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BOARD OF LAND AND NATURAL RESOURCES  
STATE OF HAWAII

IN THE MATTER OF	)	Case No. HA-22-02
	)	
The Petition of Mauna Kea Hui for a	)	MEMORANDUM IN SUPPORT OF
Declaratory Order Filed May 24, 2021.	)	MAUNA KEA HUI’S MOTION TO
	)	SUBMIT NEW EVIDENCE, OR
	)	ALTERNATIVELY, TO REQUEST
	)	JUDICIAL NOTICE OF THE SAME;
	)	DECLARATION OF E. KALANI
	)	FLORES; EXHIBITS “A” - “E”;
	)	CERTIFICATE OF SERVICE
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**MEMORANDUM IN SUPPORT OF MAUNA KEA HUI’S MOTION TO SUBMIT NEW EVIDENCE, OR ALTERNATIVELY, TO REQUEST JUDICIAL NOTICE OF THE SAME**

**I. INTRODUCTION**

E. KALANI FLORES (“Flores”), in capacity as an individual as well as a representative of the FLORES-CASE ‘OHANA (“FCO”), respectfully files this Memorandum in Support (“Memorandum”) of *Mauna Kea Hui’s Motion to Submit New Evidence, or Alternatively, to Request Judicial Notice of the Same* (“Motion”).

On June 6, 2022, Mauna Kea Hui filed a Motion seeking the admission of new evidence or judicial notice of the same to provide additional useful information for the Board of Land and

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Natural Resources (“Board”) consideration of the non-compliance of Condition No. 4 by the University of Hawai‘i at Hilo (“UHH”). As noted in this Motion, TMT International Observatory LLC (“TIO”) failed to obtain a valid National Pollutant Discharge Elimination System (“NPDES”) permit which means UHH had not and could not have legally initiated construction of the TMT project in compliance with Condition No. 4 during the time period relevant to this proceeding.

Furthermore, Flores/FCO concur with this Motion that the extent UHH may contend it initiated construction under an invalid NPDES permit, the Board should rescind the chairperson’s approval of UHH’s previous notice of initiation of construction and reopen proceedings; and address UHH’s non-compliance with CDUP HA-3568 by revoking this permit.

On December 3, 2021, Flores/FCO filed *Memorandum in Support of the Mauna Kea Hui’s Motion to Reopen Hearing to Hear Motion to Confirm Non-Compliance with Condition No. 4, or, Alternatively, Petition for Declaratory Orders Concerning the Same* which also supports the facts of this Motion and the Flores/FCO’s supporting positions on this matter.

## **II. FLORES/FCO’S SUPPORTING POSITIONS**

The Flores/FCO provides the following arguments and facts in support of the Mauna Kea Hui’s Motion.

### **A. DOH’s Press Release Regarding TIO’s Filing of a Notice of Cessation of NPDES Permit Included Misinformation**

The following statement in the State of Hawai‘i Department of Health’s (“DOH”) press release dated June 3, 2022 included misinformation, “Since TMT filed a Notice of Cessation, it will not be allowed to conduct further construction work unless a new permit is issued.” (Emphasis underlined.)

This statement actually contradicts DOH’s previous comments in DOH’s Response to Public Hearing Comments (Document No. 01011PCTM.20) as noted below.<sup>1</sup> See attached

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<sup>1</sup> Although DOH rescinded this document with Document No. 03003PCTM.21 (dated March 3, 2021) because, “The documents were worded in a way that may imply that the Director of Health has made certain determinations with respect to the permit application related to Docket No. HI S000431. The DOH will issue a new tentative recommendation in accordance with

DOH's Response to Public Hearing Comments (Document No. 01011PCTM.20) dated January 9, 2020, attached hereto as Exhibit "A". (Emphasis underlined.)

#### PROCEDURAL HISTORY

Original Permit. On March 31, 2014, TMT Observatory Corporation submitted its application for a permit authorizing discharges of storm water associated with construction activities from the Project Site to identified State waters. On May 1, 2014, a notice was published indicating that comments on the permit application or a request for public hearing would be received until May 30, 2014. DOH did not receive any comments and there were no requests for a public hearing.

On June 12, 2014, a Final Permit (NPDES Permit No. HI S000431) was issued (Original Permit) and became effective on that date. The Original Permit authorized the permittee to "discharge storm water associated with construction activities from the . . . project site" to certain receiving State waters, in accordance with certain general requirements, discharge monitoring requirements, and other conditions.

Since June 12, 2014 through the date of this letter, there has been no construction activity on the Project Site, and, therefore, no storm water discharge associated with construction activities. Since there has been no construction activity and no storm water discharged, DOH has not found any violation of the conditions of the Original Permit.

DOH concluded that "**there has been no construction activity on the Project Site**" from June 12, 2014 to January 9, 2020. It was also affirmed that the "**Original Permit authorized the permittee**" who was TMT Observatory Corporation, not TIO, to discharge storm water associated with construction activities.

Furthermore, TIO is not the Permittee of the "Original Permit" ( NPDES Permit No. HI S000431). As such, TIO can not file a notice of cessation for this NPDES permit if they are not actually the NPDES permittee according to HAR, Chapter 11-55 (2022 version). (Emphasis underlined.)

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applicable statute and rules.", the DOH concluded that "no construction activity" had occurred at the project site from June 12, 2014 to January 9, 2020. A thorough search of DOH records will affirm that construction activity never occurred during this time period.

**§11-55-18 Reporting discontinuance or dismantlement.** An NPDES permittee shall report within thirty days after the permanent discontinuance or dismantlement of that treatment works or waste outlet for which the NPDES permit had been issued by submitting a notice of cessation.

TIO's filing of a notice of cessation for the since expired "Original Permit" is just an illusion. If a non-permittee is allowed to file a notice of cessation for any NPDES permit, it would create chaos and be administratively impractical. Likewise, DOH's press release is just another example of their mishandling of this matter.

**B. DOH mishandled the renewal application for NPDES Permit No. HI S000431.**

DOH failed to make any final determination on the validity of the renewal application of the NPDES permit because DOH failed to properly conduct a contested case hearing on this matter as pursuant to Hawaii Administrative Rules ("HAR") §11-1 Subchapter 2, Hawaii Revised Statutes ("HRS") Chapter 91, and all other relevant statutory laws. The record is very clear that DOH initiated a contested case hearing (Docket No. 21-CWB-EMD-1) on September 4, 2020 and that was scheduled to begin in February 2021, but was later canceled after the notice regarding rescinding the NPDES permit was issued. It was during the prehearing of this contested case hearing that DOH's hearing officer issued *Order Re Supplemental Submissions Re Flores Objection No. 2 Filed September 21, 2020* (dated Sept. 30, 2020), attached hereto as Exhibit "B" to address the following objections.

1. NPDES Permit No. HI S000431 ("original permit") was issued in 2014 to the TMT Observatory Corporation, not to the TMT International Observatory (TIO) as stated in this Order.
2. It's unclear if HAR allows for the new applicant, TMT International Observatory (TIO), to submit a Renewal Individual NPDES application or if the new applicant was required to submit an Initial Individual or Revised Individual NPDES application.

This order affirmed that "NPDES Permit No. HI S000431 ("original permit") was issued in 2014 to the TMT Observatory Corporation, not to the TMT International Observatory (TIO)". In regards to Objection 2, the hearing officer stated in this order, "It's unclear if HAR allows for the new applicant, TMT International Observatory (TIO), to submit a Renewal Individual

NPDES application or if the new applicant was required to submit an Initial Individual or Revised Individual NPDES application.”

It was only after these objections were filed that TIO attempted to transfer this expired NPDES permit as a minor modification through an after-the-fact *Bill of Sale and Assignment Agreement*, dated September 30, 2020, between TMT Observatory Corporation and TIO. See Flores/FCO’s Memorandum in Support of the Mauna Kea Hui’s Motion to Reopen Hearing to Hear Motion to Confirm Non-Compliance with Condition No. 4, or, Alternatively, Petition for Declaratory Orders Concerning the Same, filed December 3, 2021 at Exhibit G. This action further affirmed that TIO was not in possession of the required NPDES at the time UHH asserted that construction work was initiated. It’s undisputed that NPDES Permit No. HI S000431, also referred to as the “Original Permit”, was applied for and issued to TMT Observatory Corporation as the “permittee” and designated “owner” of the project. It’s also undisputed that TMT Observatory Corporation, failed to execute either a transfer of ownership or minor modification designating TIO as the new permittee prior to the permit expiring on June 11, 2019 or at any time in 2019 when TIO and UHH are asserting that construction was initiated. Furthermore, it is contented that only the “current permittee”, TMT Observatory Corporation, could be treated as the owner or operator for this NPDES permit regardless of DOH’s administrative extension.

It’s at this point as stipulated by state and federal law that DOH was required to direct TIO to file a new Initial Individual NPDES permit application instead of trying to issue a minor modification for an expired permit in order to cover up their mishandling of this faulty renewal application.

In addition, HAR § 11-55-27(a) clearly stipulates only a "**permittee**" shall submit a renewal application for NPDES permits as noted below. It is very apparent that TMT Observatory Corporation, as the permittee of NPDES Permit No. HI S000431, failed to file a renewal application for this permit. As such, since TIO was not the permittee, they could not have legally submitted a renewal application for this permit according to this statute. (Emphasis underlined.)

**HAR §11-55-27 Renewal of NPDES permits.** (a) The director shall review applications for reissuance of NPDES permits. Any permittee who wishes to continue to discharge after the expiration date of the permittee's NPDES permit shall submit for renewal of the permit at least one hundred eighty days prior to its expiration.

DOH failed to have a continuance or commence with a new contested case hearing after it re-published its notice on April 8, 2021 regarding the renewal application to determine the ongoing validity of the permit during the pendency of the administrative extension. It's very apparent that TIO filed a notice of cessation, despite not being the permittee, to avoid a contested case hearing and any further review regarding the validity of the renewal application of the NPDES permit.

**The facts are undisputed that TMT Observatory Corporation as the Permittee failed to complete a transfer of ownership and failed to submit a renewal of the permit at least one hundred eighty days prior to its expiration. Consequently, TIO was required to submit a new Initial Individual NPDES Permit application.**

Despite DOH's administrative extension of the Original Permit, TMT Observatory Corporation as the permittee did not have any contractual right under the executed Sublease and Non-Exclusive Easement Agreement Between TMT International Observatory LLC and the University of Hawaii, Consent to Sublease and Non-Exclusive Easement Agreement Between TMT International Observatory LLC and the University of Hawaii, or Scientific Cooperation Agreement Between TMT International Observatory LLC and the University of Hawaii to construct the TMT Project, attached hereto as Exhibit "C". This is further affirmed in the following TIO's *Motion to Have TMT International Observatory, LLC Admitted as a Party in the Contested Case Hearing*, filed April 8, 2016, for Case No. BLNR-CC-16-002, attached hereto as Exhibit "D".<sup>2</sup>

- (1) TIO clearly has a property interest in the subject land as it has a contractual right under its sublease and/or Scientific Cooperation Agreement with the University of Hawaii'i to construct and operate the TMT Project on Mauna Kea and/or is responsible for designing and constructing the TMT Project and fulfilling mitigation measures.
- (2) TIO will be so directly and immediately affected by the contested case hearing that its interest is clearly distinguishable from the general public. The contested case hearing directly and immediately affects TIO's contractual right and/or responsibility to construct and operate the TMT Project on Mauna Kea. This contractual right or responsibility is unique to TIO and is not shared by the general public. In addition, TIO's interest is unique from the general public because no one in the general public can design

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<sup>2</sup> It's significant to note that TMT Observatory Corporation did not petition or enter into this CDUP HA-3568 contested case hearing (Case No. BLNR-CC-16-002) as this entity did not have any property interest and contractual right for the construction of the TMT project at this time.

or construct the TMT Project, and no one in the general public stands to lose more if the contested case hearing does not result in the issuance of a Conservation District Use Permit authorizing the construction of the TMT Project to proceed.

It is very evident that the TMT Observatory Corporation and TIO are two separate legal entities as was affirmed in the BLNR's *Findings of Fact, Conclusions of Law and Decision and Order* (Case No. BLNR-CC-16-002) as noted in the finding of facts Nos. 224 and 225.

It was further noted that TIO assumed ownership and control of the TMT project, including its assets and liabilities, through the *Asset and Employee Transfer Agreement* ("Transfer Agreement"), dated October 1, 2016, between TMT Observatory Corporation and TIO. See Flores/FCO's Memorandum in Support of the Mauna Kea Hui's Motion to Reopen Hearing to Hear Motion to Confirm Non-Compliance with Condition No. 4, or, Alternatively, Petition for Declaratory Orders Concerning the Same, filed December 3, 2021 at Exhibit F. However, TMT Observatory Corporation failed to transfer its interest and ownership to the NPDES permit as it was clearly omitted from Schedule 1.1 of this Transfer Agreement. TIO then attempted to transfer this expired NPDES permit through an after-the-fact *Bill of Sale and Assignment Agreement*, dated September 30, 2020, between TMT Observatory Corporation and TIO. See *Id.* at Exhibit G. Through TIO's own admission, by its legal counsel and representatives, it's very apparent that TIO, not TMT Observatory Corporation, had the "contractual right and/or responsibility" to construct the TMT project.

This fact was further amplified when TIO, not TMT Observatory Corporation, was identified as the "Owner" for the County of Hawai'i Grading Permit No. 6133 (June 4, 2019 - May 31, 2021) of this project, attached hereto as Exhibit "E."

Any type of construction activities that were asserted to have occurred after June 11, 2019 would have been in violation of CDUP HA-3568 preconstruction conditions as UHH or TIO did not have a valid NPDES permit which had expired due to the renewal application being faulty. Commencing any type of construction work without a valid NPDES permit would also have been a violation of both state and federal laws. Furthermore, UHH and TIO were in non-compliance with CDUP HA-3568 General Conditions Nos. 1 and 3 as well as Special Condition No. 32 at the time it purported to have initiated construction for the TMT project during the time period relevant to this proceeding.

Conclusively, UHH could not have been able to legally commence with any construction activities on the land in order to meet Condition No. 4 if it didn't meet all preconstruction conditions and mitigation measures of the CDUP as stipulated in Special Condition No. 32. In addition, UHH failed to demonstrate and provide supportive documentation for its claim that it met all preconstruction conditions and mitigation measures of the CDUP as well as Condition No. 4. Likewise, DLNR failed to verify UHH's claims that it met all preconstruction conditions and mitigation measures of the CDUP as well as Condition No. 4 prior to issuing a notice to proceed with construction work.

### III. CONCLUSION

Based on all of the reasons presented herein and any reasons appearing on record including the previously submitted *Memorandum in Support of the Mauna Kea Hui's Motion to Reopen Hearing to Hear Motion to Confirm Non-Compliance with Condition No. 4, or, Alternatively, Petition for Declaratory Orders Concerning the Same*, filed December 3, 2021, Flores/CFO supports Mauna Kea Hui's Motion.

Flores/CFO also reaffirms its support of the Petitioners' request that the BLNR reopen its contested case hearings for the purpose of hearing and deciding Mauna Kea Hui's initial motion to confirm UHH's non-compliance with Condition No. 4, or in the alternative, entering declaratory orders confirming the same.

Flores/CFO also contend that UHH was not in compliance with other conditions of CDUP HA-3568 and that BLNR/DLNR failed in their statutory duties and obligations to ensure compliance with these permit conditions and requirements in protecting and preserving Mauna a Wākea's natural and cultural resources within a conservation district. In order to determine if UHH or TIO were in compliance with all permit conditions and requirements, including General Condition No. 4, DLNR should thoroughly examine and review all permits for this project that were required as preconstruction conditions and mitigation measures of the CDUP.

As all the facts have demonstrated, it's very obvious that TIO was not the Permittee of the "Original Permit" and that TIO did not have possession of NPDES Permit No. HI S000431, despite DOH's administrative extension, at the time it purported to have initiated construction for the TMT project during the time period relevant to this proceeding. DOH had also concluded that

“no construction activity” had occurred at the project site from June 12, 2014 to January 9, 2020. Likewise, any attempts and narratives to say otherwise are false and inaccurate.

