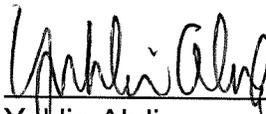




Exhibit No.	Description	Rec'd Into Evidence
B.45	Draft Environmental Impact Statement Vol. 2, Appendix D, Initial Draft Cultural Impact Assessment Report , Summary ,for the Thirty Meter Telescope (TMT) Observatory Project and Hale Pohaku Mid-Level Support Facilities Project, Maunakea, Kahohe Ahupua'a, Hamakua District, Hawai'i Island TMK: [3] 4-4-015:001 por., 009 por., 012 por. (May 23, 2009)	

DATED: Kailua, Hawaii, 10-20-16



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DRAFT  
ENVIRONMENTAL IMPACT  
STATEMENT

Volume 2

Thirty Meter Telescope Project

Island of Hawai'i

Proposing Agency:  
University of Hawai'i at Hilo

This Environmental Document was Prepared Pursuant to Hawai'i Revised Statutes, Chapter 343,  
Environmental Impact Statement Law and Chapter 200 of Title 11, Hawai'i Administrative  
Rules, Department of Health, Environmental Impact Statement Rules

May 23, 2009

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# APPENDIX D

## INITIAL DRAFT CULTURAL IMPACT ASSESSMENT

Thirty Meter Telescope Project

Mauna Kea Science Reserve and Hale Pōhaku,  
Ka'ōhe Ahupua'a, Hāmākua District, Hawai'i Island

TMK: [3] 4-4-015:001 por.; 009 por., 012 por.

May 2009

# Summary

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## Introduction

The Project requires compliance with the State of Hawai‘i environmental review process [Hawai‘i Revised Statutes (HRS) Chapter 343], which requires consideration of a proposed project’s effect on cultural practices and resources. At the request of Parsons Brinckerhoff, Cultural Surveys Hawai‘i (CSH) has conducted research of the existing literature documents and performed initial cultural consultation efforts, as part of the CIA process. The CIA process is intended to support the Project’s environmental review and may also serve to support the Project’s historic preservation review under HRS Chapter 6E-8 and Hawai‘i Administrative Rules (HAR) Chapter 13-275. The CIA process is ongoing, and the following is a summary of the initial findings thus far.

## Project Location

The proposed TMT Observatory Project area is located within Area E of the Astronomy Precinct of the Mauna Kea Science Reserve. Approximately 3.5 miles south of the proposed TMT Observatory Project site, are the Hale Pōhaku Mid-Level Support Facilities, two discrete parcels located in the Hale Pōhaku area, at approximately 2,800 m (9,200 ft.) elevation on the southern slope of Maunakea. The Project areas are depicted on the U.S. Geological Survey 7.5-Minute Series Topographic Map, Mauna Kea Quadrangle (1993) (Figure 1).

## Land Jurisdiction

State of Hawai‘i

## Agencies

State of Hawai‘i Department of Health, Office of Environmental Quality Control (DOH/OEQC), and State Historic Preservation Division (SHPD), Department of Land and Natural Resources (DLNR)

## Project Description

The proposed TMT Observatory Project involves the construction of a thirty meter diameter telescope and associated infrastructure on an approximately 5-acre site within Area E of the Astronomy Precinct. Minimally, land disturbing activities would include grading of the TMT Observatory Project site and access road and excavations associated with building construction and installation of subsurface utilities. The proposed Mid-Level Support Facilities include construction staging areas and development of housing for TMT Observatory Project staff and contractors. The proposed Project also involves upgrades to the existing Hawai‘i Electric Light Company (HELCO) power substation at Hale Pōhaku. Minimally, land disturbing activities would include grading of the construction staging areas, and excavations associated with

construction of workers dormitories and associated structures, installation of subsurface utilities, and substation upgrades.

## **Project Acreage**

The footprint of the proposed TMT Observatory Project ground disturbance measures approximately 5 acres. The footprint of the proposed Mid-Level Support Facilities measures approximately 3.2 acres.

## **Area of Potential Effect (APE)**

The APE for the TMT Observatory Project considered in the initial research and consultations includes the entire approximately 36-acre Area E of the Astronomy Precinct, even though the TMT Observatory site encompasses 5-acre area. The APE for the TMT Mid-Level Support Facilities includes the entire approximately 3.2 acres. The APE also includes the rest of the island of Hawai‘i and other Hawaiian Islands and places in Polynesia (e.g., Kahiki, or Tahiti), associated with Maunakea in the larger context of Hawaiian beliefs (e.g., mo‘olelo or legends, oral histories and wahi pana or storied places), resources and practices.

