseline documentation on all known historic properties within the UH Management Areas has been virtually completed. HAR §13-277-6 (8) requires monitoring of historic properties in order to ensure their long term preservation. A monitoring program for historic properties is needed to track changes over time, providing a valuable tool for resource protection.

Documenting and monitoring historic properties captures only part of the cultural history and resources related to Mauna Kea. Of equal importance is a need to recognize and document traditional and customary cultural practices. Culture is dynamic, and it is likely that new practices will evolve in the future. Efforts to compile information and conduct new cultural research about Mauna Kea, including more oral history documentation, must continue. This will ensure that such information is not lost, that the range of practices is captured as culture evolves, and that policies and procedures that are developed for resource protection do not impede traditional and customary practices. Some cultural practitioners may be reluctant or refuse to discuss their beliefs and practices, potentially limiting the ability to identify every single belief and practice and variations between practitioners.

It is imperative that the management plan not adversely affect the constitutionally protected right to access for the exercise of traditional and customary practices. In order to ensure this, it is important to identify the access needs for cultural, religious, and spiritual practices. As the advisory body on cultural matters, Kahu Kū Mauna or the Hawaiian Cultural Committee of the MKMB shall invite and consult with families with a lineal or historic connection to Mauna Kea, cultural practitioners, and other individuals and Hawaiian organizations on developing culturally appropriate protocols to ensure access for engaging in traditional and customary practices while minimizing adverse impacts to cultural and natural resources.

Like the protection of access to traditional and customary practices, protection and preservation of human burials and cultural resources will be paramount. Full compliance with the Burial Laws (HRS, Chapter 6E), including the preparation of a Burial Treatment Plan for the known and potential Native Hawaiian human burial remains, will be strictly adhered to. Future activities and uses within the UH Management Areas involving construction or other ground-disturbing work have the potential of encountering human burials. All applicable rules and regulations pertaining to “inadvertent discoveries” shall be followed (see Section 6.4). Procedures related to cultural resources should be clearly explained to any contractors and to all staff of OMKM and other University entities that participate in any future construction activities. It should be possible to preserve the historic properties in the Astronomy Precinct through avoidance and the establishment of buffers. Buffer zones around historic properties will help maintain their integrity. Monitoring during construction activities is addressed in Section 7.3.2.

Management plans are not static. To provide adequate protection of cultural resources, continual reevaluation of policies and procedures within organizations and coordination among agencies is necessary. The University and all University organizations associated with Mauna Kea, such as OMKM

and MKSS, must coordinate with DLNR, SHPD, and in some cases, the HIBC and local law enforcement, in order to successfully implement protective measures for the historical and cultural resources of the UH Management Areas. In addition, because the boundaries of the cultural landscape extend outside of the UH Management Areas, UH must work closely with DLNR to develop policies and implement procedures to monitor cultural resources. As the advisory body on cultural resources, Kahu Kū Mauna shall be consulted about all issues that may require their counsel.

Enforcement personnel such as rangers not only help deter actions that may damage cultural resources or that are illegal; they can also serve in an educational capacity. OMKM rangers currently maintain a presence on the mountain, but because they lack enforcement authority, they are limited in their effectiveness. The presence of enforcement personnel is critical to the protection of resources and to visitor safety (see Section 7.2.2). Rules must be established to protect and preserve the resources of Mauna Kea. Enforcement of rules is a critical element of future management.

A variety of federal and state laws cover the effects of proposed actions on historic properties and cultural practices (see Section 3.4). In general, it is likely that activities that do not require ground disturbance or alteration of existing environments may not require a permit. Conversely, in the Conservation District, research activities, construction, observatory-related projects, or any other project that may result in ground disturbance or impacts to historical sites or cultural practices, may require some type of permit. A sufficient number of enforcement personnel are necessary to ensure that rules and regulations are followed as directed by permits (see Section 7.2.2 and Section 7.4.1) or the CMP.