Given the foregoing, the record clearly demonstrates that UHH or TIO have not complied with Condition No. 4 as well as other conditions of CDUP HA-3568 as they failed to meet all preconstruction conditions and mitigation measures.

Furthermore, UHH has also demonstrated that it doesn't have the capacity and expertise to properly manage astronomy development such as the TMT project to ensure that TIO, current project owner, is in compliance with its permit conditions and requirements. As such, members of the public should have a means and method for notifying the BLNR/DLNR when there are non-compliance issues associated with BLNR issued permits.

DATED: Pu'ukapu, Hawai'i, June 17, 2022

/s/ E. Kalani Flores

E. KALANI FLORES

BOARD OF LAND AND NATURAL RESOURCES  
STATE OF HAWAI‘I

IN THE MATTER OF	)	Case No. HA-22-02
	)	
The Petition of Mauna Kea Hui for a	)	DECLARATION OF E. KALANI
Declaratory Order Filed May 24, 2021.	)	FLORES
	)	

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**DECLARATION OF E. KALANI FLORES**

I, E. KALANI FLORES, hereby declare as follows:

1. I am a member of the Flores-Case ‘Ohana.
2. The Flores-Case ‘Ohana is an unincorporated association of a Kanaka Maoli (aka Native Hawaiian) family whose members reside on Hawai‘i Island and who engage in Native Hawaiian traditional and customary practices on Maua a Wākea, also referred to as Mauna Kea.
3. I have the authority to represent the Flores-Case ‘Ohana in this matter before the State of Hawai‘i Board of Land and Natural Resources (“BLNR”).
4. I make this declaration in lieu of an affidavit and based on personal knowledge and the records and files of this matter.
5. Attached hereto as Exhibit “A” is a true and correct copy of the DOH’s Response to Public Hearing Comments (Document No. 01011PCTM.20) dated January 9, 2020 obtained from the DOH Clean Water Branch - Public Notices and Updates webpage at:  
<https://health.hawaii.gov/cwb/clean-water-branch-home-page/public-notices-and-updates/>
6. Attached hereto as Exhibit “B” is a true and correct copy of the *Order Re Supplemental Submissions Re Flores Objection No. 2 Filed September 21, 2020* (filed September 30, 2020).
7. Attached hereto as Exhibit “C” is a true and correct copy of the executed Sublease and Non-Exclusive Easement Agreement Between TMT International Observatory LLC and the University of Hawaii, Consent to Sublease and Non-Exclusive Easement Agreement Between TMT International Observatory LLC and the University of Hawaii, and the Scientific Cooperation Agreement Between TMT International Observatory LLC and the University of

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Hawaii (filed June 21, 2016) for Case No. BLNR-CC-16-00, obtained from the OCCL online file repository available as Document 075 (*Declaration of J. Douglas Ing*) at:

<https://dlnr.hawaii.gov/mk/documents-library/>

8. Attached hereto as Exhibit “D” is a true and correct copy of *Motion to Have TMT International Observatory, LLC Admitted as a Party in the Contested Case Hearing* (filed April 8, 2016) for Case No. BLNR-CC-16-00, obtained from the OCCL online file repository available as Document 002 at: <https://dlnr.hawaii.gov/mk/documents-library/>

9. Attached hereto as Exhibit “E” is a true and correct copy of the County of Hawai‘i Grading Permit No. 6133 (June 4, 2019 - May 31, 2021) .

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Pu‘ukapu, Hawai‘i, June 17, 2022

/s/ E. Kalani Flores

E. KALANI FLORES



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DATED: Pu'ukapu, Hawai'i, June 17, 2022

/s/ E. Kalani Flores

E. KALANI FLORES



In reply, please refer to:  
EMD/CWB

01011PCTM.20

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P. O. BOX 3378  
HONOLULU, HI 96801-3378

January 9, 2020

The applicant, TMT International Observatory (Applicant) published a Notice of Proposed Water Pollution Control Permit to renew a National Pollutant Discharge Elimination System (NPDES) permit for the Thirty Meter Telescope (TMT) Observatory project on March 7, 2019. Public comments were received, and on May 23, 2019, the Department of Health (DOH) published a notice of public hearing. At the public hearing and through the extension of time for receiving written submissions, DOH received 464 written submissions. The purpose of this letter is to outline the criteria DOH considers in reviewing the application and, where the public has commented (both orally and in writing), generally describe the evidence on the subject currently before DOH.

### **STORM WATER DISCHARGE PERMIT**

In general, an NPDES permit ensures that the State's mandatory standards for water pollution and the federal minimum requirements are being met. In broad terms, an NPDES permit contains:

- limits on what an applicant may discharge;
- monitoring and reporting requirements; and
- other provisions to ensure that the discharge does not hurt water quality or people's health.

The Renewal Permit (as defined below) application being evaluated here is based on an NPDES permit authorizing discharges of storm water associated with construction activities to identified State waters from the Thirty Meter Telescope (TMT) Observatory project site (Project Site). Among other things, the Original Permit (as defined below) did, and the Renewal Permit would, include obligations on the part of the permittee designed to ensure that the State's Water Quality Standards are being met. Construction at the Project Site and its potential impact on State waters must also meet the State's antidegradation policy which requires that existing uses and the level

**EXHIBIT "A"**

**FINAL DETERMINATION FOR  
TMT INTERNATIONAL OBSERVATORY  
NPDES PERMIT NO. HI S000431**

of water quality necessary to protect existing uses of the receiving State water be maintained and protected.<sup>1</sup>

Based on the general and special conditions we proposed to impose on Applicant, and as set forth in greater detail in our Permit Rationale letter dated March 7, 2019, DOH believes the discharge will not cause unreasonable degradation to the marine environment or unreasonable degradation to the receiving water environment when Applicant complies with the conditions of the permit. DOH also believes the Renewal Permit would meet Hawaii's antidegradation policy because it requires the permittee to apply the best degree of treatment or control to the discharge, with the result that any residual soil reaching the receiving State waters will be of an acceptable level under HAR § 11-54-4(c).

### **PROCEDURAL HISTORY**

Original Permit. On March 31, 2014, TMT Observatory Corporation submitted its application for a permit authorizing discharges of storm water associated with construction activities from the Project Site to identified State waters. On May 1, 2014, a notice was published indicating that comments on the permit application or a request for public hearing would be received until May 30, 2014. DOH did not receive any comments and there were no requests for a public hearing.

On June 12, 2014, a Final Permit (NPDES Permit No. HI S000431) was issued (Original Permit) and became effective on that date. The Original Permit authorized the permittee to "discharge storm water associated with construction activities from the . . . project site" to certain receiving State waters, in accordance with certain general requirements, discharge monitoring requirements, and other conditions.

Since June 12, 2014 through the date of this letter, there has been no construction activity on the Project Site, and, therefore, no storm water discharge associated with construction activities. Since there has been no construction activity and no storm water discharged, DOH has not found any violation of the conditions of the Original Permit.

Renewal Permit. On December 3, 2018, the Clean Water Branch of DOH received the Certification Statement dated November 16, 2018 to renew the Original Permit. A Notice of Proposed Water Pollution Control Permit to renew the Original Permit for the TMT International Observatory project (Renewal Permit) was published

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<sup>1</sup> HAR § 11-54-1.1.

On March 7, 2019, in the *Hawaii Tribune Herald*. The March 7, 2019 notice indicated that comments on the Renewal Permit or a request for public hearing would be received until April 6, 2019. In contrast to the process associated with the Original Permit, DOH received 125 submissions, including multiple submissions from certain individuals.

In response to comments submitted, on May 23, 2019, DOH published a notice of public hearing for the Renewal Permit in the *Hawaii Tribune Herald* and *West Hawaii Today*. This notice indicated that the public hearing would be held on June 25, 2019 at the West Hawaii Civic Center, Council Chambers, starting at 5:00 p.m. This notice further indicated that DOH would continue to receive comments on the Renewal Permit until 4:30 p.m. on June 25, 2019. DOH was unable to receive email comments on June 25, 2019, so the comment period was extended to July 9, 2019. DOH received 444 written submissions.

## CRITERIA FOR REVIEW

Limited Focus on Storm Water. The focus of the Original Permit was to put limits and conditions on any storm water the permittee would be allowed to discharge into State waters from the Project Site during construction. The scope of the Renewal Permit remains limited to storm water discharge limitations and conditions from the Project Site.

We note that certain public comments raise concerns about threats to drinking water, threats to aquifers, mercury spillage, spills of chemical wastewater or raw sewage during operation of the observatory, and the impact on endangered species from the loss of access to clean water or water pollution. The Renewal Permit is only applicable to storm water discharges. The Renewal Permit does not authorize wastewater discharges to State waters.

We note that certain public comments raise concerns about impacts on historic sites and traditional cultural properties and/or practices. To the extent storm water discharge could have such impacts, these would be considered in formulating limitations and/or conditions to the Renewal Permit, if granted.

Evaluating the Renewal Permit. An application to renew an existing permit is submitted 180 days or more before the expiration of the permit. The application for the

**FINAL DETERMINATION FOR  
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NPDES PERMIT NO. HI S000431**

Renewal Permit was timely and properly submitted prior to the expiration date of the Original Permit. The DOH may deny<sup>2</sup> a permit renewal application where:

- the permittee has not substantially complied with any condition of the Original Permit;
- the permittee misrepresented any or did not fully disclose all relevant facts in the application or during the permit issuance process;
- the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by modifying or terminating the Original Permit; or
- there is a change in any condition that requires either a temporary or permanent reduction or elimination of any discharge controlled by the Original Permit.

As we noted above, there has been no construction activity on the Project Site and the project has not commenced. Therefore, as a practical matter, there has been no opportunity for the permittee to fail to substantially comply with any condition of the Original Permit.

DOH is not aware of the permittee failing to fully disclose, certify, or provide other required information for reissuance of the Renewal Permit.

As noted above, the Original Permit does, and the Renewal Permit would, include obligations on the part of the permittee designed to ensure that the State's Water Quality Standards are being met. Further, the Renewal Permit would contain conditions to ensure storm water discharges will not cause unreasonable degradation to the receiving water environment when the permittee complies with the conditions of the permit. Since State Water Quality Standards would be met and unreasonable degradation would be avoided, DOH does not believe the permitted activity endangers human health or the environment such that it can only be regulated to acceptable levels by modifying or terminating the Original Permit.

As noted in our evaluation of the relevant criteria, above, there has been no construction activity and no material change in the scope of the project or Project Site. Therefore, DOH believes there is no change in any condition that requires a reduction or elimination of any discharge controlled by the Original Permit.

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<sup>2</sup> HAR § 11-55-17(c).

**RESPONSE TO PUBLIC COMMENTS**

Set forth, below, is a summary of public comments received. Where the same, substantially similar, or closely-related issues appear across multiple comments, DOH attempts to group those into categories and summarize them. DOH's response to each category of comments appears below. An itemized table of each of the 444 written comment documents received follows this summary.

**Comment 1 (purpose of permit)**

Commenters:

- wanted DOH to protect our water;
- had concerns about the water being poisoned by waste;
- had concerns about additional sediment and pollution; and
- had concerns about the need for additional BMP Controls requirements.

**Response to Comment 1:** The purpose of the proposed NPDES permit is to authorize storm water discharges associated with construction activities. The proposed permit is meant to protect State waters.

The proposed NPDES permit requires the discharger to comply with Hawaii Administrative Rules (HAR) Chapter 11-55, Appendix C, which is the Construction Storm Water General Permit (CGP). The CGP contains the federal Construction and Development Effluent Guidelines in 40 CFR Part 450 and other Best Management Practices (BMPs) to control potential pollutants in the storm water discharge.

Construction site developers are required to:

- implement erosion and sediment controls;
- stabilize soils;
- manage dewatering activities;
- implement pollution prevention measures;
- provide and maintain buffers around surface waters;
- prohibit certain discharges, such as motor fuel and concrete washout; and
- utilize surface outlets for discharges from basins and impoundments.

**Comment 2 (scope of permit)**

A commenter opposed the new construction on Mauna Kea and The University of Hawaii's management of Mauna Kea. A commenter had concerns that the telescopes leak mercury from the lens and can impact groundwater. A commenter expressed concerns about the underground wastewater tanks that will be utilized during the operation of the facility. A commenter was concerned about the disposal of wastewater runoff, as a result of observing the leakage of hydraulic fluid, oil and other substances in 2015. A commenter had concerns with the lack of engineering criteria shown in the application (i.e. signed engineering drawings, engineering soils report, or grading strategy adhering to County of Hawaii Code).

**FINAL DETERMINATION FOR  
TMT INTERNATIONAL OBSERVATORY  
NPDES PERMIT NO. HI S000431**

**Response to Comment 2:** The NPDES program regulates point pollutant discharges. This construction activity is considered a point source, which may be regulated under the NPDES program.

- The proposed NPDES permit only authorizes storm water discharges during construction.
- The proposed NPDES permit does not authorize construction activity itself.
- The proposed NPDES permit does not authorize wastewater discharges to State waters.
- The proposed NPDES permit does not cover activities conducted during operation of the facility.
- Any concerns regarding potential discharges during operation of the facility are outside of the scope of the proposed NPDES permit.
- Any county code requirements, including signed engineering drawings, soils report, and county grading permits, are outside the scope of review of the proposed NPDES permit.

DOH notes that, according to Applicant, the Environmental Impact Statement (EIS) and Conservation District Use Application (CDUA) disclosed that the TMT project will not utilize mercury in any capacity during construction or operation, and therefore, a mercury leak affecting the environment is not possible.

DOH notes that, according to Applicant, the TMT project has a zero-discharge policy so that during operation of the facility there will be no wastewater discharges.

**Comment 3 (drinking water and aquifer)**

A commenter stated that other hearings clarified that run off during construction will not impact drinking water. Commenters have stated that there are no wells tapping into groundwater near the summit of Mauna Kea with the closest well for drinking water being 12 miles away from the Project Site. A commenter stated that hydrologists have determined there is no reasonable prospect of adverse impact to groundwater.

**Response to Comment 3:** DOH notes that, according to Applicant, the TMT project has a zero-discharge policy so that during operation of the facility there will be no wastewater discharges.

As outlined in Response to Comment 1, the proposed NPDES permit is meant to protect State waters. During construction, the BMPs and mitigation measures to be employed by the TMT project will protect water quality.

**Comment 4 (precipitation)**

A commenter wanted to learn more about whether the possible runoff from the construction activity could increase erosion and cause potential water pollution. Another commenter expressed concerns with storm water associated with construction activities infiltrating the ground and discharging to groundwater.

Another commenter stated that the top of Mauna Kea is drier than many other high mountains because a tropical inversion layer ensures summit skies are dry. A commenter stated that protected waterways of concern do not originate close to the arid summit.

**Response to Comment 4:** As outlined in the Final EIS for the project, given the surface topography, permeability of the surface and subsurface, and the low rainfall rates and annual totals in the summit region, storm water runoff is anticipated to quickly infiltrate the subsurface and not increase erosion.

As outlined in Response to Comment 1, the proposed NPDES permit is meant to protect State waters. During construction, the BMPs and mitigation measures to be employed by the TMT project will protect water quality.

#### **Comment 5 (hydrology)**

A commenter requested documentation of the hydrology of the summit, and the precise impacts of oil and hydraulic fluids on the perched water bodies that may be impacted. Another commenter stated that a full hydrological study of the proposed TMT site was not done. A commenter stated that significant water related research was completed after the close of the Mauna Kea Contested Case Hearings and must be considered.

**Response to Comment 5:** Applicant indicated that the commenter requesting documentation submitted similar comments regarding hydrology during the EIS review period.

- The Final EIS responded to those comments and provided sufficient information to conclude that the TMT project will have a less than significant impact on water resources, including groundwater quality and the perched groundwater associated with Lake Waiau in the summit region.
- Mitigation measures, such as the zero-discharge wastewater system, will further reduce the level of potential impact to water resources, which was considered to be less than significant without any mitigation.