## **Consultation Effort**

Hawaiian organizations, agencies and community members were contacted by CSH to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the Project area and the vicinity. The agencies consulted include the State Historic Preservation Division (SHPD), the Office of Hawaiian Affairs (OHA), and the Hawai‘i Island Burial Council (HIBC), in addition to community groups such as Mauna Kea Anaina Hou, Royal Order of Kamehameha ‘E kahi, Mamalahoa, Hilo Chapter and Hale o Lono. This effort is ongoing and is being made by letter, e-mail, telephone, and in person contact. In the majority of cases, letters are mailed along with a map and an aerial photograph of the Project area.

## **Note on Spelling of Maunakea**

For this preliminary CIA, both spelling variations of the name Maunakea are used. The two word format - Mauna Kea - is used to address official entities such as the “Mauna Kea Science Reserve” and when quoting content from other sources such as books or past published interviews that include the name of the mountain as two words. All other uses of the mountain will be written as one word, Maunakea. See Section 3.2 on Place Names for further details on the spelling of Maunakea.

## **Results of Background Research**

Background research conducted for this Project yields the following results:

1. Maunakea is a sacred cultural landscape; symbolic of Wākea (the ‘Sky Father’ to all Hawaiians), home of Poli‘ahu, the goddess of snow and foe of Pele (the fire goddess), and of many other resident deities and supernatural entities (e.g., Līlīnoe, Kūkahau‘ula and Mo‘oinanea) and the piko (umbilical cord) of the island-child, Hawai‘i which

connects the land to the heavens (Maly and Maly 2005:v); home of Waiau, the highest permanent lake in the Hawaiian Islands; location of the highest and most extensive basalt quarry in all of Polynesia and perhaps the entire world; and numerous trails, ahu (stone markers), religious shrines and cinder cone pu'u (hills), based on extensive historical and oral-historical documentation.

2. Maunakea is rich in mo'olelo, mele (chants, songs), and 'olelo no'eau (proverbs, poetical sayings) associated with akua (God, male and female deities, spirits) and storied places (wahi pana). Poli'ahu, the snow goddess and Pele, the volcano goddess engaged in legendary battles to control Maunakea. Pele also had legendary battles with the pig demi-god Kamapua'a on the summit of Maunakea. Numerous stories of Wākea and Papa, Poli'ahu, Līlīnoe, Kūkahau'ula and Mo'oinanea, to name a few, are written into the landscape.
3. The TMT Observatory Project area is located below the summit cone, Pu'u Kūkahau'ula, at approximately 13,700 feet elevation. The Hale Pōhaku Project area is located at approximately 9,160 feet in elevation. Maunakea, the tallest mountain in the Hawaiian Islands at 13,796 feet elevation, is also the tallest mountain on earth as measured from the ocean floor to the summit, a distance of some 29,500 feet (thus, exceeding by approximately 1,000 feet the non-volcanic Mount Everest).
4. Vegetation is almost non-existent in the summit region of Maunakea; the tree-line is located nearly a mile in elevation below the summit (at approximately 9,000 feet elevation); the highest major vegetation zone, known as the Alpine Scrub Zone, generally ends at approximately 11,300 feet elevation. Plants in the so-called Alpine Stone Desert Zone of the summit region are mostly limited to small lichens and mosses. More plant life is present in the Hale Pōhaku Project area characterized by scrub vegetation including a number of natives such as mamane (*Sophora chrysophylla*), pukiawe (*Leptecophylla tameiameia*) and the endangered endemic, ahinahina, also known as Maunakea silversword (*Argyroxiphium sandwicense*) as well as introduced exotics such as mullein (*Verbascum thapsus*) and various grasses.
5. Maunakea translates literally as white (kea) mountain (mauna), so named for its breathtaking snow-capped summit. However, according to Nā Maka o ka 'Āina (2008) and according to other authorities on Hawaiian culture (e.g., Kepā Maly, Pualani Kanahale), Maunakea has numerous other meanings and translations. It is a short version of Mauna a Wākea, a name that connects it to the sky father, Wākea; this would be one of its kaona (hidden or more subtle meanings).
6. Hale Pōhaku literally "stone house," refers to the two stone cabins constructed by the Civilian Conservation Corps in 1936 and 1939 at an elevation of 9,220 feet on the southern slope of Maunakea. L.W. Bryan, who served as the Territorial Forestry Office and oversaw the construction of the "stone houses," also named them Hale Pōhaku.
7. Pu'u Poli'ahu is named for Poli'ahu, "the woman who wears the snow mantle of Mauna Kea"; Poli'ahu, which is also the name of a land division on Maunakea, is translated as "garment [for the] bosom (referring to the snow)" by Pukui et al. (1974) and as "Snow goddess of Mauna Kea. Lit. Bosom goddess" by Pukui and Elbert (1986). Maly & Maly include a citation by W.D. Alexander regarding the naming of Pu'u Poli'ahu. As the peak