### *Management Actions*

The BLNR has previously identified management actions to address the needs described above.<sup>4</sup> This CMP adopts those management actions where appropriate as follows:

1. There shall continue to be an Office of Mauna Kea Management and a Mauna Kea Management Board, whose mission shall continue to be:

Achieve harmony, balance and trust in the sustainable management and stewardship of the Mauna Kea UH Management Areas through community involvement and programs that protect, preserve and enhance the natural, cultural and recreational resources of Mauna Kea while providing a world-class center dedicated to education, research and astronomy.

The Mauna Kea Management Board shall include, but not be limited to, a representative of the Department and Native Hawaiian interests, environmental interests, and the business community. The Office of Mauna Kea Management shall regularly consult with and seek advice from Native Hawaiians, Native Hawaiian organizations, and environmental organizations.

2. The Office of Mauna Kea Management shall oversee compliance with the permit and report any known or suspected non-compliance or violations to the Department.

---

<sup>4</sup> BLNR previously imposed the following management actions when they granted the Outrigger Telescopes CDUP. The CDUP was subsequently reversed by Judge Hara. However, the BLNR's management actions are consistent and applicable to the CMP. Accordingly, the following conditions have been cited verbatim except where the reference was to the "Outrigger Telescopes permit" and has been replaced with the generic term "permit."

## Mauna Kea Comprehensive Management Plan

3. On June 30 of each year, the Office of Mauna Kea Management shall submit to the Board of Land and Natural Resources a written report detailing its activities generally, and with particularity its activities with respect to its responsibilities under the permit.
4. All persons involved with construction activities, including, but not limited to, the construction manager, contractors, supervisors, and all construction workers, and all persons involved in operation and maintenance activities, including, but not limited to, scientists and support staff, shall be educated about the historical and cultural significance of the Mauna Kea summit area, and shall be given training as to what constitutes respectful and sensitive behavior while on the summit area. A detailed plan for complying with this condition (including both the content of training and the procedures for implementation, including, but not limited to, a means for certifying persons who have completed the training program) shall be developed by the Office of Mauna Kea Management following consultation with Kahu Kū Mauna or other Native Hawaiians or Native Hawaiian organizations known to have cultural ties to Mauna Kea, and reviewed and approved by the Department. A specialist or specialists in the field of Native Hawaiian culture shall be selected by the Office of Mauna Kea Management with the concurrence of the Department for the purpose of implementing the compliance plan, including, but not limited to, the conduct of educational and training programs for all persons described in this condition. To be qualified for appointment to this position(s), a person shall have worked as a Native Hawaiian cultural specialist and shall be knowledgeable of the types of cultural resources and practices relating to the summit of Mauna Kea.
5. During all periods of construction (including, but not limited to, the delivery of construction materials to the site or to staging areas), there shall be on-site a construction monitor, whose responsibility shall be to monitor compliance with the terms and conditions of the permit as related to construction activities.

The on-site construction monitor shall have the authority to order that any or all construction activity must cease if and when, in the construction monitor's judgment, (a) there has been a violation of the permit that warrants cessation of construction activities, or (b) that continued construction activity will unduly harm cultural resources; provided that the construction monitor's order to cease construction activities shall be for a period not to exceed seventy-two (72) hours for each incident. All orders to cease construction issued by the construction monitor shall be immediately reported to the Chairperson and the Office of Mauna Kea Management. The Chairperson may issue a cease and desist order to extend the period of time that construction activity is prohibited, or such other order as the Chairperson deems appropriate.