As outlined in Response to Comment 1, the proposed NPDES permit is meant to protect State waters. The BMPs and mitigation measures to be employed by the TMT project will protect water quality, including potential impacts associated with the use of oil and hydraulic fluids during construction.

#### **Comment 6 (cultural impact)**

Commenters were concerned about the historic sites and traditional cultural properties that will be in jeopardy due to construction runoff. Commenters were concerned about the cultural significance of Mauna Kea.

Another commenter stated that discharge of storm water will not impact traditional cultural sites on Mauna Kea in any way.

**Response to Comment 6:** According to the Renewal Permit application, historic sites will not be adversely affected by runoff from the project construction site.

Although beyond the scope of the proposed NPDES storm water discharge permit, Applicant indicated that any cultural impacts will be mitigated by training TMT employees to respect, honor, and not restrict or interfere with cultural or religious practices. Cultural training will also be provided to construction managers, contractors, supervisors, all construction workers, and all persons involved in operation and maintenance activities including, but not limited to, scientist and support staff.

The University of Hawaii's (UH) Office of Mauna Kea Management, is currently in the process of developing a Cultural Resource Management Plan, which is a requirement of the Board of Land and Natural Resources (BLNR) prior to the submission of a CDUA for the TMT project.

**Comment 7 (endangered species)**

A commenter was concerned that the construction activities will destroy or adversely impact the Palila or any endangered plant species, such as the Silversword. The commenter wanted to know if the US Fish and Wildlife Service (USFWS) has been consulted.

**Response to Comment 7:** Applicant indicated that there are no threatened or endangered species or designated critical habitat in the vicinity of the TMT project construction sites in the summit region of Mauna Kea (above roughly 13,000 feet). Palila and their designated critical habitat occur much lower (below roughly 9,000 feet) on Mauna Kea.

The USFWS was consulted. Applicant further indicated that the Draft and Final EIS for the TMT project was sent to the USFWS. The USFWS did not provide comments on either EIS.

**Comment 8 (public hearing)**

Commenters requested a public hearing:

- for the opportunity to present facts, opinions or arguments about the proposed permit;
- for the opportunity to learn more about the proposed permit before the permit is denied or approved;
- because they have significant interest in the proper issuance of the permit and rights that may be affected by that issuance; and
- due to the project's potential to adversely impact Mauna Kea aquifers.

A commenter stated that permit documents for public review were out-of-date, despite a statement on the Water Pollution Control website that all NPDES documents can be viewed and downloaded, and further noting that nothing related to the 2019 filings for

**FINAL DETERMINATION FOR  
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permit HIS000431 was available. In addition, the commenter noted that Clean Water Branch (CWB) stated that the servers were full and so CWB was unable to upload new documents.

Another commenter was concerned that the public meeting would not focus on the merits of permit renewal, but would, instead, be used as another opportunity for anti-TMT protestors.

**Response to Comment 8:** The Renewal Permit was published in the *Hawaii Tribune Herald* on March 7, 2019 for public review and comment. At the Director's discretion, DOH published a notice of public hearing on May 23, 2019. The purpose of the public notice was to solicit comments from the public on the proposed permit. The Director held a public hearing for this NPDES permit application on June 25, 2019, at the West Hawaii Civic Center. The public comment period was extended through July 9, 2019 and all Renewal Permit documents were made available on the CWB website and at the CWB Honolulu Office and the DOH District Health Offices.

**Comment 9 (contested case hearing)**

A commenter was concerned about a contested case hearing request being made at the public hearing prior to the issuance of the NPDES permit renewal, and asked if there is a rough schedule to when the NPDES permit will be renewed.

**Response to Comment 9:** A contested case hearing is governed by HRS Chapter 91 and HAR Chapters 11-1 and 11-55.

**Comment 10 (administrative extension of permit)**

A commenter stated the NPDES permit is going to public hearing on June 25, 2019, and was not renewed prior to the June 19 issuance of the Notice to Proceed. The commenter stated that the Original Permit expired by its own terms on June 11, 2019, and that an administrative extension does not satisfy item GC3, which requires that TMT has "obtained a NPDES."

**Response to Comment 10:** Applicant submitted a complete NPDES Individual Permit application December 3, 2018 for storm water associated with construction activities. Pursuant to HAR §11-55-15(a), "[t]he director may administratively extend the permit until the effective date of the new permit for discharges that the permit covered prior to expiration." All permit limitations and conditions remain in force and effect.

**Comment 11 (Notice to Proceed)**

A commenter stated that the public participation in the NPDES permitting was denied because the Notice to Proceed was already, violating opponents' right to due process in the NPDES permitting process.

**FINAL DETERMINATION FOR  
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**Response to Comment 11:** The Notice to Proceed, dated June 19, 2019, appears to have been issued in connection with an approved Conservation District Use Permit (CDUP). The CDUP was approved by BLNR. The CDUP is not an NPDES permit and the Notice to Proceed does not preclude DOH from evaluating the Renewal Permit application.

**Comment 12 (notice of start)**

A commenter stated that it remains unclear whether TMT must file a new notice of start.

**Response to Comment 12:** A notification of start of construction is required from permittee shortly in advance of the date permittee anticipates starting construction. DOH requires the notification so that it can determine when to start inspecting the Project Site for compliance with permit conditions. The permittee is required to submit a notification of start of construction only at the initial start. DOH received a notification of start of construction September 12, 2014.

**Comment 13 (permit violations)**

Commenters stated there are ongoing violations with the current NPDES permit.

**Response to Comment 13:** There have been no reportable spills or violations issued in association with the TMT project or the current NPDES permit.

**Comment 14 (water classification)**

A commenter noted that 4 of the 5 waters (Kemole Gulch, Kuupahaa Gulch, Puupohakuloa Gulch, Pohakuloa Gulch) are not listed in the 2013 or 2018 Water Quality Monitoring Assessment Report, stating that it is unclear how the Class 2 designation was assigned to these waters. Additional comment questions how contamination by storm water runoff from the project can be reasonably proven without a complete assessment prior to the beginning of the project? The commenter stated this allows TMT to claim a stream was degraded prior to the start of their project, and leaves the public with no information to counter that claim, rendering any attempt at enforcement of the permit impotent.

**Response to Comment 14:** HAR Chapter 11-54, Appendix A, identifies Class 1, Inland Waters within the State of Hawaii. All other inland waters not in the Mauna Kea Ice Age Natural Area Reserve (as identified by DLNR) are class 2 inland waters.

Water classification is a usage designation, not an indication of water quality or condition of the water body. The overall status of water quality statewide is described in the Water Quality Monitoring and Assessment Report (Integrated Report, IR). This report is used to rank and prioritize impaired waters for Total Maximum Daily Loads (TMDLs) development.

**FINAL DETERMINATION FOR  
TMT INTERNATIONAL OBSERVATORY  
NPDES PERMIT NO. HI S000431**

**Comment 15 (self-reporting)**

A commenter noted that relying on an applicant to notify the agency of non-compliance is a weak and unrealistic expectation for meaningful enforcement of the permit.

- rules proposed by UH's office of Mauna Kea Management attempt to restrict access to Mauna Kea;
- remote nature of the TMT site make it unlikely that other agencies or the public will come across potential violations;
- citizen enforcement is an important enforcement tool that is impeded by using state police power and private security at Mauna Kea, and specifically on the TMT site.

**Response to Comment 15:** All NPDES permits stipulate self-monitoring and reporting requirements that are the responsibility of the discharger. Failure to comply with HAR Chapters 11-54 and 11-55 and the NPDES permit is an enforceable violation and the NPDES permit may be terminated.

The ideal situation to verify compliance with an NPDES permit would be DOH and/or an independent laboratory collecting and analyzing samples from the permittee's discharge. However, since this process is not logistically or financially possible, the burden falls on the permittee. Under the NPDES program, DOH may conduct inspections of a permittee's facility to verify that permit requirements are being met. Inspections may be limited and routine, unless suspected violations of permit requirements are uncovered, at which point a more comprehensive investigation may follow.

DEPARTMENT OF HEALTH  
STATE OF HAWAII  
HEARINGS OFFICE  
P. O. Box 3378  
Honolulu, HI 96801  
1250 Punchbowl Street  
Honolulu, Hawaii 96813  
(808) 586-4409

~~FILED~~  
OFFICE OF THE DIRECTOR  
DEPT. OF HEALTH

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In re Proposed Water Pollution Control Permit  
Renewing NPDES Permit No. HI S000431 for  
Construction Activity Relating to the Thirty  
Meter Telescope (TMT) Observatory Project

Docket No. 21-CWB-EMD-1

**ORDER RE SUPPLEMENTAL SUBMISSIONS RE FLORES OBJECTION NO. 2**  
**FILED SEPTEMBER 21, 2020**

On September 4, 2020, the undersigned Hearings Officer entered the Order Granting Requests for Contested Case Review, etc., which initiated this matter.

Page 1 of that Order states as follows (emphasis added):

On June 12, 2014, an individual construction storm water permit, numbered National Pollutant Discharge Elimination System (NPDES) Permit No. HI S000431 (“original permit”), was issued to the TMT International Observatory (TIO). . . .

On December 3, 2018, the TIO submitted an application for renewal of Permit HI S000431 to the Clean Water Branch (CWB) of the Department of Health (DOH).

On September 21, 2020, Objecting Party E. Kalani Flores, whose request for a contested case was granted in that Order, filed Objections to parts thereof.

Mr. Flores’ Objections 1 and 2 were as follows (emphasis added):

1. NPDES Permit No. HI S000431 ("original permit") was issued in 2014 to the TMT Observatory Corporation, not to the TMT International Observatory (TIO) as stated in this Order.

2. It’s unclear if HAR allows for the new applicant, **TMT International Observatory (TIO)**, to submit a Renewal Individual NPDES application or if the new applicant was required to submit an Initial Individual or Revised Individual NPDES application.

A review of the original permit on the Department of Health’s website shows that Mr. Flores Objection 1 is correct. [https://health.hawaii.gov/cwb/files/2019/06/S000431.FNL\\_.14.pdf](https://health.hawaii.gov/cwb/files/2019/06/S000431.FNL_.14.pdf).

**EXHIBIT "B"**

Indeed, on September 28, 2020, when Applicant-Party TMT International Observatory (TIO) responded to Mr. Flores, TIO thankfully didn't bother with disputing Mr. Flores' Objection 1 and instead skipped to his Objection 2, by:

First, pointing out (at 4-5) that TIO is, nevertheless, the TMT Observatory Corporation's successor in interest as "the current owner of the TMT Project and responsible for construction activities relating to the TMT Project" – facts which appear beyond dispute; and

Second, arguing (at 5) that TIO was entitled to submit an application for renewal of NPDES Permit No. HI S000431 as the TMT Observatory Corporation's successor in interest on December 3, 2018, rather than being required to apply for a new NPDES permit with virtually the same provisions as NPDES Permit No. HI S000431.<sup>1</sup>

However, the latter may or may not be correct because:

1. The record does not show whether the TMT Observatory Corporation had transferred NPDES Permit No. HI S000431 to TIO under the provisions of 40 CFR 122.61, which state:

**§ 122.61 Transfer of permits (applicable to State programs, see § 123.25).**

**(a) *Transfers by modification.*** Except as provided in paragraph (b) of this section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under § 122.62(b)(2)), or a minor modification made (under § 122.63(d)), to identify the new permittee and incorporate such other requirements as may be necessary under CWA.

**(b) *Automatic transfers.*** As an alternative to transfers under paragraph (a) of this section, any NPDES permit may be automatically transferred to a new permittee if:

**(1)** The current permittee notifies the Director at least 30 days in advance of the proposed transfer date in paragraph (b)(2) of this section;

**(2)** The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

**(3)** The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify or revoke and reissue the permit. A modification under this subparagraph may also be a minor modification under § 122.63. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph (b)(2) of this section.

2. Such a transfer may have been unnecessary. Although HAR 11-55-27(a) provides only for "permittees" to apply for renewal of NPDES permits, HAR 11-55-15(a) appears to indicate that "projects" as well as permittees may apply for their renewal.

3. Alternatively, whether a 40 CFR 122.61 transfer made now can be retroactively effective is unclear.

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<sup>1</sup> NPDES Permit No. HI S000431 was originally scheduled to expire, as stated on in first page, at midnight on June 11, 2019.

4. Alternatively, TIO's application for renewal of NPDES Permit No. HI S000431 can simply be treated as a mislabeled application for a new NPDES permit with the same terms is unclear.

5. There may be other possibilities the Hearings Officer may not have discovered in his research.

TIO's objection that Mr. Flores' Objections 1 and 2 are premature and should only be considered after the merits hearing is denied.

Mr. Flores' Objection 1 is undisputedly correct, and his Objection 2 largely raises legal rather than factual questions.

Moreover, resolving the question of whether the TMT Observatory Corporation obtained a 40 CFR 122.61 transfer of NPDES Permit No. HI S000431 does not appear to require a lot of documentation.

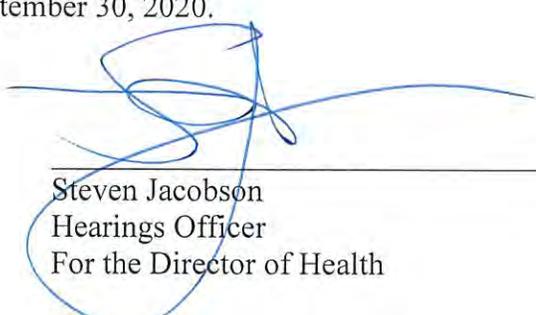
IT IS THEREFORE ORDERED that:

TIO shall file and serve a written submission indicating whether and when the TMT Observatory Corporation obtained a 40 CFR 122.61 transfer of NPDES Permit No. HI S000431 to TIO and (i) if so, attaching the relevant documents and, (ii) if not, addressing the legal significance, if any, of its not having done so. If so, the submission shall be filed and served not later than Friday, October 2, 2020. If not, the submission shall be filed and served not later than Friday, October 9, 2020.

If Party DOH Clean Water Branch has documentation of such a transfer, it shall notify the Hearings Officer and the parties as soon as possible.

Responses will be allowed by due dates to be set after the Hearings Officer reviews any filings made by Friday, October 2, 2020, if any.

DATED: Honolulu, Hawaii, September 30, 2020.



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Steven Jacobson  
Hearings Officer  
For the Director of Health

Received  
Office of Conservation and Coastal Lands  
Department of Land and Natural Resources  
State of Hawaii  
Jun 17 2022 16:07

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Attorneys for Defendant  
**TMT INTERNATIONAL OBSERVATORY, LLC**

BOARD OF LAND AND NATURAL RESOURCES  
FOR THE STATE OF HAWAI'I

RECEIVED  
OFFICE OF CONSERVATION  
AND COASTAL LANDS  
2016 JUN 21 A 9 55  
DEPT. OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII

IN THE MATTER OF

Case No. BLNR-CC-16-002

A Contested Case Hearing Re Conservation  
District Use Permit (CDUP) HA-3568 for the  
Thirty Meter Telescope at the Mauna Kea  
Science Reserve, Kaohe Mauka, Hamakua  
District, Island of Hawaii TMK (3) 4-4-  
015:009

**DECLARATION OF J. DOUGLAS ING;  
EXHIBITS "A" thru "C" and  
CERTIFICATE OF SERVICE**

**DECLARATION OF J. DOUGLAS ING**

I, J. DOUGLAS ING, hereby declare and state as follows:

1. I am an attorney licensed to practice law in the State of Hawaii and am one of the attorneys representing TMT International Observatory LLC, a non-profit organization, who filed a motion to be admitted as a party in the Contested Case Hearing on April 8, 2016.

2. I make this Declaration based upon my personal knowledge and upon reliance of the files and records maintained by my office and in the normal and regular course of business.