was nameless, Alexander called it “Poliahu” since it had “a poetical name, being that of the demigoddess with snow mantle who haunts Mauna Kea” (Maly and Maly 2005:200).

8. Waiau, the permanent lake located within Pu‘u Waiau near the summit of Maunakea at approximately 13,020 feet elevation, translates as “swirling water,” and is associated with the snow goddess Poli‘ahu and is guarded by the supernatural water spirit (mo‘o) known as Mo‘oinanea. Queen Emma went to the top of Maunakea to bathe in the waters of Waiau. The ceremony was to cleanse in Lake Waiau at the piko (navel or center) of the island. The water caught at Lake Waiau is considered pure water of the gods much like the water caught in the piko of the kalo (taro) leaf and is thought of as being pure, therefore it is used medicinally (Nā Maka o ka ‘Āina 2008).
9. The Mauna Kea Adze Quarry, also known as Ke-ana-kāko‘i, “the adze-making cave” (Pukui et al 1974:103), is located on the southern slopes of the mountain, at elevations up to 12,400 feet. The site was listed on the National Register of Historic Places in 1969, and the Hawai‘i State Register of Historic Places in 1981.
10. The ahupua‘a of Ka‘ohe was government land on which four native claims were made following the Māhele in 1848. Only one kuleana claim was awarded in the entire ahupua‘a. The single awarded claim indicates coffee, arrowroot, banana, and taro were all cultivated in the lands of Ka‘ohe. Ka‘ohe was also known as a habitat for uwa‘u, or ‘ua‘u (dark-rumped petrel) seabirds that reside in rocky, dry, elevated areas (Foster 1893).
11. While historic accounts and mo‘olelo tell of the presence of burials on Maunakea (Maly and Maly 2005), archaeological evidence until recently, was relatively limited concerning confirmed human burials in the summit region. Prior to 2005, archaeological authorities on Maunakea, including Pat McCoy, had documented only one confirmed burial site (with multiple burials) and four possible burial sites in the summit region (McCoy 1991). All of these sites are located on Pu‘u Mākanaka to the northeast of the subject Project area. In progress work by McCoy and Nees however, has documented 28 sites designated as burials and possible burials (McCoy et al 2008).
12. Several extensive cultural studies have been previously carried out for Maunakea (McEldowney 1982; Kanahale and Kanahale 1997; Maly 1998; Langlas et al. 1999; Maly 1999; PHRI 1999; Maly and Maly 2005). The most comprehensive study by Maly and Maly (2005) builds on archival and oral-historical research conducted by the authors beginning in 1996 (to 2005) and presents a wide range of information on natural and cultural beliefs, resources and practices associated with Maunakea. Among the many critical findings of Maly and Maly’s (2005) cumulative research is the emphasis on Maunakea as a sacred landscape and native lore associated with traditional knowledge of the heavens - documenting 270 Hawaiian names for stars.
13. Past studies identify Traditional Cultural Properties (TCP) on Maunakea. Three places that have been identified by SHPD as TCPs and documented in a study done by PHRI (1999) are: (1) Kūkahau‘ula, the summit (Site 21438), (2) Līlinoe (Site 21439) and (3) Lake Waiau (Site 21440). Other traditional places may also qualify (Figure 6). Maly (1998:29) has suggested the entire Maunakea summit region down to the 6,000 foot elevation contour be designated a Traditional Cultural Property (Figure 16).

14. Archival and oral-historical evidence confirms that Maunakea has long been, and continues to be, a place where significant cultural practices are carried out: where, the piko of newborn children is taken to Pu‘u Kūkahau‘ula and Lake Waiau to ensure long life and safety; the remains of individuals with generational ties to Maunakea are taken to pu‘u and the summit plateau for interment (Maly and Maly 2005:vi); shrines and stone markers are erected and; ceremonial and other activities related to birth, death, healing, navigation and more, occur.