The construction monitor shall be selected by the Office of Mauna Kea Management with the concurrence of the Department. The construction monitor shall have experience and be knowledgeable in construction management. Prior to assuming on-site duties, the construction monitor shall have completed the educational and training program above.
6. Whenever construction, operations or maintenance activities include earth movement or disturbance, a trained archaeologist, selected by the Office of Mauna Kea Management and approved by the Department, shall be on site to monitor any impacts, real or potential, of construction activity on archaeological and historical resources. The archaeological monitor shall be funded by the project.
7. In addition to the statutory requirements of Hawai'i Revised Statutes chapter 6E, if an inadvertent discovery of any human burial is discovered in the course of construction,

## Mauna Kea Comprehensive Management Plan

operation or maintenance of the project, the person making the discovery shall seek the advice and recommendation of either the Hawaii Island Burial Council or Kahu Kū Mauna, recognized lineal or cultural descendant, for treatment of the inadvertently discovered burial.

Pursuant to the legal requirements under the Hawai‘i Supreme Court’s ruling in *Ka Pa‘akai*, access to UH Management Areas for Native Hawaiian traditional and customary practices shall not be restricted, except where safety, resource management, cultural appropriateness, and legal compliance considerations may require reasonable restrictions:

1. Access for traditional and customary practices, including the gathering of cultural resources, including but not limited to mamake, ko‘oko‘olau, māmane, ‘awa, and ōwī.
2. Access for families to visit *na iwi kupuna* (the bones of their ancestors).
3. Access to scatter ‘*ohana* ashes.
4. Access through the trails located within the UH Management Areas for subsistence gathering and hunting.
5. Access for families to continue to bury their ‘*ohana piko*.
6. Access for traditional and customary practices, including religious and spiritual observances, pilgrimage, offerings, and prayers.
7. Access for families to gather water from Lake Waiau for religious and spiritual purposes.
8. In the event of disputes or determination of appropriateness of traditional and customary practices, including cultural, historical, and natural resources, Kahu Kū Mauna and/or the MKMB Hawaiian Cultural Committee in coordination with families with lineal connections to Mauna Kea, kupuna, cultural practitioners, and Native Hawaiian organizations shall provide cultural guidance on the appropriateness of the practice and appropriate cultural protocols.

The following table lists additional management actions to address the needs described above. For items identified with an asterisk, additional considerations are described after the table.

**Table 7-1. Management Actions: Native Hawaiian Cultural Resources**

<b>Management Action</b>	
<b>Management</b>	
CR-1*	Kahu Kū Mauna shall work with families with lineal and historical connections to Mauna Kea, cultural practitioners, and other Native Hawaiian groups, including the Mauna Kea Management Board’s Hawaiian Culture Committee, toward the development of appropriate procedures and protocols regarding cultural issues.
CR-2	Support application for designation of the summit region of Mauna Kea as a Traditional Cultural Property, per the National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq. in consultation with the larger community.
CR-3	Conduct educational efforts to generate public awareness about the importance of preserving the cultural landscape.
<b>Cultural Practices</b>	
CR-4*	Establish a process for ongoing collection of information on traditional, contemporary, and customary cultural practices.
CR-5*	Develop and adopt guidelines for the culturally appropriate placement and removal of offerings
CR-6*	Develop and adopt guidelines for the visitation and use of ancient shrines.
CR-7*	Kahu Kū Mauna shall take the lead in determining the appropriateness of constructing new Hawaiian cultural features.

## Mauna Kea Comprehensive Management Plan

Management Action	
CR-8*	Develop and adopt a management policy for the UH Management Areas on the scattering of cremated human remains.
CR-9*	A management policy for the culturally appropriateness of building ahu or “stacking of rocks” will need to be developed by Kahu Kū Mauna who may consider similar policies adopted by Hawai‘i Volcanoes National Park.
Historic Properties	
CR-10*	Develop and implement a historic property monitoring program to systematically monitor the condition of the historic district and all historic properties, including cultural sites and burials.
CR-11	Complete an archaeological survey of the portions of the Summit Access Road corridor that are under UH management.
CR-12*	Consult with Kahu Kū Mauna about establishing buffers (preservation zones) around known historic sites in the Astronomy Precinct, to protect them from potential future development.
CR-13*	Develop and implement a burial treatment plan for the UH Management Areas in consultation with Kahu Kū Mauna Council, MKMB’s Hawaiian Culture Committee, the Hawai‘i Island Burial Council, recognized lineal or cultural descendants, and SHPD.
CR-14	Immediately report any disturbance of a shrine or burial site to the rangers, DOCARE, Kahu Kū Mauna Council, and SHPD.