**EXHIBIT "C"**

Received  
Office of Conservation and Coastal Lands  
Department of Land and Natural Resources  
State of Hawaii  
Jun 17 2022 16:07

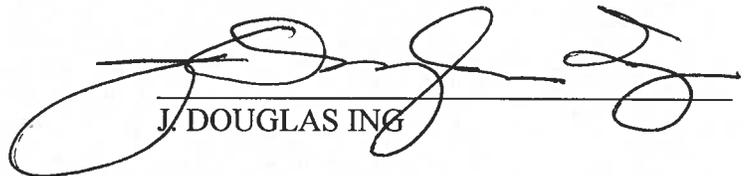
3. Attached hereto as Exhibit "A" is a true and correct copy of the executed Sublease and Non-Exclusive Easement Agreement between TMT International Observatory LLC and the University of Hawaii, dated July 28, 2014.

4. Attached hereto as Exhibit "B" is a true and correct copy of the executed Consent to Sublease and Non-Exclusive Easement Agreement between TMT International Observatory LLC and the University of Hawaii Under General Lease No. S-4191.

5. Attached hereto as Exhibit "C" is a true and correct copy of the executed Scientific Cooperation Agreement between TMT International Observatory LLC and the University of Hawaii, dated July 28, 2014, concerning the design, construction and operation of the Thirty Meter Telescope on Mauna Kea, Hawaii.

I, J. DOUGLAS ING, declare under penalty of law that the foregoing is true and correct.

DATED: Honolulu, Hawaii, June 17, 2016.

  
J. DOUGLAS ING

**SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT  
BETWEEN  
TMT INTERNATIONAL OBSERVATORY LLC  
AND  
THE UNIVERSITY OF HAWAII**

THIS SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT (this "Sublease") is made and entered into on this 28 day of July, 2014, effective as of July 28, 2014 (the "Effective Date"), by and between TMT International Observatory LLC, a Delaware limited liability company ("Sublessee"), and the University of Hawaii, a public body corporate and the public university of the State of Hawaii ("Sublessor").

**RECITALS**

This Sublease is entered into with reference to the following:

- A. Sublessor leases certain lands located on and around the summit of Mauna Kea, Island of Hawaii from the State of Hawaii, Board of Land and Natural Resources ("Lessor") pursuant to General Lease No. S-4191, dated June 21, 1968 (the "Master Lease"), a copy of which is attached hereto as **Exhibit A** and incorporated herein by reference.
- B. Sublessee desires to sublease a portion of said lands, as more fully described below, for the purpose of constructing and operating an optical/infrared telescope facility known as the Thirty Meter Telescope ("TMT") in the manner described in, and accordance with, this Sublease and that certain Scientific Cooperation Agreement Between Sublessee and Sublessor Concerning the Design, Construction and Operation of the Thirty Meter Telescope on Mauna Kea, Hawaii (the "Scientific Cooperation Agreement") executed simultaneously herewith and to be effective on the same Effective Date indicated above. The TMT facilities will include, but are not limited to, the TMT telescope and enclosure; the support building (the space necessary to support scientific observers and technical personnel while at the summit); together with instruments, electrical conductors, cableways and tunnels; driveways and parking lots; power, telephone and communications conduits and lines; and access roads within the border of the Subleased Premises (as defined in Section 1 below) ("TMT Facilities"). "TMT Facilities" does not include any facilities outside the Subleased Premises.
- C. The Master Lease provides that Sublessor may not enter into a sublease without the prior written consent of the Lessor. Prior written consent to this Sublease has been obtained pursuant to that certain Consent to Sublease Under General Lease No. S-4191 dated \_\_\_\_\_, 2014, a copy of which is attached hereto as **Exhibit B** and incorporated herein by reference.
- D. In 2000, Sublessor adopted the Mauna Kea Science Reserve Master Plan, which establishes the management structures for Sublessor's stewardship of the areas it

manages on Mauna Kea. In 2009 and 2010, Sublessor adopted, and Lessor approved, the Mauna Kea Comprehensive Management Plan ("CMP") and its subplans: the Cultural Resources Plan, Natural Resources Management Plan, Public Access Plan, and Decommissioning Plan. These plans commit Sublessor to exercise responsible stewardship of Mauna Kea and to ensure that astronomical activities are conducted in a manner that respects the cultural significance of Mauna Kea, protects the environment, and is responsive to the needs and concerns of Native Hawaiians and the public.

E. In May 2010, Sublessor completed an Environmental Impact Statement for the TMT. In September 2010, Sublessor filed an Application for a Conservation District Use Permit to construct the TMT. The permit was approved in April 2013. Sublessee is now seeking a long term sublease to build and operate the TMT.

F. Sublessor has submitted a request to the Lessor for the mutual cancellation of the current Master Lease and issuance of a new master lease for a term of sixty-five (65) years from issuance. Sublessee desires to continue operation of the TMT Facilities beyond 2033. It is desirable for management and planning purposes, including appropriate stewardship of Mauna Kea, to address the potential continued operation of the TMT Facilities beyond 2033 in this Sublease.

#### AGREEMENT

Now, therefore, in consideration of the foregoing and of the mutual promises and agreements set forth herein, Sublessor and Sublessee agree as follows:

1. Subleased Premises. Sublessor does hereby sublease to Sublessee, and Sublessee does hereby sublease from Sublessor, the parcel of land shown and described in Exhibits C-1 and C-2 attached hereto and incorporated herein by reference (the "Subleased Premises"), constituting a portion of the land leased by Sublessor under the Master Lease.

2. Non-Exclusive Easements. Sublessee shall have the right of access to and egress from the Subleased Premises over and across the Mauna Kea Science Reserve, utilizing the common entrances and rights of way, together with others entitled thereto, under such rules and regulations as may be established by and amended from time to time by Sublessor. Sublessee shall also have the rights to (i) utilize and construct in, grade, fill, and perform work approved by Lessor and Sublessor in the easement area shown and described in Exhibits C-1 and C-3 attached hereto and incorporated herein by reference (the "Easement Area"), (ii) utilize and construct in and perform work approved by Lessor and Sublessor and consistent with the TMT Access Way Agreement dated September 13, 2012, by and among Sublessor, the Smithsonian Institution Astrophysical Observatory, and the TMT Observatory Corporation, in the spur road from the Mauna Kea Observatory Access Road to the Subleased Premises, (iii) install and utilize power and communications conduits and lines from a central handhole or handholes in the Mauna Kea summit area to the Subleased Premises, and (iv) utilize and access the Batch Plant staging area as authorized by the TMT CDUP (as defined in Section 4 below).

3. Survey/Site Specific Description. The site shown in Exhibit C-1 hereto has been surveyed. The area covered by the Subleased Premises is specifically described in the metes and bounds description in Exhibit C-2 hereto. The area covered by the Easement Area is specifically described in the metes and bounds description in Exhibit C-3 hereto.

4. Use of Subleased Premises. Sublessee shall use the Subleased Premises solely to construct and operate the TMT Facilities in accordance with this Sublease and the Scientific Cooperation Agreement. The construction and operation of the Subleased Premises shall be conducted in strict compliance with the terms and conditions of Conservation District Use Permit HA-3568 approved by the Lessor on April 12, 2013 (the "TMT CDUP"), including performance of all mitigation conditions set forth therein, and any amended or subsequent Conservation District Use Permit. Sublessee shall not at any time during the term of this Sublease construct, place, maintain, or install on the Subleased Premises any other building, structure, or improvement without the prior written approval of Sublessor and Lessor and upon such conditions as Sublessor or Lessor may impose. For purposes of the foregoing sentence, any other "improvement" means improvements that are not specified in or contemplated by the TMT CDUP and not contained within the building envelop of TMT observatory plans approved in accordance with Section 37 below. For the avoidance of doubt, the addition of any instruments, equipment or any other additions that are fully contained within the observatory structure or buildings shall not require the prior written approval of Sublessor or Lessor, provided that such additions are otherwise in compliance with the terms of this Sublease and the Master Lease.

5. Management and Stewardship Obligations. This Sublease shall be subject to the following:

a. The Subleased Premises are within the State Land Use Conservation District and all uses shall comply with the applicable rules and regulations of the State Conservation District, including but not limited to Hawaii Revised Statutes ("HRS") Chapter 183C and Hawaii Administrative Rules ("HAR") Chapter 13-5.

b. Sublessee shall comply with applicable State rules and regulations related to historic preservation including but not limited to HRS Chapter 6E, and HAR Chapters 13-197, 13-198, 13-275 through 13-284 and 13-300, and any applicable amendments of or supplements to such historic preservation regulations.

c. Sublessor shall exercise management jurisdiction over the Subleased Premises pursuant to management plans approved by the Lessor, including the CMP and its subplans, the Natural Resources Management Plan, Cultural Resources Management Plan, Decommissioning Plan, and Public Access Plan, the TMT Management Plan, and any amendments of or supplements to management plans approved by the Lessor for lands that include the Subleased Premises. Sublessee acknowledges that it has reviewed and is familiar with the CMP and subplans. Sublessor shall keep Sublessee informed regarding any future amendments or supplements thereto, and shall promptly provide copies of such documents to Sublessee.

d. All public and commercial activities in the areas of Mauna Kea managed by Sublessor, including recreational activities, shall be governed by administrative rules promulgated pursuant to the authority granted Sublessor by Act 132 (SLH 2009), following consultation with DLNR, the Office of Hawaiian Affairs, and the public in accordance therewith.

e. The Constitution of the State of Hawaii mandates the protection of recognized customary and traditional native Hawaiian rights subject to State regulation. This Sublease shall be subject to the right of Native Hawaiians to exercise protected traditional and customary practices as provided in the CMP and consistent with the laws of the State of Hawaii.

f. Sublessor has established a management structure to manage the lands of which the Subleased Premises are a part, which structure includes the Office of Mauna Kea Management at the University of Hawaii at Hilo, the volunteer community-based Mauna Kea Management Board and the Kahu Kū Mauna advisory council on Hawaiian cultural matters.

6. Operation of the TMT Facilities. Neither Sublessee nor any successor or assign shall operate the TMT Facilities for purposes of research without a valid and effective Scientific Cooperation Agreement with Sublessor. The TMT Facilities may be operated in the absence of a valid and effective Scientific Cooperation Agreement only when necessary to ensure the safety of personnel or of the TMT Facilities.

7. Rent. In consideration for the use of the Subleased Premises, Sublessee shall pay to Sublessor annual rents based on calendar years during the term of this Sublease as set forth below. The annual rent during the construction period is based on the incremental value of the major milestones achieved during the construction of the TMT Facilities. The milestones are set forth below and generally span approximately two (2) year periods. The annual rents shall be paid based upon the specified calendar years below regardless of whether the respective milestone is achieved.

<u>Year</u>	<u>Annual Rent</u>	<u>Milestone</u>
1-3	\$300,000	Civil construction
4-5	\$400,000	Enclosure
6-7	\$600,000	Telescope Structure
8-9	\$700,000	Instruments and Mirrors
10	\$900,000	Commissioning
11 and later	\$1,080,000	Operations

Rent shall be paid in advance, in equal semi-annual installments, on or before January 31 and July 31, of each calendar year during the term of this Sublease. The first installment of rent for the initial, partial year (which will be prorated) shall be due within 30 days of the date of execution of this Sublease. Beginning in January of 2015, and in January of each year thereafter, the annual rental amount for the year shall be based on the initial annual rental amount adjusted for the annual rate of inflation recorded for subsequent years in

accordance with the Consumer Price Index for all Urban Consumers, U.S. City Average (not seasonally adjusted) (base year 1982-1984 - 100) ("CPI"), published by the United States Department of Labor, Bureau of Labor Statistics. The calculation shall be made by comparing the CPI last published for the date nearest to the Effective Date (the "Base Index") with the CPI last published for the date nearest to the current anniversary date (the "Current Index"). If the Current Index has increased or decreased over the Base Index, then the amount subject to adjustment shall be set for the ensuing year by multiplying the initial annual rental amount by a fraction, the numerator of which is the Current Index and the denominator of which is the Base Index. If the base of the CPI changes from the 1982-84 base (100), the CPI shall, thereafter, be adjusted to the 1982-84 base (100) before the computation indicated above is made. If the CPI Index is at any time no longer published, a comparable index generally accepted and employed by the real estate profession shall be used.

Sublessor shall receive, deposit, and apply the rents received hereunder in accordance with the laws of the State of Hawaii, including, without limitation, Section 304A-2170 of the Hawaii Revised Statutes, as amended from time to time. Such deposit shall be net of the funds required by law to be transferred or paid to the Office of Hawaiian Affairs. Sublessor shall be responsible for paying over to the Office of Hawaiian Affairs its ratable share of the rents received in accordance with the laws of the State of Hawaii.

8. Master Lease: Order of Precedence. The rights granted to Sublessee pursuant to this Sublease are subject to the terms and conditions of the Master Lease, as the same may be amended. In the event of any conflict between the terms of this Sublease and the Master Lease, the Master Lease shall be controlling. In the event of any conflict between the terms of this Sublease and the Scientific Cooperation Agreement, this Sublease shall be controlling. Sublessee shall comply with the terms and conditions of the Master Lease at all times. If Sublessee causes a breach or default of any term, covenant, restriction, or condition of the Master Lease, and this breach or default shall continue for a period of more than forty-five (45) days after delivery by the Sublessor of a written notice of breach or default and demand for cure (plus any additional period as the Lessor may allow for good cause), then Sublessor may, subject to the provisions of Section 171-21 of the Hawaii Revised Statutes, at once re-enter the Subleased Premises, or any part, and upon or without the entry, at its option, terminate this Sublease without prejudice to any other remedy or right of action for arrears of rent or for any preceding or other breach of contract; and in the event of termination, at the option of the Sublessor, all buildings and improvements shall remain and become the property of the Sublessor or shall be removed by Sublessee in accordance with the Site Decommissioning Plan at Sublessee's sole cost and expense; furthermore, Sublessor shall retain all rent paid in advance to be applied to any damages.

9. Term and Termination. The term of this Sublease shall begin on the Effective Date and shall expire on December 31, 2033, unless extended or sooner terminated as provided herein.

a. Mutual Cancellation of Master Lease and Concurrent Issuance of New Master Lease.

(1) Sublessor shall use its best efforts to continue to and shall diligently pursue and take all actions necessary or advisable to complete the process currently underway with Lessor to obtain mutual cancellation of the current Master Lease subject to and concurrent with issuance of a new master lease (the "New Master Lease"), for a term of sixty-five (65) years and on terms and conditions materially consistent with the form of lease document submitted to the Lessor for consideration at its meeting of November 8, 2013. In the foregoing sentence, such "actions" shall include, without limitation, continuing to prepare and process an Environmental Impact Statement for the New Master Lease and such "terms and conditions" shall include, without limitation, that the New Master Lease shall include the provisions stating that "The lease shall be subject to all existing subleases entered into by the Lessee and approved by the Lessor pursuant to General Lease No. S-4191 dated June 21, 1968", and "Should this lease be rendered or declared invalid, illegal, or unenforceable by a court of competent jurisdiction, such invalidation shall cause, without further action, General Lease No. S-4191 dated June 21, 1968 to be revived in its entirety for the duration of the term therein, unless and until the parties subsequently agree otherwise".

(2) If the New Master Lease is approved and duly executed by Lessor and Sublessor, Sublessor shall promptly provide a copy of the New Master Lease to Sublessee. Effective as of the effective date of the New Master Lease, the following shall apply:

i) The provisions of this Sublease shall continue, whether by extension, issuance of a new sublease, or otherwise, provided that any continuance shall be in accordance with the terms herein as a sublease under the New Master Lease (including, without limitation, the rents set forth herein);

ii) The New Master Lease shall become the Master Lease for all purposes of this Sublease or any new sublease, and all references to the Master Lease in this Sublease or any new sublease shall thereafter refer to the New Master Lease; and

iii) The term of this Sublease shall automatically be extended, and shall thereafter expire sixty-five (65) years after the Effective Date, or upon expiration or termination of the New Master Lease, whichever shall first occur.

(3) If the New Master Lease is approved, but the term is not for sixty-five (65) years or the terms and conditions thereof are not materially consistent with the form of lease document submitted to the Lessor for consideration at its meeting of November 8, 2013, Sections 9.a.(2)i, ii), and iii) above shall apply unless Sublessee, at its sole option, provides a notice of termination to Sublessor in accordance with Section 9.d. below within one hundred twenty (120) days after Sublessee's receipt of the New Master Lease from Sublessor. Sublessor further agrees to diligently negotiate in good faith with Sublessee regarding mutually acceptable amendments to this Sublease during such one hundred twenty (120) day period and to promptly and diligently pursue approval by the Lessor of such amendments.

