

quest to find and study Earth-like planets which are close enough that future generations might be able to fly there. WDT Dr. Hasinger at 2.

1039. Considering all of the evidence, including but not limited to the testimonies of Dr. Taualii, Dr. Aluli Meyer; Prof. Kaholokula, Perreira, Teale, Townsend, Ward, Prof. Fujikane, C. Freitas, Fergerstrom, Munroe, Rosier, Kihoi, White, Hayes, Nance, Dr. Hasinger, and Dr. Sanders, and giving such evidence due weight, Petitioners and Opposing Intervenors have not offered reliable, probative, substantial, or credible evidence, scientific or otherwise, to suggest that the TMT Project will be harmful to the health, safety, and welfare of native Hawaiians or anyone else.
1040. Based on these factual findings, the TMT Project is not materially detrimental to the public health, safety, and welfare. Thus, the TMT Project satisfies HAR § 13- 5-30(c)(8).

V. PETITIONERS' AND OPPOSING INTERVENOR'S ARGUMENTS THAT UHH FAILS TO MEET CRITERIA FOR APPROVAL OF PERMIT

1041. Petitioners and Opposing Intervenors rely on the testimony of Dr. Fujikane in challenging UHH's contention that it meets all eight criteria.
1042. Dr. Fujikane's testimony was made in two parts: the first part focused on a rhetorical problem: the faulty and self-contradictory logic in the TMT's Conservation District Use Application (CDUA) that attempt to make substantial, adverse, and significant impacts "disappear." The second part focused on the cultural value of the integrity of land embodied in mo'o'aina land divisions, where relationships between land forms are inseverable. Vol. 23, Tr. 1/9/17 at 207:15-208:17.
1043. Dr. Fujikane stated that the TMT CDUA cannot fulfill the eight Conservation District Use Criteria because cumulatively, the TMT project would add to the impacts of existing observatories that are "substantial, adverse, and significant." Vol. 23, Tr. 1/9/17 at 209-210.
1044. Dr. Fujikane reaffirmed NASA's 2005 Final Environmental Impact Statement for the Outrigger Telescopes project on Mauna Kea where it concluded that the impact of existing astronomical activities on Mauna Kea has been substantial, adverse and significant: "From a cumulative perspective, the impact of the past, present, and reasonably foreseeable future activities on cultural and biological resources is substantial, adverse and significant" (Ex. 813d at 4-124).
1045. Dr. Fujikane stated that as NASA's FEIS for the Outrigger Telescopes Project indicates, Mauna Kea is already overbuilt. Vol. 23, Tr. 1/9/17at 211.
1046. Dr. Fujikane testified that the TMT's FEIS Vol.1 also acknowledges that cumulatively, the TMT can only add to the substantial, significant and adverse impact on Mauna Kea: "From a cumulative perspective, the impact of past and present actions on cultural, archaeological, and historic resources is substantial, significant, and adverse; these impacts would continue to be substantial, significant, and adverse with the consideration of the Project and other reasonably foreseeable future actions" Ex. 832 at S-8. Vol. 23,

Tr. 1/9/17at 210.