### Additional Considerations for Management Actions

#### *CR-1. Appropriate procedures regarding cultural issues*

Culturally appropriate protocols developed in consultation with Kahu Kū Mauna, families with lineal and historic connections to Mauna Kea, cultural practitioners, and other Native Hawaiian individuals and organizations may describe culturally appropriate practices and what may be considered culturally disrespectful behaviors that should either be discouraged or, perhaps, banned altogether. Subject to compliance with the legal requirements for access to traditional and customary practices of the State Constitution, no restrictions shall be placed on any Native Hawaiian cultural observance except those observances that are considered culturally inappropriate by a collective consensus of Kahu Kū Mauna, the MKMB Hawaiian Culture Committee, families with lineal and historic connections to Mauna Kea, cultural practitioners, and other Native Hawaiian groups. Access shall not be denied or unduly restricted for Native Hawaiians wanting to visit sites such as burials or shrines or exercise their religious and spiritual practices within the UH Management Areas. Public tours of burial sites shall be prohibited. The rangers or other management staff shall be notified of visits to burial sites prior to the visits for security and safety reasons.

#### *CR-4. Collection of information on traditional and customary cultural practices*

Several methods may be used to establish a process for the ongoing collection of information on traditional and customary cultural practices and their significance. OMKM should partner with educational institutions such as the UH-Hilo and Hilo Community College, to establish an oral history program that would memorialize the traditional and customary practices associated with Mauna Kea. Native Hawaiian families or communities that have a connection to Mauna Kea shall be invited to work with OMKM to identify traditional and customary practices associated with Mauna Kea and ensure those practices are protected and respected (see Section 7.1.3).

#### *CR-5. Guidelines for the culturally appropriate removal of offerings*

One practice that has become a major management issue in many places in Hawai‘i is the placement of offerings on altars. Offerings include both biodegradable items (e.g., leis and foods such as bananas) and a variety of other objects, including unmodified stones, artifacts, prayer flags, and crystals. Accumulations of offerings can have an adverse effect on the integrity of historic properties as well as on

natural resources. In most cases, to protect resources, offerings must be removed; however, this process must be done in a culturally appropriate manner. Guidelines will include a stipulation that food offerings be removed immediately following the ceremony, and a means of handling non-food offerings during and after removal. Consultation with cultural practitioners is critical to the development of these guidelines. A culturally trained staff person or a specially designated individual shall be responsible for the removal of offerings.

*CR-6. Guidelines for the visitation and use of ancient shrines*

Guidelines for the visitation and use of ancient shrines are necessary to provide a mechanism that allows for access and use by modern cultural practitioners yet preserves their integrity and the underlying meaning they had for the ancestors that built them. Guidelines shall include the provision that access shall not be denied or unduly restricted for any Native Hawaiian wanting to visit the shrines within the UH Management Areas. No restrictions shall be placed on any observance or practice that is deemed culturally appropriate (see *CR-1 Appropriate procedures regarding cultural issues*), as long as the practice does not violate Chapter 6E, which prohibits the alteration of historic properties. Practitioners shall be informed of the same general rules and precautions as are all public users. A program to regularly monitor the condition of ancient shrines shall be established and if effects of heavy use become apparent, measures will be considered to control access (see CR-9, CR-13, and CR-14).