(4) If the New Master Lease is approved on terms and conditions materially consistent with the form of lease document submitted to the Lessor for consideration at its meeting of November 8, 2013 or is otherwise acceptable to Sublessee in Sublessee's sole judgment, Sublessor agrees to execute an amendment to this Sublease to reflect compliance with Sections 9.a.(2)i, ii, and iii) above or a new sublease on the same material terms and conditions as set forth in this Sublease (including, without limitation, the rents set forth herein) and reflecting compliance with Sections 9.a.(2)i, ii, and iii) above.

(5) Sublessee acknowledges that the Lessor has sole authority to determine whether to approve and enter into the New Master Lease, pursuant to and in accordance with Hawaii law, that no such approval has been granted as of the date of this Sublease, and that no prior commitment to issue such approval has been or can be made.

b. Failure to Obtain New Master Lease. If the New Master Lease is not approved by Lessor or if Sublessor otherwise fails to obtain a New Master Lease that automatically extends the term of this Sublease in accordance with Sections 9.a.(3) or 9.a.(4) above, Sublessor agrees to use its best efforts to and will immediately and diligently pursue another means of acquiring sufficient rights to continue to lease the Subleased Premises to Sublessee on substantially the same terms and conditions herein, but for an additional term extending to, on or about March 31, 2079. If a subsequent master lease is approved and duly executed by Lessor and Sublessor, Sublessor shall promptly provide a copy of such subsequent master lease to Sublessee and, at Sublessee's sole option: (I) the provisions of Sections 9.a.(2)i, ii, and iii) above shall apply as if the subsequent master lease is the "New Master Lease" referred to in Section 9.a. above and Sublessor shall execute an amendment to this Sublease to reflect compliance with Sections 9.a.(2)i, ii, and iii) above or a new sublease on the same material terms and conditions as set forth in this Sublease (including, without limitation, the rents set forth herein) and reflecting compliance with Sections 9.a.(2)i, ii, and iii) above, or (II) Sublessor shall diligently negotiate in good faith a new sublease with Sublessee, if so desired by Sublessee, on the same material terms and conditions as set forth in this Sublease (including, without limitation, the rents set forth herein and compliance with the Master Lease then in effect) or on such other terms and conditions as may be mutually agreeable to Sublessor and Sublessee, with a term ending on or after March 31, 2079.

c. Option to Extend Term. Notwithstanding the foregoing in Sections 9.a. and 9.b. above, Sublessee shall have an option to extend the term of this Sublease beyond December 31, 2033 if Sublessor acquires rights to sublease the Subleased Premises to Sublessee, whether under the New Master Lease or other master lease, and such extension shall be coterminous with such New Master Lease or other master lease, but in no event shall the term of this Sublease extend beyond March 31, 2079. Such option shall expire on December 31, 2033 and Sublessee shall have sole discretion regarding whether or not to exercise such option.

d. Termination Without Cause. Sublessee shall have the right to terminate this Sublease at any time upon six (6) months prior written notice to Sublessor.

e. **Termination for Breach.** This Sublease may be terminated for breach as provided in, and in accordance with, Sections 8 above or 25 below.

f. **Non-use and Abandonment.** If the Sublessee shall, at any time for a continuous period of eleven (11) months, fail or cease to use, or abandon the Subleased Premises, this Sublease shall cease and terminate. Sublessor shall provide written notice to Sublessee within thirty (30) days after the sixth (6<sup>th</sup>) month of such eleven (11) month period and shall allow Sublessee three (3) months to cure any such purported abandonment.

10. **Effect of Termination or Expiration: Decommissioning.** Upon termination or expiration of this Sublease, Sublessee shall, at Sublessor's sole option and at Sublessee's sole cost and expense either (a) surrender the Subleased Premises with all improvements existing or constructed thereon, or (b) decommission and remove the TMT Facilities and restore the land in accordance with the CMP and the Decommissioning Plan for Mauna Kea Observatories, A Sub-Plan of the Mauna Kea Comprehensive Management Plan (dated January, 2010 and approved by Lessor in March, 2010) ("**Decommissioning Plan**"), and any amended, supplemental, or successor plans adopted by Sublessor with the approval of the Lessor.

a. **Decommissioning Funding Plan.** Sublessee shall develop and periodically update a Decommissioning Funding Plan as described in, and in accordance with, the Decommissioning Plan, to provide assurance to Sublessor that sufficient funds will be available to carry out deconstruction and site restoration activities upon termination or expiration of this Sublease. The Decommissioning Funding Plan shall include one or more financial assurance mechanisms as described in the Decommissioning Plan. Sublessee shall provide the initial Decommissioning Funding Plan on or before the execution date of this Sublease as set forth above. Sublessee shall submit an updated Decommissioning Funding Plan to Sublessor for Sublessor's review and approval as provided in the CMP, and shall provide such information and documents as Sublessor may reasonably request from time to time to verify the availability and adequacy of funding to meet Sublessee's decommissioning and restoration obligations. If, at any time during the term of this Sublease, Sublessor reasonably determines that the Decommissioning Funding Plan is insufficient, Sublessee shall consult with Sublessor and shall negotiate in good faith to determine the amount of such additional funding and provide such additional funding assurance mechanisms.

b. **Site Decommissioning Plan.** Upon expiration or termination of this Sublease or any extended sublease, decommissioning, including site restoration, shall be carried out in strict compliance with a Site Decommissioning Plan developed and approved in accordance with the Decommissioning Plan ("**Decommissioning Obligations**").

c. **Delivery of Possession.** Except as otherwise provided herein, upon expiration or termination of this Sublease or any extended sublease and completion of Sublessee's Decommissioning Obligations, Sublessee shall peaceably deliver to Sublessor possession of the Subleased Premises in a clean and orderly condition.

d. Payment of Decommissioning Costs of Sublessor or Lessor. Sublessee shall promptly pay on demand any reasonable and necessary costs incurred by Sublessor or Lessor to remedy any failure on the part of Sublessee to fully and timely perform its Decommissioning Obligations.

e. Survival. The obligations of Sublessee under this Section 10, the rights and obligations of Sublessor and Sublessee under Sections 9.a., 9.b., and 9.c. above, and the obligations of Sublessee under Section 11 below shall survive expiration or termination of this Sublease.

f. Termination Without Decommissioning: Assumption of Decommissioning Obligations by Sublessor. If this Sublease expires or is terminated prior to the expiration of the Master Lease and at a time when the TMT Facilities have remaining useful life, at Sublessor's sole option Sublessee shall be relieved of its Decommissioning Obligations and permitted to surrender its subleasehold interest in the Subleased Premises without removal of the TMT Facilities on such terms as may be mutually agreed in writing by Sublessor and Sublessee, which may include payment to Sublessor of an amount to be held in reserve for future decommissioning in exchange for Sublessor's assumption of the Decommissioning Obligations.

11. Indemnity. Sublessee shall indemnify, defend, and hold harmless Lessor, Sublessor, and their officers, agents, employees, and other persons acting on their behalf, from and against any claim or demand for loss, liability, or damages (including, but not limited to, reasonable attorneys' fees and claims for property damage, personal injury, or death, based upon any accident, fire, or other incident on or about the Subleased Premises) to the extent arising or resulting from: (1) any act or omission on the part of Sublessee relating to Sublessee's use, occupancy, maintenance, or enjoyment of the Subleased Premises; (2) any failure on the part of Sublessee to properly maintain the Subleased Premises, and areas adjacent thereto in Sublessee's use and control, including any accident, fire, or nuisance, arising from or caused by any failure on the part of Sublessee to maintain the Subleased Premises in a safe condition; or (3) Sublessee's non-observance or non-performance of any of the terms, covenants, and conditions of this Sublease or the Master Lease or the rules, regulations, ordinances and laws of the Federal, State, or County governments. Sublessee further agrees to indemnify, defend, and hold harmless Lessor and Sublessor from any damages or claims arising from the release of "hazardous material" (as defined in Section 31 below) on the Subleased Premises occurring while Sublessee is in possession, or elsewhere if caused by Sublessee or any person acting under Sublessee.

12. Insurance. Sublessee shall, at its own cost and expense, maintain the following insurance. Such insurance shall be subject to the reasonable approval of Sublessor and Lessor and, except as to any property insurance, shall name Sublessor and Lessor as additional insureds. Sublessee shall deliver executed certificates thereof to Sublessor on or before the Effective Date of this Sublease and thereafter within a reasonable time prior to the expiration of the term of each such policy. As often as any such policy shall expire or terminate, renewal or additional policies shall be procured and maintained by Sublessee in like manner to like extent. If Sublessee has only provided

Sublessor with certificates evidencing the policies required to be carried by Sublessee under this Sublease, Sublessee agrees to deliver executed copies of all such required policies to Sublessor within ten (10) days of Sublessor's written request for the same.

a. Property Insurance. Sublessee shall at its own expense and at all times during the term of this Sublease keep Sublessee's property, including but not limited to the TMT Facilities, insured against (i) all of the risks covered by a standard ISO Commercial Property Special Causes of Loss Form (or equivalent) which shall be in an amount equal to the full replacement cost of such property and shall not have a deductible in excess of Two Hundred and Fifty Thousand Dollars (\$250,000), and (ii) such other hazards or risks which a reasonably prudent telescope operator on Mauna Kea would insure against. Sublessee hereby waives any and all rights of subrogation which it may have against Lessor and/or Sublessor, except to the extent of available insurance. In case the property required to be insured above or any part thereof shall be destroyed or damaged by fire or such other casualty required to be insured against, then and as often as the same shall happen, the proceeds of such insurance shall be paid to Sublessee to be used by Sublessee to promptly repair and restore any damage to such property.

b. Liability Insurance. Sublessee shall procure at Sublessee's expense and keep in force during the term of this Sublease and any extension thereof, the following insurance:

i) General Liability Insurance. Commercial general liability insurance (including coverage for liability caused by the fault of Sublessee, products-completed operations liability, personal and advertising injuries and coverage for contractual liability to the extent provided by ISO Form CGL #00-01-04-13 (or equivalent) covering Sublessee and naming as additional insureds: (i) Sublessor, (ii) Lessor, (iii) Sublessor's and Lessor's managers, officers, agents and employees, and (iv) such other parties as Sublessor may specify, insuring against liability arising out of the use, occupancy or maintenance of the Subleased Premises and areas appurtenant thereto by Sublessee with limits of not be less than One Million Dollars (\$1,000,000) for property damage, and Five Million Dollars (\$5,000,000) for injuries and deaths in any one occurrence or a combined single limit of Five Million Dollars (\$5,000,000) per occurrence and deductibles of no more than Two Hundred and Fifty Thousand Dollars (\$250,000). Such insurance shall be primary and shall not limit the liability of the Sublessee under Section 11 above.

ii) Auto Liability Insurance. Auto liability insurance covering all automobiles used by Sublessee in connection with its operations in the Subleased Premises with limits of not less than Five Hundred Thousand Dollars (\$500,000) for property damage, and Five Million Dollars (\$5,000,000) for injuries or deaths in any one occurrence or a combined single limit of Five Million Dollars (\$5,000,000) per occurrence, with deductibles of no more than Five Thousand Dollars (\$5,000) per occurrence and naming Sublessor and Lessor as additional insureds.

iii) Pollution Liability Insurance. Pollution liability insurance in the amount of not less than Five Million Dollars (\$5,000,000) and with deductibles of no

more than Two Hundred and Fifty Thousand Dollars (\$250,000) per occurrence and naming Sublessor and Lessor as additional insureds. Such insurance shall cover bodily injury, property damage, and environmental damage, including clean up and defense and remediation costs, for occurrences that arise from the occupancy or use of the Subleased Premises during the term of this Sublease by Sublessee.

c. General Insurance Requirements.

i) Sublessee shall use its best efforts to obtain the following terms in each policy of commercial property insurance and general liability insurance required in Sections 12.a. and 12.b. above to the extent that such terms are reasonably available in the commercial marketplace:

a) a provision that the liability of the insurer thereunder shall not be affected by, and that the insurer shall not claim, any right of set-off, counterclaim, apportionment, proration, or contribution by reason of, any other insurance obtained by or for Sublessor, Lessor, Sublessee, or any person claiming by, through, or under any of them; and

b) no provision relieving the insurer from liability for loss occurring while the hazard to buildings and personal property is increased, whether or not within the knowledge or control of, or because of any breach of warranty or condition or any other act or neglect by Sublessor, Lessor, Sublessee, or any person claiming by, through, or under any of them.

ii) Each policy of commercial property insurance and general liability insurance required in Sections 12.a. and 12.b. above shall:

a) be written by an insurance company rated A- or better, Class size VIII or better, by the Best's Key Rating Guide, based upon the rating system in effect on the date this Sublease is signed. In the event that Best's changes its rating system or ceases to provide ratings at some later date, then such insurance company shall have a rating from Best (or some other comparable rating service if Best's ceases to provide ratings) comparable to the "A- or better, Class VIII or better" requirement of the immediately preceding sentence; and

b) be specifically endorsed to provide that they are primary policies, not contributing with and not in excess of any coverage that Sublessor and/or Lessor may carry, notwithstanding anything to the contrary contained in any policies obtained by Sublessor and/or Lessor.

In addition, Sublessor shall request that each such policy be specifically endorsed to provide that such policy may not be cancelled except upon the insurer giving at least thirty (30) days' prior written notice thereof (ten (10) days in the case of nonpayment of premium) to Sublessor, Lessor, Sublessee, and other person having an interest in the property who has requested such notice of the insurer.

13. Taxes, Assessments, etc. Sublessee shall pay or cause to be paid, when due, the amount of all taxes, rates, and assessments of every description as to which the Subleased Premises or any part, or any improvements, or the Lessor, Sublessor, or Sublessee, are now or may be assessed or become liable by authority of law during the term of this Sublease; provided, however, that with respect to any assessment made under any betterment or improvement law which may be payable in installments, Sublessee shall be required to pay only those installments, together with interest, which becomes due and payable during the term of this Sublease.

14. Utility Services. Sublessee shall be responsible for obtaining any utility services and shall pay when due all charges, duties and rates of every description, including water, sewer, gas, refuse collection or any other charges, as to which the Subleased Premises or any part, or any improvements, or the Lessor, Sublessor, or Sublessee may become liable for during the term, whether assessed to or payable by the Lessor, Sublessor, or Sublessee.

15. Covenant against discrimination. The use and enjoyment of the Subleased Premises shall not be in support of any policy which discriminates against anyone based upon race, creed, sex, color, national origin, religion, marital status, familial status, ancestry, physical handicap, disability, age or HIV (human immunodeficiency virus) infection.

16. Sanitation. Sublessee shall keep the Subleased Premises and improvements in a strictly clean, sanitary and orderly condition.

17. Waste and Unlawful, Improper or Offensive Use of Subleased Premises. Sublessee shall not commit, suffer or permit to be committed any waste, nuisance, strip or unlawful, improper or offensive use of the Subleased Premises or any part, nor, without the prior written consent of the Lessor and Sublessor, cut down, remove or destroy, or suffer to be cut down, removed or destroyed, any trees now growing on the premises.

18. Compliance with Laws. Sublessee shall comply with all applicable requirements of all municipal, state, and federal authorities and observe all municipal, state and federal laws applicable to the Subleased Premises, now in force or which may be in force.

19. Inspection of Subleased Premises. Upon reasonable notice by Sublessor to Sublessee, Sublessee shall permit the Lessor, Sublessor, and their respective agents, at all reasonable times during the Sublease term, to enter the Subleased Premises and examine the state of its repair and condition.

20. Improvements. Sublessee shall not at any time during the term of this Sublease construct, place, maintain and install on the premises any building, structure or improvement of any kind and description except with the prior written approval of the Lessor and the Sublessor and upon those conditions as the Lessor or Sublessor may impose, unless otherwise provided in this Sublease. Construction of the TMT Facilities in accordance with Section 4 above is authorized. Except as otherwise provided in this

Sublease, Sublessee shall own all improvements constructed by and installed by Sublessee on the Subleased Premises.