## Results of Initial Community Consultations

CSH attempted to contact 58 community members (government agency or community organization representatives, or individuals such as residents, cultural and lineal descendants, and cultural practitioners) for the purposes of this preliminary CIA. Out of the contacted community members 30 people responded via written comments or verbally over the phone. Of the 30 persons who responded, 13 kūpuna (elders) and/or kama‘āina (native born) agreed to be interviewed for more in-depth contributions to the CIA process. Community consultation with a few respondents is ongoing. The results of these initial cultural consultations indicate that there are major concerns (and several ancillary ones) regarding potential adverse impacts on cultural and natural resources and associated beliefs and practices as a result of the proposed development of the Thirty Meter Telescope, construction of the staging area for the TMT Observatory Project and the HELCO electrical transformer needed to supply electrical power to the TMT Observatory Project:

1. All of the community consultants interviewed for this study stress that Maunakea is a sacred landscape and that any future development activities on the mountain proceed with greater awareness of, and the utmost respect for Hawaiian culture, Hawaiians’ spiritual connection to the mountain, and the sanctity of Maunakea.
2. Nine of the community elders interviewed, and three of the respondents who provided brief commentary, explicitly stated their opposition to the proposed actions on Maunakea which is traditionally, and continues to be, one of the most sacred locations in all of Polynesia, not to mention Hawai‘i Nei. These participants voiced sadness, frustration or negative feelings about the cumulative impacts of past and present developments on Maunakea. In the words of one participant, referring to the telescopes on the summit of Maunakea, “When is enough, enough?” Specific mana‘o (thoughts, ideas), concerns and recommendations from those that oppose the proposed TMT Observatory Project and Hale Pōhaku Mid-Level Support Facilities Project are:
  - a. Three participants called for astronomy facilities to be removed and Maunakea be repaired to its original condition. Two of these participants recommended that the proponents of the TMT Observatory Project make an effort to better reach out to the community about the findings of the Mauna Kea Science Reserve and scientific intent of the proposed TMT Observatory Project through public education events.
  - b. One participant stated that there should be no further development until issues are rectified with the Hawaiian people.
  - c. One participant called for the proposed TMT Observatory Project to be installed in Chile rather than in Hawai‘i.

- d. A number of these participants stressed the importance of astronomy to Hawaiians, particularly discussing voyaging traditions.
  - e. Several interview participants and respondents expressed concern about the disturbance of burials and associated cultural artifacts, markers and shrines (ahu) and in pu‘u as result of construction of the proposed TMT Observatory Project and support facilities.
  - f. Five participants discussed environmental concerns, particularly about Lake Waiau and the mountain aquifer, as well as other impacts to environmental services. These participants assert that Maunakea - the principal aquifer and watershed for Hawai‘i Island - is being contaminated by human use (i.e., sewage and toxic chemicals leaching from astronomy facilities). Participants also mention the threatened endemic Maunakea Wekiu Bug (*Nysius wekiuicola*) and cleaning up trash left by visitors to Maunakea.
  - g. One participant noted that the entire Mauna Kea Science Reserve has been identified by SHPD as an historic district; suggesting that a Cultural Reserve be created and that the following landscape features qualify as TCPs: the Mauna Kea Adze Quarry Complex; the cluster of 3 pu‘u of Kūkahau‘ula that make up the summit region of Maunakea; Lake Waiau; and Līlīnoe, referring to the pu‘u southeast of the summit and within the Science Reserve
  - h. Three participants questioned legal aspects of the lease agreement between the University of Hawai‘i and the state and legitimacy of the Mauna Kea Science Reserve to operate on ceded and/or occupied lands.
  - i. Two participants questioned the benefits to the local economy and education promised by past and proposed telescope projects on Maunakea.
3. Three participants interviewed and one respondent who provided brief commentary, are in favor of the development of the TMT Observatory Project and its associated facilities on Maunakea. These participants recommend Project proponents proceed with care and respect to the sacredness of Maunakea and advised mitigation measures and/or alternatives to the current proposed design and location of the TMT Observatory Project and support facilities. In the words of one participant, “The future of Maunakea...can serve as an educational center and a place for man to view the stars and the universe but it has to remain a sacred and holy place. It’s like stepping into a sanctuary, a very sacred place of peace, a place that one can learn the things beyond what man knows now.”
- Mana‘o, concerns and recommendations from these participants are:
- a. One participant believes the TMT Observatory Project should be built on a recycled site. He states that if an outdated telescope site on Maunakea is identified, the site should be recycled for TMT Observatory Project usage to avoid unnecessary intrusions that detracts from the beauty and majesty of Maunakea.
  - b. One participant calls for a process to be put in place that respects community and allows projects such as TMT Observatory Project telescope to continue.
  - c. One participant recommends the removal of all other telescopes and that only one telescope be utilized and shared by interested parties.