*CR-7. Determining the appropriateness of constructing new Hawaiian cultural features*

This is an extremely sensitive issue as most Native Hawaiians will be the first to say that it is not their *kuleana* to judge the cultural practices of another Hawaiian. However, the intent of this management measure is to develop a process to determine culturally appropriate protocols. Kahu Kū Mauna and/or the MKMB's Hawaiian Cultural Committee in consultation with families with lineal connections to Mauna Kea, *kūpuna*, cultural practitioners, or Native Hawaiian organizations will work in collaboration to develop these protocols. Guidelines should be adopted to assist in formulating culturally appropriate protocols (e.g., to determine which kinds of features and locations are appropriate or inappropriate, as well as if and when a regulatory review process is necessary). Construction of new features will be evaluated to determine whether a CDUP is required. New construction not complying with the applicable protocols, the conditions imposed by guidance provided by Kahu Kū Mauna, MKMB, and/or the MKMB Hawaiian Cultural Committee or administrative rules, if/when adopted, will be dismantled.

*CR-8. Management policy on the scattering of cremated human remains*

The scattering of the ashes of cremated human remains and the burial of urns in the summit area of Mauna Kea are on-going cultural practices. These private affairs are not well known or documented, but they may impact historic properties. One recommendation is to adopt a policy similar to that recently instituted at Hawai'i Volcanoes National Park, with the following considerations:

The scattering of cremated human remains requires a special use permit. A death certificate is required to obtain a special use permit. Conditions of the permit include: scattering must take place in a such a manner and in such a location that the ashes will not be located and identified as human remains; no memorials, plaques, photos or flowers may be left behind; the permittee recognizes and is aware of the sensitivity of this activity and agrees to perform it in a discrete and private manner; all local, state, and county rules and regulations must be followed; violation of the terms and conditions of the permit may result in the immediate revocation of the permit and/or other law enforcement action.<sup>5</sup>

However the ultimate determination will be based upon appropriate cultural consultation and applicable rules.

---

<sup>5</sup> Derived from <http://www.nps.gov/havo/parkmgmt/scattering-of-ashes.htm>

*CR-9. Management policy on the piling and stacking of rocks*

*Ahu*, which are created by placing single rocks or stacks of rocks on boulders and outcrops, dot the landscape in the summit area of Mauna Kea. Most of the 336 “find spots” recorded in the 2005–2007 archaeological survey are piled and stacked rocks. Such features, which are widespread in Hawai‘i, may have as their basis a traditional cultural practice, but whose purpose and meaning have probably changed over time. At the same time, there is reason to believe that a large number of the single rock features and small concentrations of piled or stacked rocks on Mauna Kea are modern and that many were constructed by non-Hawaiian visitors in the last decade or so.

The management policy for piling and stacking rocks could be similar to that recently instituted at Hawai‘i Volcanoes National Park (Kubota 2005). A culturally trained staff person will be responsible for the culturally appropriate removal of rock piles that are made on Mauna Kea. Visitors to and users of Mauna Kea will be educated about the importance of preserving the cultural landscape, with particular attention to prohibitions on the piling and stacking of rocks.

*CR-10. Historic Property Monitoring Program*

A historic property monitoring program would provide a plan for monitoring the condition of identified historic properties within the UH Management Areas. The primary purpose of monitoring these sites is to determine what uses, if any, are affecting historic properties and the degree and frequency of these effects. This information would, in turn, help in developing ways to prevent or minimize the occurrence of damaging uses. The long-term effects of human activities and natural processes on historic properties shall be monitored and management policies adjusted, as needed. Inventories of areas that have not yet been surveyed, such as the road corridor, should be a priority. In addition, new discoveries and Hawaiian cultural features that are newly erected should be described and their locations recorded, so that they can be protected and monitored as part of this program. The recording and monitoring of new cultural features may depend on what guidelines or policies are adopted for new cultural features. While the recording of new features should be done, to continue the process of developing a baseline, the monitoring of all features, which already number over 300, would be an overwhelming and expensive task and would need to be sensitive to the desire of some Hawaiians to not have their features recorded. The findings of the historic property monitoring program will be used to inform management decision-making.