21. Repairs to Improvements. Sublessee shall, at its own expense, keep, repair, and maintain all buildings and improvements now existing or hereafter constructed or installed on the Subleased Premises in good order, condition and repair, reasonable wear and tear excepted.

22. Liens. Sublessee shall not commit or suffer any act or neglect which results in the Subleased Premises, any improvement, the leasehold estate of the Sublessor, or the subleasehold estate of the Sublessee becoming subject to any attachment, lien, charge, or encumbrance, except as provided in this Sublease, and shall indemnify, defend, and hold the Lessor and Sublessor harmless from and against all attachments, liens, charges, and encumbrances and all resulting expenses.

23. Assignments, etc. Sublessee shall not sublease, subrent, transfer, assign, or permit any other person to exclusively occupy the Subleased Premises or any portion or transfer or assign this Sublease or any interest therein, either voluntarily or by operation of law, without the prior written approval of the Lessor and the Sublessor.

24. Costs of Litigation. Sublessee shall pay all costs, including reasonable attorney's fees, and expenses incurred by or paid by the Lessor or Sublessor (i) in enforcing the covenants and agreements of the Master Lease or this Sublease with respect to Sublessee, (ii) in recovering possession of the Subleased Premises, or (iii) in the collection of delinquent rental, taxes, and any and all other charges.

25. Breach. Time is of the essence in this Sublease and if the Sublessee shall become bankrupt, or if this Sublease and Subleased Premises shall be attached or taken by operation of law, or if Sublessee shall fail to observe and perform any of the material covenants, terms, and conditions contained in this Sublease and on its part to be observed and performed (other than a failure that causes a breach of the Master Lease, in which case Sublessor and Sublessee hereby agree that Section 8 above applies), and this failure shall continue for a period of more than sixty (60) days after delivery by the Sublessor of a written notice of breach or default and demand for cure, by personal service, registered mail or certified mail to the Sublessee at its last known address and to each holder of record having a security interest in the premises, then Sublessor may, subject to the provisions of Section 171-21 of the Hawaii Revised Statutes, at once re-enter the premises, or any part, and upon or without the entry, at its option, terminate this Sublease without prejudice to any other remedy or right of action for arrears of rent or for any preceding or other breach of contract; and in the event of termination, at the option of Sublessor, all buildings and improvements shall remain and become the property of the Sublessor or shall be removed by Sublessee in accordance with Section 10 above; furthermore, Sublessor shall retain all rent paid in advance to be applied to any damages.

26. Condemnation. If at any time, during the term of this Sublease, any portion of the Subleased Premises should be condemned, or required for public purposes by any

government authority, the rental shall be reduced in proportion to the value of the portion of the Subleased Premises condemned. Sublessee shall be entitled to receive from the condemning authority the proportionate value of the Sublessee's permanent improvements so taken in the proportion that it bears to the unexpired term of the Sublease; provided, that the Sublessee may, in the alternative, remove and relocate its improvements to the remainder of the lands occupied by Sublessee. Sublessee shall not by reason of the condemnation be entitled to any claim against the Lessor or Sublessor for condemnation or indemnity for leasehold interest and all compensation payable or to be paid for or on account of the leasehold interest by reason of the condemnation shall be payable to and be the sole property of the Lessor or Sublessor. The foregoing rights of the Sublessee shall not be exclusive of any other to which Sublessee may be entitled by law. Where the portion taken renders the remainder unsuitable for the use or uses for which the Subleased Premises were leased, Sublessee shall have the option to surrender this lease and be discharged and relieved from any further liability; provided, that Sublessee shall remove the permanent improvements constructed, erected and placed by it within any reasonable period allowed by the Lessor and Sublessor, in accordance with Section 10 above.

27. Right to Enter. The Lessor, Sublessor, or the County of Hawaii and their agents or representatives shall have the right to enter and cross any portion of the Subleased Premises for the purpose of performing any public or official duties; provided, however, in the exercise of these rights, the Lessor, Sublessor, or the County of Hawaii shall not interfere unreasonably with the Sublessee or Sublessee's use and enjoyment of the Subleased Premises.

28. Extension of Time. Notwithstanding any provision contained in this Sublease, when applicable, Sublessor may for good cause shown, allow additional time beyond the time or times specified in this Sublease for the Sublessee to comply, observe, and perform any of the Sublease terms, conditions, and covenants.

29. Quiet Enjoyment. Sublessor covenants and agrees with Sublessee that upon payment of the rent at the times and in the manner provided and the observance and performance of these covenants, terms, and conditions on the part of the Sublessee to be observed and performed, the Sublessee shall and may have, hold, possess, and enjoy the premises for the term of this Sublease, without hindrance or interruption by the Lessor, Sublessor or any other person or persons lawfully claiming by, through, or under the Lessor or Sublessor.

30. Non-warranty. Neither the Lessor nor Sublessor warrants the conditions of the Subleased Premises, as the same are being subleased as is.

31. Hazardous Materials. Sublessee shall not cause or permit the escape, disposal or release of any hazardous materials except as permitted by law. Sublessee shall not allow the storage or use of such materials in any manner not sanctioned by law or by the highest standards prevailing in the industry for the storage and use of such materials, nor allow to be brought onto the premises any such materials except to use in the ordinary

course of Sublessee's business where the Sublessee has provided Sublessor with a list that contains the identity of such materials used or stored by Sublessee in the ordinary course of its business and in compliance with all applicable federal and state regulations; provided, that if Sublessor disapproves in writing any such materials, the disapproved materials shall not be brought onto the Subleased Premises. If any lender or governmental agency shall ever require testing to ascertain whether or not there has been any release of hazardous materials by Sublessee, then the Sublessee shall be responsible for the reasonable costs thereof. In addition, Sublessee shall execute affidavits, representations and the like from time to time at Lessor's or Sublessor's request concerning Sublessee's best knowledge and belief regarding the presence of hazardous materials on the Subleased Premises placed or released by Sublessee.

For the purpose of this Sublease, "hazardous material" shall mean any pollutant, toxic substance, hazardous waste, hazardous material, hazardous substance, or oil as defined in or pursuant to the Resource Conservation and Recovery Act, as amended, the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, the Federal Clean Water Act, or any other federal, state, or local environmental law, regulation, ordinance, rule, or by-law, whether existing as of the date hereof, previously enforced, or subsequently enacted.

32. Hawaii Law. This Sublease shall be construed, interpreted, and governed by the laws of the State of Hawaii.

33. Exhibits - Incorporation in Sublease. All exhibits referred to herein are attached to this Sublease and hereby are deemed incorporated by reference.

34. Headings. The section headings herein are inserted only for convenience and reference and shall in no way define, describe or limit the scope or intent of any provision of this Sublease.

35. Partial Invalidity. If any term, provision, covenant or condition of this Sublease should be held to be invalid, void or unenforceable, the remainder of this Sublease shall continue in full force and effect and shall in no way be affected, impaired or invalidated thereby.

36. Withdrawal. If and to the extent that Lessor exercises its power of withdrawal under the Master Lease to withdraw any portion of the Subleased Premises for public uses or purposes upon giving reasonable notice and without compensation except as otherwise provided in the Master Lease, HRS Chapter 171, the New Master Lease, or other master lease between Sublessor and Lessor that includes the Subleased Premises, then Sublessor shall have the right to withdraw these same portions of the Subleased Premises during the term of this Sublease upon giving reasonable notice to Sublessee and subject to the Sublessee's claim for any compensation provided under the Master Lease, HRS Chapter 171, the New Master Lease, or other master lease between Sublessor and Lessor that includes the Subleased Premises for any permanent improvement constructed upon the Subleased Premises that is destroyed or made unusable in the process of the withdrawal or

taking. Upon such withdrawal, or upon the taking which causes any portion of the Subleased Premises to become unusable for the specific use or uses for which it was subleased, the rent shall be reduced in proportion to the value of the land withdrawn or made unusable, and to the extent permitted in the Master Lease, HRS Chapter 171, the New Master Lease, or other master lease between Sublessor and Lessor that includes the Subleased Premises, if any permanent improvement constructed upon the land by Sublessee is destroyed or made unusable in the process of the withdrawal or taking, the proportionate value shall be paid based upon the unexpired term of the lease (which value shall also include the cost of decommissioning such improvements including site restoration as required in the Decommissioning Plan).

37. Building Construction. All building construction shall be in full compliance with all applicable laws, rules and regulations of the federal, state, and county governments and in accordance with plans and specifications submitted to and approved by the Sublessor and the Chairman of the Board of Land and Natural Resources prior to commencement of construction.

38. Clearances. Sublessee shall be responsible for obtaining all necessary federal, state or county clearances.

39. Time of Essence. Time is of the essence in all provisions of this Sublease.

40. Written Notice. All notices shall be in writing and shall be deemed to have been delivered on the date sent if sent by certified mail (return receipt requested) or recognized courier (with delivery confirmation) or transmitted by facsimile (with written confirmation of transmission) and in each case with a copy sent by email on the same date as follows:

Sublessor:

Chancellor  
University of Hawaii at Hilo  
200 West Kawili Street  
Hilo, Hawaii 96720-4091  
Telephone: (808) 932-7348  
Facsimile: (808) 932-7338  
Email: dstraney@hawaii.edu

Sublessee:

Project Manager (during construction) or Observatory Director (after first light; contact information for Observatory Director to be delivered to Sublessor by written notice following construction)  
TMT International Observatory LLC  
1111 South Arroyo Parkway, Suite 200  
Pasadena, CA 91105

Telephone: (626) 395-2997  
Facsimile: (626) 296-1887  
Email: sanders@tmt.org

With a copy to:

Ann Martin  
General Counsel  
TMT Observatory Corporation  
Telephone: (626) 395-1646  
Facsimile: (626) 395-6841  
Email: ann.martin@caltech.edu

41. **Dispute Resolution.** Any dispute relating to or arising as a result of or in connection with this Sublease, if not resolved by negotiation, shall be submitted first to non-binding mediation with Dispute Prevention & Resolution, Inc. and if such mediation is not concluded within six (6) months after submission, then shall be decided in legal or equitable proceedings in accordance with Hawaii law in any court having jurisdiction in the State of Hawaii. Such mediation shall take place in the County of Honolulu, State of Hawaii. Each party shall bear its own costs and fees for such mediation and the fees and expenses of the mediator shall be borne by the parties equally.

42. **Historic preservation.** In the event any historic properties or burial sites, as defined in Section 6E-2 of the Hawaii Revised Statutes, are found on the Subleased Premises, Sublessee and Sublessee's agents, employees and representatives shall immediately stop all land utilization and/or work and contact the Historic Preservation Office in compliance with Hawaii Revised Statutes Chapter 6E.

43. **Removal of Trash.** Sublessee shall be responsible for the removal of all illegally dumped trash upon the premises within ninety (90) days from the date of execution of this Sublease and shall so notify the Sublessor in writing at the end of ninety (90) days.

44. **Phase I Environmental Site Assessment.** Prior to termination or revocation of this Sublease, Sublessee shall conduct a Phase I environmental site assessment of the Subleased Premises and conduct a complete abatement and disposal of any such sites, if necessary, satisfactory to the standards required by the Federal Environmental Protection Agency, the Department of Health, and the Department of Land and Natural Resources. Failure to comply with the provisions of this Section 44 shall not extend the term of this Sublease or automatically prevent termination or revocation of the lease. Sublessor, at its sole option, may refuse to approve termination, unless this evaluation and abatement provision has been performed. In addition or in the alternative, Sublessor may, at its sole option if Sublessee does not do so, arrange for performance of the provisions of this Section 44, all costs and expenses of such performance to be charged to and paid by Sublessee.

45. Counterparts. This Sublease may be executed in counterparts, each of which so executed shall, irrespective of the date of its execution and delivery, be deemed an original (including counterparts delivered by facsimile or email), and said counterparts together shall constitute one and the same agreement binding all of the parties hereto.

*[Remainder of page intentionally left blank; signature page follows.]*

IN WITNESS WHEREOF, Sublessor and Sublessee have executed this Sublease as of the date first written above.

**SUBLESSOR:**

**SUBLESSEE:**

FOR THE UNIVERSITY OF HAWAII:

FOR TMT INTERNATIONAL  
OBSERVATORY LLC:

By David Lassner  
Name: David Lassner  
Title: President  
Date: 7/28/14

By EC Stone  
Name: Edward C. Stone  
Title: Executive Director  
Date: 7/23/14

By Howard Todo  
Name: Howard Todo  
Title: Vice-President for Budget and  
Finance  
Date: 7/28/14

By Donald D. Straney  
Name: Donald Straney  
Title: Chancellor, University  
of Hawai'i at Hilo  
Date: 28 July 14

Approved as to form:

By Lawrence S. Okinaga  
Name: Lawrence S. Okinaga, Carlsmith Ball LLP  
Title: Special General Counsel  
Date: 07/28/2014

STATE OF HAWAII )  
 ) ss.  
CITY AND COUNTY OF HONOLULU )

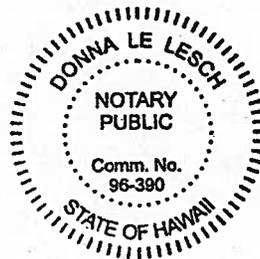
The attached document: **SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT BETWEEN TMT INTERNATIONAL OBSERVATORY LLC AND THE UNIVERSITY OF HAWAII**, dated July 28, 2014 which consists of 48 pages (including this page), was executed by **DAVID LASSNER** and **HOWARD TODO** and on this 28 day of July, 2014 in the First Judicial Circuit of the State of Hawaii, personally known/proved to me on the basis of satisfactory evidence to be the persons, who personally appeared before me and being by me duly sworn or affirmed, did say that they are the **PRESIDENT** and **VICE-PRESIDENT FOR BUDGET AND FINANCE**, respectively, of the **UNIVERSITY OF HAWAII**, and that such persons executed the foregoing instrument as the free act and deed of such persons, and if applicable in the capacities shown, having been duly authorized to execute such instrument in such capacities.

Donna Le Lesch  
[Notary Signature]

(notary stamp or seal)

Printed Name: Notary Name

My commission expires: DONNA LE LESCH  
Commission No. 96-390  
Notary Public, State of Hawaii  
My commission expires July 18 2016



CITY of  
K

STATE OF HAWAII )  
 ) ss.  
COUNTY OF HAWAII )

The attached document: **SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT BETWEEN TMT INTERNATIONAL OBSERVATORY LLC AND THE UNIVERSITY OF HAWAII**, dated July 28, 2014 which consists of 48 pages (including this page), was executed by **DONALD STRANEY** on this 28 day of July, 2014 in the Third Judicial Circuit of the State of Hawaii, personally known/proved to me on the basis of satisfactory evidence to be the person, who personally appeared before me and being by me duly sworn or affirmed, did say that he is the **CHANCELLOR** of **UNIVERSITY OF HAWAI'I AT HILO**, and that such person executed the foregoing instrument as the free act and deed of such person, and if applicable in the capacity shown, having been duly authorized to execute such instrument in such capacity.

Donna Le Lesch  
[Notary Signature]

(notary stamp or seal)

Printed Name: Notary Name

My commission expires: Donna Le Lesch  
Commission No. 96-390  
Notary Public, State of Hawaii  
My commission expires July 18 2016



STATE OF CALIFORNIA )  
 ) ss.  
COUNTY OF Los Angeles )

The attached document: **SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT BETWEEN TMT INTERNATIONAL OBSERVATORY LLC AND THE UNIVERSITY OF HAWAII**, dated July 23, 2014 which consists of 22 pages (including this page), was executed by **EDWARD C. STONE** on this 23<sup>rd</sup> day of JULY, 2014, personally known/proved to me on the basis of satisfactory evidence to be the person, who personally appeared before me and being by me duly sworn or affirmed, did say that he is the **EXECUTIVE DIRECTOR** of **TMT INTERNATIONAL OBSERVATORY LLC** and that such person executed the foregoing instrument as the free act and deed of such person, and if applicable in the capacity shown, having been duly authorized to execute such instrument in such capacity.