- d. All three of these participants state that if the TMT Observatory Project proceeds, it should be developed to blend in with the natural setting and not detract from the natural beauty and sacredness of Maunakea.
4. Interviewees discussed salient features of the cultural landscape, resources and associated uses of Maunakea including, mo‘olelo about Wākea and Papa, Poli‘ahu, Līlīnoe, Kūkahau‘ula and Mo‘oinanea; the summit as an area where families take the piko of their babies to bury, and where the bones or ashes of deceased family members are placed, burials and burial complexes; shrines and stone markers; navigation traditions and astronomy; the adze quarry, ancient and historic trails; the healing and purifying waters of Lake Waiau and snow and ice collected for medicinal and ceremonial purposes; bird hunting; and other past and present cultural practices (see Sections 7 and 8).
5. SHPD, responding in a memo sent on May 4, 2009, states that, “As you may have discerned from the most recent Mauna Kea Comprehensive Management Plan (MCMP) for the UH Management Area (January 2009) and the public hearings for that plan that Mauna Kea is a very sensitive subject that truly needs and deserves more time to consider all the cultural impacts to this iconic symbol of all cultural connections including but not limited to the genealogical connections, and the spiritual connections to all of the deities in the Hawaiian cosmos and to the kanaka maoli world view.” Additionally, SHPD recognizes Maunakea’s place in Hawaiian navigation as “the first sighting for voyaging canoes to arrive safely to our islands in the middle of the Pacific [and] a significant part of the Pacific Rim mythological connections to all the Pacific Rim.” SHPD recommends:
  - a. An assessment of buildings no longer functional be done before building new structures or “perhaps no more development on this sacred mountain”;
  - b. access for cultural practitioners be clearly addressed and defined;
  - c. the entire summit of Maunakea be treated as one traditional cultural landscape and not as a piecemeal analysis of just the Science Reserve; and that
  - d. more community outreach occur for all cultural impacts on the summit and the proposed area to properly assessed - see list of contacts in the MCMP.
6. OHA, responding in a letter dated January 9, 2009 (Appendix B), acknowledges the different perspectives on Maunakea as a spiritual, sacred place, home to “wao akua” (dwelling, place of the gods) and the place where the presence of numerous ahu and iwi kūpuna provide silent testimony that generations of Hawaiians have worshipped and buried loved ones “at the highest point possible to rest in peace.” The “life sustaining waters known as Kanekawaiola... contribute to a healthy natural environment, which in turn allow man to thrive.” The letter describes the 40-year debate surrounding the development of Maunakea and recommends that the current proposed TMT Observatory Project study be viewed in context of this long history to “consider the overall impacts of development on Mauna Kea.” OHA suggests several parties for consultation and is currently reviewing the Hale Pōhaku Mid-Level Support Facilities Project area information to determine whether they will provide additional comments.

## Ongoing Community Consultations

The consultations, including additional interviews with the community members will continue to be on-going in soliciting input representative of the community. The initial consultations resulted in a limited number of only 13 interviews with kūpuna and/or kama'āina. Thus, and also as indicated by some respondents during the initial consultations, outreach to other parties will continue in the on-going consultations and interviews conducted, in order to gather input representative of the community. The results of these consultations and interviews, and recommendations reflecting community input, will be documented in a final CIA report and the Final EIS.

Attachment: Draft Initial CIA report prepared by CSH

**BOARD OF LAND AND NATURAL RESOURCES**

**STATE OF HAWAI'I**

In the Matter of: ) Case No. BLNR-CC-16-002  
)  
A Contested Case Hearing Re: ) **CERTIFICATE OF SERVICE**  
Conservation District Use Permit )  
(COUP) HA-3568 for the Thirty Meter )  
Telescope at the Mauna Kea Science )  
Reserve, Kaohe Mauka, Hamakua )  
District, Island of Hawai'i, TMK (3) 4-4-015:009 )  
\_\_\_\_\_ )

**CERTIFICATE OF SERVICE**

We hereby certify that a copy of the foregoing was served on the following via email unless otherwise specified below:

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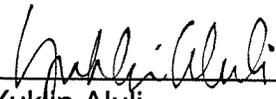
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