1047. Dr. Fujikane stated that the TMT's CDUA claims, "As detailed in this CDUA, locating the TMT Project in Area E will result in less than significant impact on historic properties, cultural practices and native Hawaiian rights, as well as viewplanes, species habitat and existing facilities." (Ex. A002 at 2-27, cited in Ex. 8.13a at 3) is contrary to the CDUA which points out that "As the Astronomy Precinct is the site of many existing astronomical observatories, the TMT project will be compatible with existing land uses" (Ex. A002 at 2-27).
1048. Dr. Fujikane testified that, instead, the proposed TMT site is located in a pristine area that falls in the Mauna Kea Summit Region Historic District and the TMT site is an integral part of the cultural and natural resources of Mauna Kea. Ex. A002 at 2-6, Exhibit 8.13c at 2-31, cited in Ex. 8.13a at 3.
1049. Dr. Fujikane has conducted research on the ways Hawaiians culturally valued the integrity of land, and that cultural value is encoded in a land division known as "mo'o'aina." Vol. 23, Tr. 1/9/17at 214-215.
1050. "Mo'o'aina" is defined by Mary Kawena Pukui and Samuel H. Elbert as a "narrow strip of land, smaller than an 'iii." Ex. B.13j at 253-254. Mo'o'aina as a series of smaller land divisions that is part of a larger land base. Mo'o'aina foreground the relationality between land formations. Mo'o'aina are defined by what lies on their borders, by their relationality to other mo'o'aina. Exhibit 8.13c is LCA Award 3131 illustrating a mo'o'aina land division. Key here is that mo'o'aina are not defined by abstract cardinal directions north, south, east or west but in their relation to other land formations. Vol. 23, Tr. 1/9/17at 214-215.
1051. The term "mo'o'aina," then, indicates that Mo'o'aina's presence on Mauna Kea is also about the integrity of land there, and that the undivided ahupua'a of Ka'ohe represents an even higher expression of this integrity of land. Ex. 8.13.m at 2-5, cited in Ex 8.13a at 10. As surveyor Curtis J. Lyons explained in 1875, "The whole main body of Mauna Kea belongs to one land from Hamakua, viz., Ka'ohe." Ex. 8.130 at 14, cited in Ex. 8.13a at 10. Siting the TMT on the northern plateau would violate this integrity of the land.
1052. Dr. Fujikane stated that the CDUA failed to address the State desecration law. Ex. 8.13h, cited in Vol. 23, Tr. 1/9/17at 214-215. "if all of Mauna a Wakea is considered sacred from Saddle Road up to the summit, and the NASA Environmental Impact Statement for the Outrigger project deemed that there is already adverse, substantial-that there is cumulative, adverse, substantial and significant impact, the building of the TMT would be desecrating a place that is held sacred by Hawaiians and by many who are not Hawaiian. And in that sense, I think that the CDUA doesn't address the Desecration Law at all, and I'm not sure why there's that huge omission, because one of the questions has to do with the protection of Native Hawaiian rights and cultural practices." Vol. 23, Tr. 1/9/17at 222-223. Dr. Fujikane also recalled charges of desecration proposed by the Office of Hawaiian Affairs in a letter to Stephanie Nagata, Director of the Office of Mauna Kea Management (OMKM) calling for the investigation of an **OMKM** staff

member who bulldozed an ahu (altar) erected at the TMT site. Tr. 01/9/2017, V. 25 at 68-69.

1053. Dr. Fujikane testified that the CDUA fails to address Mauna Kea itself as a cultural resource. Vol. 23, Tr. 1/9/17 at 249-250. Dr. Fujikane states that this is a result of a discrepancy between the TMT's CDUA quoting the State Land Use Law (Chapter 183C, Hawai'i Revised Statutes) instead of HAR §13-5-1 as it is cited in the first application question (Exhibit B.13f: HAR §13-5-1). Ex. 8.13a at 3-4.

1054. Dr. Fujikane stated, "what the CDUA is trying to say is that cultural practices will not be infringed upon, but it says nothing about the cultural resources, and the land is a cultural resource because it reminds us of the mo'olelo. Some people will try to argue that you can still remember the mo'olelo if you build the TMT, but it will not be the same. So the land itself is a map that reminds us of the mo'olelo, and certain features of the land will trigger connections that we can make to other mo'olelo. But if it's built upon we will lose that capacity to connect mo'olelo through, you know, being in those places." Vol. 23, Tr. 1/9/17 at 225.

The application states, "The purpose of the Conservation District to conserve, protect, and preserve the natural and cultural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety and welfare" (emphasis mine). The TMT project cannot "conserve, protect, and preserve" the natural or cultural resources of the northern plateau, the sacred ground that will be desecrated by the construction of the TMT. Vol. 23, Tr. 1/9/17at 225.

1055. Dr. Fujikane stated that viewplanes are an important cultural resource on Mauna Kea, and that city and county ordinances in Honolulu recognize that viewplanes are an important aspect of preserving natural beauty. Vol. 23, Tr. 1/9/17 at 90.

"So viewplanes are recognized in the CDUA application itself when it asks whether a development project will preserve open space and natural beauty. That to me is a recognition of the importance of viewplanes, and it's also again reinforcing other kinds of city ordinances, where you need height variance applications when you build a building beyond a certain height." Vol. 23, Tr. 1/9/17at 90.

1056. Dr. Fujikane specifies the importance of the viewplanes of Mauna Kea: "So the viewplanes in the mo'olelo are very important because there are recognized viewplanes from Mauna a Wakea all the way to Kaua'i where there is an ahu, the Ahu o Poli'ahu on Kaua'i. And I have heard on a clear day--and this is in the Cultural Impact Assessment of the TMT--you can see Kaua'i from--I think you can see Kaua'i from Mauna a Wakea, but why do you have an ahu on Kaua'i, Ahu o Poliahu, unless there is a viewplane and a connection between these sacred points?" Vol. 23, Tr. 01/9/2017 at 90-91.

1057. Contrary to Dr. Fujikane's testimony and based on the factual findings in FOF sections IV.A. through H., the TMT Project satisfied all eight criteria of HAR § 13-5-30.