C.M. Aguilar  
\_\_\_\_\_  
(Notary Signature]

(notary stamp or seal)

Printed Name: Notary Name C.M. Aguilar

My commission expires: Jan. 16, 2017

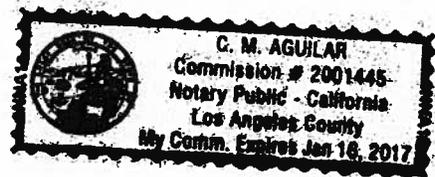


Exhibit A to Sublease

**Master Lease (General Lease No. S-4191)**

**GENERAL LEASE NO. S-4191**

THIS INDENTURE OF LEASE, made this 21st day of June, 1968, by and between the STATE OF HAWAII, by its Board of Land and Natural Resources, pursuant to the provisions of Section 103A-90(b), Revised Laws of Hawaii 1955, as amended, hereinafter referred to as the "LESSOR", and the UNIVERSITY OF HAWAII, a body corporate, whose post office address is 2444 Dole Street, Honolulu, City and County of Honolulu, State of Hawaii, hereinafter referred to as the "LESSEE",

**WITNESSETH THAT:**

FOR and in consideration of the mutual promises and agreements contained herein, the Lessor does hereby demise and lease unto the said Lessee and the said Lessee does hereby rent and lease from the Lessor, all of that certain parcel of land situate at Kaohu, Hamakua, County and Island of Hawaii, State of Hawaii, and more particularly described in Exhibit "A", hereto attached and made a part hereof.

TO HAVE AND TO HOLD, all and singular the said premises, herein mentioned and described, unto the said Lessee, for and during the term of sixty-five (65) years, to commence from the 1st day of January, 1968, and to terminate on the 31st day of December, 2033.

**DEPARTMENT OF LAND AND NATURAL RESOURCES**  
HONOLULU, HAWAII

**EXHIBIT A**

RESERVING UNTO THE LESSOR THE FOLLOWING:

1. Water Rights. All surface and ground waters appurtenant to the demised premises, together with the right to enter and to capture, divert or impound water; provided, that the Lessor shall exercise such rights in such manner as not to interfere unreasonably with the Lessee's use of the demised premises; provided, further, that the Lessee shall have the right to use the waters of Lake Waiau for any purpose necessary or incidental to the use permitted by this lease on the following conditions:

a. No drilling or disturbance of Lake Waiau's bottom, banks or areas adjacent thereto shall be permitted;

b. No activity shall be permitted which will result in the pollution of the waters of Lake Waiau;

c. Lessee shall not take or divert any of the waters arising from springs which furnish the water supply for Pohakuloa, and no alterations to said springs shall be made by Lessee.

2. Access. All rights to cross the demised premises for inspection or for any government purposes.

3. Hunting and Recreation Rights. All hunting and recreation rights on the demised lands, to be implemented pursuant to rules and regulations issued by said Board in discharging its fish and game or state parks responsibilities; provided, however, that such hunting and recreation activities shall be coordinated with the activities of the Lessee on the demised lands; and provided, further, that such hunting and recreation activities shall be limited to day-light hours only.

4. Right to use Demised Lands. The right for itself, and its successors, lessees, grantees and permittees, to use any portion of the lands demised and the right to grant to others rights and privileges affecting said land; provided, however, that, except as otherwise provided herein, no such use shall be permitted or rights and privileges granted affecting said lands, except upon mutual determination by the parties hereto that such use or grant will not unreasonably interfere with the Lessee's use of the demised premises; provided, further, that such agreement shall not be arbitrarily or capriciously withheld.

THE LESSEE, IN CONSIDERATION OF THE PREMISES, COVENANTS WITH THE LESSOR AS FOLLOWS:

1. Surrender. The Lessee shall, at the expiration or sooner termination of this lease, peaceably and quietly surrender and deliver possession of the demised premises to the lessor in good order and condition, reasonable wear and tear excepted.

2. Maintenance of the Premises. The Lessee shall keep the demised premises and improvements in a clean, sanitary and orderly condition.

3. Waste. The Lessee shall not make, permit or suffer, any waste, strip, spoil, nuisance or unlawful, improper or offensive use of the demised premises.

4. Specified Use. The land hereby leased shall be used by the Lessee as a scientific complex, including without limitation thereof an observatory, and as a scientific reserve being more specifically a buffer zone to prevent the intrusion of activities inimical to said scientific complex.

Activities inimical to said scientific complex shall include light and dust interference to observatory operation.

*RWA*  
~~During hours of darkness~~ and certain types of electric or electronic installation on the demised lands, but shall not necessarily be limited to the foregoing.

5. Assignments. The Lessee shall not sublease, subrent, assign or transfer this lease or any rights thereunder without the prior written approval of the Board of Land and Natural Resources.

6. Improvements. The Lessee shall have the right during the existence of this lease to construct and erect buildings, structures and other improvements upon the demised premises; provided, that plans for construction and plot plans of improvements shall be submitted to the Chairman of the Board of Land and Natural Resources for review and approval prior to commencement of construction. The improvements shall be and remain the property of the Lessee, and shall be removed or disposed of by the Lessee at the expiration or sooner termination of this lease; provided, that with the approval of the Chairman such improvements may be abandoned in place. The Lessee shall, during the term of this lease, properly maintain, repair and keep all improvements in good condition.

7. Termination by the Lessee. The Lessee may terminate this lease at any time by giving thirty (30) days' notice in writing to the Lessor.

B. Termination by the Lessor. In the event that (1) the Lessee fails to comply with any of the terms and conditions of this lease, or (2) the lessee abandons or fails to use the demised lands for the use specified under paragraph 4 of these covenants for a period of two years, the Lessor may terminate this lease by giving six months' notice in writing to the Lessee.

9. Non-Discrimination. The Lessee covenants that the use and enjoyment of the premises shall not be in support of any

policy which discriminates against anyone based upon race, creed, color or national origin.

10. General Liability. The Lessee shall at all times, with respect to the demised premises, use due care for safety, and the Lessee shall be liable for any loss, liability, claim or demand for property damage, personal injury or death arising out of any injury, death or damage on the demised premises caused by or resulting from any negligent activities, operations or omissions of the Lessee on or in connection with the demised premises, subject to the laws of the State of Hawaii governing such liability.

11. Laws, Rules and Regulations, etc. The Lessee shall observe and comply with Regulation 4 of the Department of Land and Natural Resources and with all other laws, ordinances, rules and regulations of the federal, state, municipal or county governments affecting the demised lands or improvements.

12. Objects of Antiquity. The Lessee shall not appropriate, damage, remove, excavate, disfigure, deface or destroy any object of antiquity, prehistoric ruin or monument of historical value.

13. Undesirable Plants. In order to prevent the introduction of undesirable plant species in the area, the Lessee shall not plant any trees, shrubs, flowers or other plants in the leased area except those approved for such planting by the Chairman.

IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board of Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this 21/2



EXHIBIT "A"

MAUNA KEA SCIENCE RESERVE

Kahe, Hamakua, Island of Hawaii, Hawaii

Being a portion of the Government Land of Kahe

Beginning at a point on the south boundary of this parcel of land, the coordinates of said point of beginning referred to Government Survey Triangulation Station "SUMMIT 1955" being 12,325.95 feet South and 471.84 feet West, as shown on Government Survey Registered Map 2789, thence running by azimuths measured clockwise from True South:-

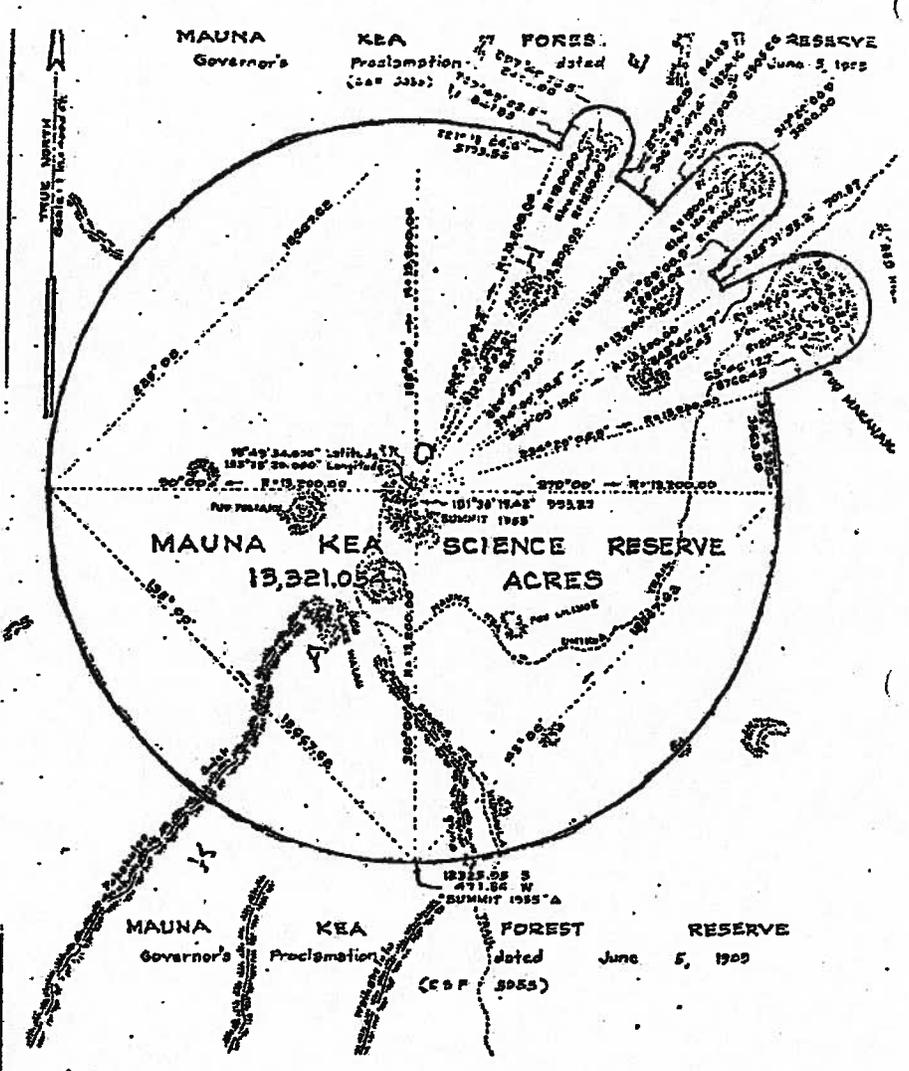
1. Along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 135° 00' 18,667.62 feet;
2. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 225° 00' 18,667.62 feet;
3. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 281° 18' 04.6" 5173.56 feet;
4. 207° 49' 06.5" 841.83 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
5. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 1200.00 feet, the chord azimuth and distance being: 297° 49' 06.5" 2400.00 feet;

6. 27° 49' 06.5" 841.83 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
7. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 306° 59' 47.4" 1824.16 feet;
8. 227° 29' 00.9" 2805.06 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
9. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 1500.00 feet, the chord azimuth and distance being: 317° 29' 00.9" 3000.00 feet;
10. 47° 29' 00.9" 2805.06 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
11. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13200.00 feet, the chord azimuth and distance being: 325° 31' 55.2" 701.87 feet;
12. 245° 46' 12.7" 2760.45 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
13. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 2000.00 feet, the chord azimuth and distance being: 335° 46' 12.7" 4000.00 feet;
14. 65° 46' 12.7" 2760.45 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
15. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 352° 14' 32.9" 3563.50 feet;

16. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 45' 00' 18,667.62 feet to the point of beginning and containing an AREA OF 13,321.054 ACRES.

EXCEPTING and RESERVING to the State of Hawaii and to all others entitled thereto, the Mauna Kea-Hunoula and Mauna Kea-Uaikea Trails, and all other existing trails within the above-described parcel of land, together with rights of access over and across said trails.

ALSO, EXCEPTING and RESERVING to the State of Hawaii, its successors and assigns, the waters and all riparian and other rights in and to all the streams within the above-described parcel of land.



**MAUNA KEA SCIENCE RESERVE**  
 Kahohe, Hamakua, Island of Hawaii, Hawaii  
 Scale: 1 inch = 4000 feet

JOB 4-3078  
 C. D. 1961, June 5, 1965

TAX MAP # 4-1E  
 SURVEY DIVISION  
 DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES  
 STATE OF HAWAII

Exhibit B to Sublease

**Consent to Sublease Under General Lease No. S-4191**

(attached)

**CONSENT TO SUBLEASE OF GENERAL LEASE NO. S-4191**

CONSENT is hereby given by the STATE OF HAWAII, by its Board of Land and Natural Resources, Lessor under unrecorded General Lease No. S-4191 dated June 21, 1968, leased to the University of Hawaii, a public body corporate, as Lessee, to the attached Sublease and Non-Exclusive Easement Agreement ("Sublease") dated \_\_\_\_\_, 2014, from the UNIVERSITY OF HAWAII, a public body corporate, as "Sublessor," to TMT INTERNATIONAL OBSERVATORY LLC, a Delaware limited liability company, as "Sublessee"; SUBJECT, HOWEVER, to the provisions of Section 171-21, Hawaii Revised Statutes, as amended, relating to the rights of holder of security interests, PROVIDED, FURTHER, that nothing contained herein shall change, modify, waive or amend the provisions, terms, conditions and covenants or the duties and obligations of the Lessee or Sublessee under General Lease S-4191.

IT IS UNDERSTOOD that except as provided herein, should there be any conflict between the terms of General Lease No. S-4191 and the terms of the Sublease, the former shall control; and that no further sublease or assignment of any interest of the premises or any portion thereof shall be made without the prior written consent of the Board of Land and Natural Resources.

IT IS FURTHER UNDERSTOOD AND AGREED by the STATE OF HAWAII, by its Board of Land and National Resources, that in the event said General Lease No. S-4191 is surrendered or defaulted upon by Lessee, UNIVERSITY OF HAWAII, prior to the expiration of the term thereof, the Sublease shall remain in full force and effect for the remainder of the term thereof, and Sublessee, TMT INTERNATIONAL OBSERVATORY LLC, shall be allowed its continued right to quiet enjoyment of the demised premises, upon and subject to the terms, conditions and covenants of General Lease No. S-4191. For the avoidance of doubt, for purposes of the immediately preceding sentence, a "surrender" by Lessee, UNIVERSITY OF HAWAII, does not include a mutual cancellation of said General Lease No. S-4191 and concurrent issuance of a New Master Lease (as defined in Section 9.a. of the Sublease) on terms that are acceptable to Sublessee or other master lease on terms that are acceptable to Sublessee, TMT INTERNATIONAL OBSERVATORY LLC, as contemplated by Section 9 of the Sublease.

FURTHERMORE, Lessee hereby acknowledges that the Lessor's consent to sublease under General Lease No. S-4191 does not release the Lessee of any and all responsibilities, obligations, liabilities, and claims respecting or arising under or out of said General Lease prior to the effective date of this consent.

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DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION  
P. O. Box 621  
Honolulu, Hawaii 96809

IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board and Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be fully executed on this \_\_\_\_ day of \_\_\_\_\_, 2014.

STATE OF HAWAII

Approved by the Board  
of Land and Natural  
Resources at its  
meeting held on  
\_\_\_\_\_, 2014

By \_\_\_\_\_  
Chairperson and Member  
Board of Land and  
Natural Resources

LESSOR

UNIVERSITY OF HAWAII, a public body  
corporate

By \_\_\_\_\_  
DAVID LASSNER  
Its President

By \_\_\_\_\_  
HOWARD TODO  
Its Vice-President for Budget and Finance

By \_\_\_\_\_  
DONALD STRANEY  
Chancellor, University of Hawai'i at Hilo

LESSEE

APPROVED AS TO FORM:

\_\_\_\_\_  
Deputy Attorney General  
Dated: \_\_\_\_\_

DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION  
P. O. Box 621  
Honolulu, Hawaii 96809

STATE OF HAWAII )  
 ) ss.  
 CITY AND COUNTY OF HONOLULU )

On this \_\_\_\_ day of \_\_\_\_\_, 2014, before me personally appeared **DAVID LASSNER, HOWARD TODO** and **DONALD STRANEY** personally known , who, being by me duly sworn or affirmed, did say that they are the President of the University of Hawai'i, the Vice-President for Budget and Finance of the University of Hawai'i, and the Chancellor of the University of Hawai'i at Hilo, respectively, and that the foregoing instrument was signed in the capacity shown, having been duly authorized to execute such instrument on behalf of the University of Hawai'i, a public body corporate, by authority of its Board of Regents, and that said **DAVID LASSNER, HOWARD TODO** and **DONALD STRANEY** acknowledged the foregoing instrument as the free act and deed of said University.