*CR-12. Establishing buffer zones around historic sites*

In order to protect all known historic sites within the Astronomy Precinct, a specified buffer shall be established around each site, if and when a specific set of development plans is proposed. OMKM and Kahu Kū Mauna will work with DLNR, including SHPD and appropriate divisions, on establishing buffers. Each buffer would vary in size based on the area of potential effect, which is defined as the geographic area or areas within which an action may affect historic properties. HAR §13-277-4 requires buffer zones to be established to ensure that the integrity and context of historic properties are preserved. Establishing and marking buffers with fences, the most common type of buffer, would draw attention to the sites, and is not recommended unless a site needs to be identified for a particular activity.

*CR-13. Burial Treatment Plan*

Components of the burial treatment plan should include documenting inadvertently exposed burials and reburial sites for inclusion in the historic property catalogue; appropriate treatment protocols for human remains exposed due to natural causes; and monitoring protocols for burial sites. The burial treatment plan must adhere to all state laws and shall be approved by SHPD in consultation with the HIBC and where appropriate, recognized lineal and cultural descendants, and Kahu Kū Mauna. Determinations on the treatment and disposition of inadvertent discoveries of human remains fall to the DLNR and SHPD, in consultation with the HIBC, the Office of Hawaiian Affairs, and any known descendants (cf. §6E-43.6, HRS, and HAR 13-300-40). Although circumstances for each inadvertent burial find may differ, the procedures specified in §6E-43.6(a) through (c) should always be followed. Depending on the results of

consultation with Kahu Kū Mauna and other stakeholders, including the HIBC and any known descendants, treatment measures may also include the covering up or securing of any exposed skeletal remains.

### 7.1.2 Natural Resources

This section provides information and management recommendations to ensure the protection, preservation, and enhancement the natural resources of the UH Management Areas.

While past management planning for the Mauna Kea area has focused on development planning (i.e., *2000 Mauna Kea UH Management Areas Master Plan* (Group 70 International 2000)) and guiding uses of the area (i.e., *1995 Revised Management Plan for the UH Management Areas on Mauna Kea* (DLNR 1995), which focused on public access), the CMP addresses the protection and preservation of natural resources in the UH Management Areas. The CMP is based on a comprehensive review of existing scientific studies, biological and physical resource inventories, and historical documentation. The CMP also examines human uses of the area, with particular emphasis on their current and potential impacts on natural resources. The CMP was developed with the following concepts in mind:

1. The high-elevation areas of Mauna Kea represent a unique global resource that should be preserved for future generations.
2. Management activities shall be focused on limiting the impacts of human activities on natural resources.
3. The planning and execution of natural resources management programs will involve input from the larger community, including scientists, educators, volunteers, and the public—as well as from natural resource managers.
4. Long-term global environmental factors such as climate change must be taken into account when planning natural resource management activities.
5. Natural resources management planning will use an ecosystem approach.<sup>6</sup>
6. Adaptive management techniques will be used.
7. The biological and physical resources found in high elevation areas of Mauna Kea and the unique ecosystems that encompass them deserve further study by researchers and managers.

#### *Desired Outcome*

Increase understanding of the status of natural resources (biotic and abiotic), and identify threats to these resources in order to better protect and preserve unique geological features, ecosystem functions, subalpine and alpine habitats, and biological communities through adaptive management of stressors and threats.

#### *Current Status*

There are many unique geological features and biological communities within the UH Management Areas. The summit area consists of an alpine stone desert with scattered *pu'u* (cinder cones) that support a unique aeolian invertebrate community that includes the wēkiu bug. Below the summit lie the alpine

---

<sup>6</sup> An ecosystem consists of the plants, animals, and microorganisms within an area; the environment that sustains them; and their interactions. Ecosystem can be as tiny as an isolated wetland containing only a few species or as huge as a tropical rainforest containing thousands of species.