Name: \_\_\_\_\_

Notary Public, State of Hawaii

My commission expires: \_\_\_\_\_

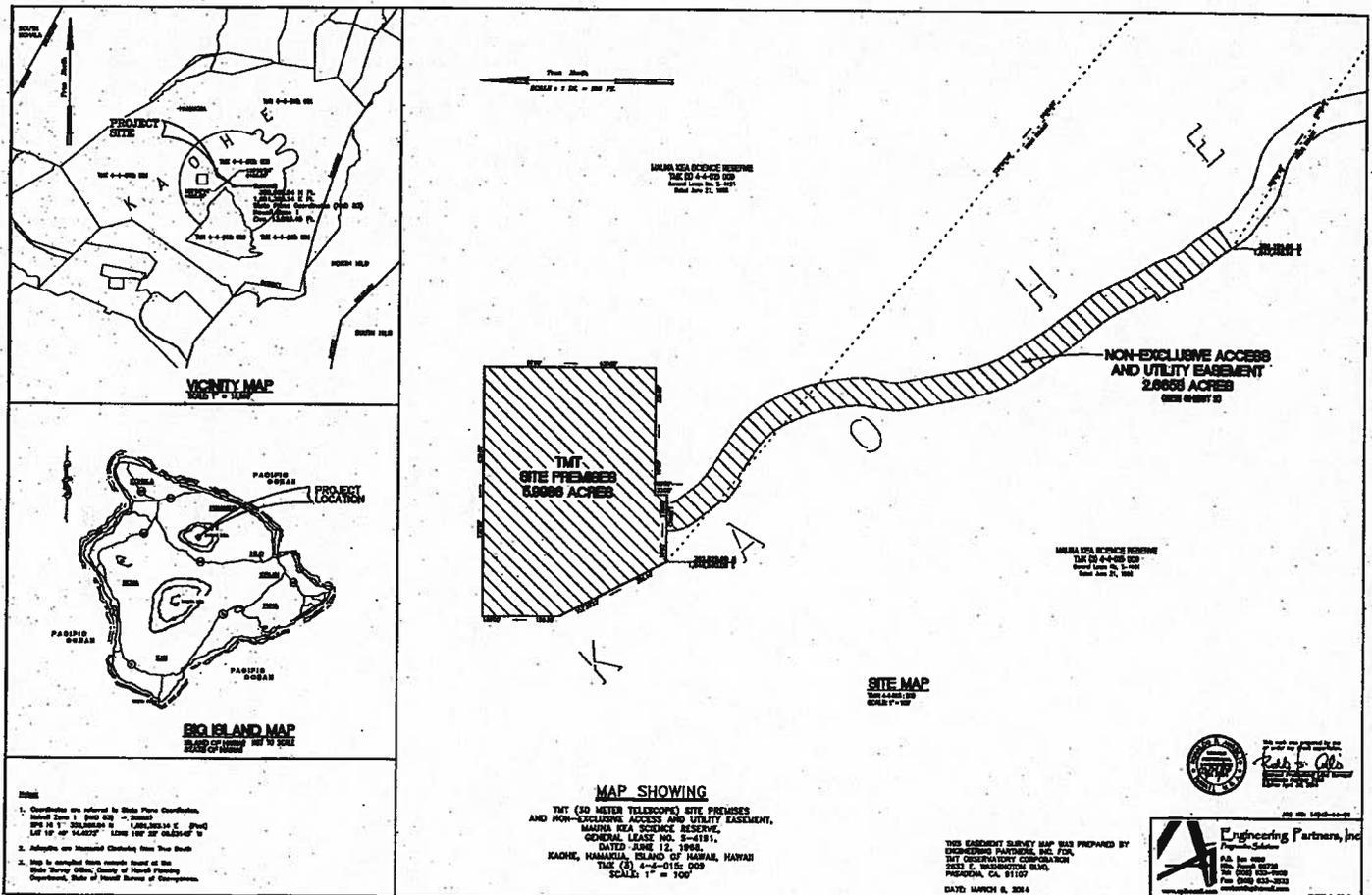
(Notary Stamp or Seal)

<b>NOTARY CERTIFICATION STATEMENT</b>	
Document Identification or Description: <b>CONSENT TO SUBLEASE OF GENERAL LEASE NO. S-4191</b>	
Document Date: _____	
No. of Pages: _____	
Jurisdiction (in which notarial act is performed): Third Judicial Circuit of the State of Hawaii	
Signature of Notary	Date of Notarization and Certification Statement
(Notary Stamp or Seal)	
Printed Name of Notary	

Exhibit C-1 to Sublease

**Subleased Premises and Easement Area**

(attached)



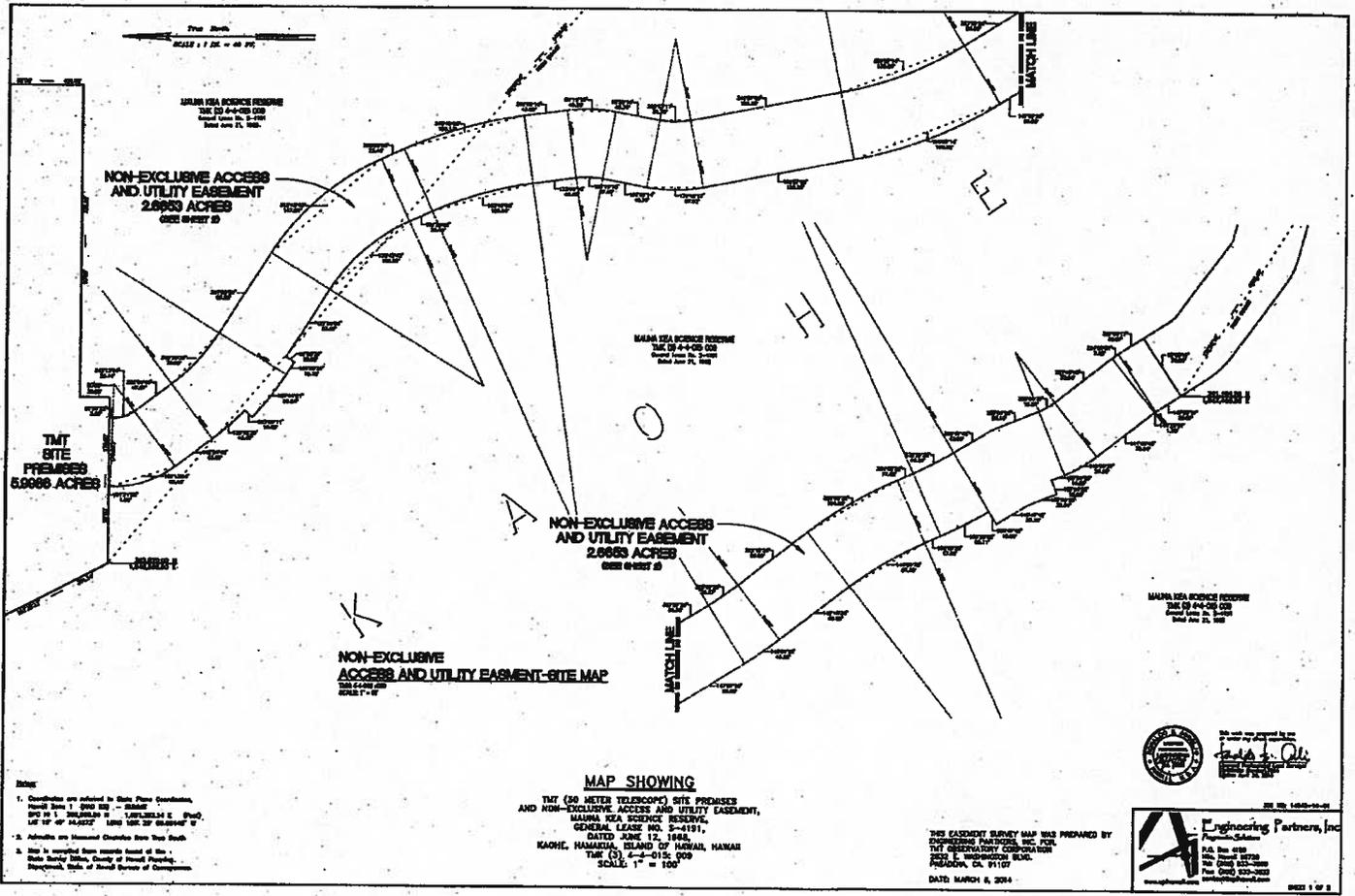


Exhibit C-2 to Sublease

**Legal Description of Subleased Premises**

(attached)

DESCRIPTION

TMT SITE PREMISES

All of that certain parcel of land being a portion of the Government Land of Kaohe, being also a portion of Mauna Kea Science Reserve covered by General Lease S-4191 to the University of Hawaii Situate at Kaohe, Hamakua, Island of Hawaii, Hawaii

Beginning at the southwest corner of this parcel of land referred to the Hawaii State Plane Coordinate System, Zone 1 (NAD83) 362,519.00 feet North and 1,646,660.00 feet East and the direct azimuth and distance from the Government Survey Triangulation Station "SUMMIT 1955" being 129° 52' 08"; 6,166.86 feet and running by azimuths measured clockwise from True South:

1. 152° 35' 33" 304.14 feet along the remainder of the Government Land of Kaohe and the remainder of Mauna Kea Science Reserved covered by General Lease S-4191 to the University of Hawaii;
2. 180° 00' 00" 190.00 feet same;
3. 270° 00' 00" 630.00 feet along same;
4. 0° 00' 00" 430.00 feet along same;
5. 90° 00' 00" 320.00 feet along same;
6. 0° 00' 00" 30.00 feet along same;
7. 90° 00' 00" 170.00 feet along the same to the point of beginning and containing an area of 5.9986 acres, more or less.



Description Prepared By:  
Engineering Partners Inc.

*Ronaldo B. Aurelio*

RONALDO B. AURELIO  
Licensed Professional Land Surveyor  
Certificate Number 7564  
Expires April 30, 2014

Hilo, Hawaii, March 10, 2014

Exhibit C-3 to Sublease

**Legal Description of Easement Area**

(attached)

DESCRIPTION

NON-EXCLUSIVE ACCESS AND UTILITY EASEMENT

All of that certain parcel of land being a portion of the Government land of Kaohe, being also a portion of Mauna Kea Science Reserve covered by General Lease S-4191 to the University of Hawaii Situate at Kaohe, Hamakua, Island of Hawaii, Hawaii

Beginning at the southwest corner of this parcel of land referred to the Hawaii State Plane Coordinate System, Zone 1 (NAD83) 361,104.89 feet North and 1,647,460.58 feet East and the direct azimuth and distance from the Government Survey Triangulation Station "SUMMIT 1955" being 122° 50' 16"; 4,680.47 feet and running by azimuths measured clockwise from True South:

1. 147° 03' 17" 30.07 feet along the remainder of the Government Land of Kaohe and the remainder of Mauna Kea Science Reserved covered by General Lease S-4191 to the University of Hawaii;

Thence along the same on a curve to the left with a radius of 15.00 feet, the chord azimuth and distance being;

2. 144° 25' 01" 1.38 feet;

3. 141° 46' 45" 73.94 feet along same;

Thence along the same on a curve to the right with a radius of 135.00 feet, the chord azimuth and distance being;

4. 149° 50' 37" 37.88 feet;

5. 157° 54' 28" 14.29 feet along same;

6. 67° 54' 28" 15.00 feet along same;

7. 157° 54' 28" 32.04 feet along same;

8. 148° 47' 42" 37.18 feet along same;

9. 238° 47' 42" 15.00 feet along same;

Thence along the same on a curve to the right with a radius of 435.00 feet, the chord azimuth and distance being;

10. 152° 25' 35" 55.11 feet;

11. 156° 03' 28" 17.62 feet along same;

Thence along the same on a curve to the left with a radius of 365.00 feet, the chord azimuth and distance being;

12. 149° 09' 32" 87.69 feet;

13. 142° 15' 36" 89.55 feet along same;

Thence along the same on a curve to the right with a radius of 435.00 feet, the chord azimuth and distance being;

14. 145° 06' 28" 43.22 feet;

15. 147° 57' 20" 86.90 feet along same;

Thence along the same on a curve to the right with a radius of 435.00 feet, the chord azimuth and distance being;

16. 158° 27' 14" 158.52 feet;

17. 168° 57' 08" 156.20 feet along same;

Thence along the same on a curve to the right with a radius of 155.00 feet, the chord azimuth and distance being;

18. 179° 43' 11" 57.92 feet;

19. 190° 29' 14" 45.76 feet along same;

Thence along the same on a curve to the left with a radius of 85.00 feet, the chord azimuth and distance being;

20. 181° 19' 15" 22.08 feet;

21. 172° 09' 16" 43.65 feet along same;  
 Thence along the same on a curve to the left with a radius of 365.00 feet, the chord azimuth and distance being;
22. 163° 49' 06" 105.84 feet;
23. 155° 28' 55" 25.44 feet along same;  
 Thence along the same on a curve to the left with a radius of 185.00 feet, the chord azimuth and distance being;
24. 138° 43' 43" 106.65 feet;
25. 121° 58' 31" 82.07 feet along same;
26. 31° 58' 31" 10.00 feet along same;
27. 121° 58' 31" 15.18 feet along same;  
 Thence along the same on a curve to the right with a radius of 275.00 feet, the chord azimuth and distance being;
28. 127° 44' 21" 55.24 feet;
29. 223° 30' 11" 10.00 feet along same;  
 Thence along the same on a curve to the right with a radius of 265.00 feet, the chord azimuth and distance being;
30. 138° 12' 29" 43.47 feet;
31. 142° 54' 46" 47.07 feet along same;  
 Thence along the same on a curve to the right with a radius of 105.00 feet, the chord azimuth and distance being;
32. 162° 13' 04" 69.43 feet;
33. 181° 31' 22" 1.83 feet along same;
34. 270° 00' 00" 70.02 feet along the TMT Building Site Easement;

35. 1° 31' 22" 3.69 feet along the remainder of the Government Land of Kaohe and the remainder of Mauna Kea Science Reserved covered by General Lease S-4191 to the University of Hawaii;
- Thence along the same on a curve to the left with a radius of 35.00 feet, the chord azimuth and distance being;
36. 342° 13' 04" 23.14 feet;
37. 322° 54' 46" 47.07 feet along same;
- Thence along the same on a curve to the left with a radius of 195.00 feet, the chord azimuth and distance being;
38. 312° 26' 39" 70.86 feet;
39. 301° 58' 31" 97.25 feet along same;
- Thence along the same on a curve to the right with a radius of 255.00 feet, the chord azimuth and distance being;
40. 318° 43' 43" 147.01 feet;
41. 335° 28' 55" 25.44 feet along same;
- Thence along the same on a curve to the right with a radius of 435.00 feet, the chord azimuth and distance being;
42. 343° 49' 06" 123.13 feet;
43. 352° 09' 16" 43.65 feet along same;
- Thence along the same on a curve to the right with a radius of 155.00 feet, the chord azimuth and distance being;
44. 1° 19' 15" 49.38 feet;
45. 10° 29' 14" 45.76 feet along same;

Thence along the same on a curve to the left with a radius of 85.00 feet, the chord azimuth and distance being;

46. 359° 43' 11" 31.76 feet;  
47. 348° 57' 08" 156.20 feet along same;

Thence along the same on a curve to the left with a radius of 365.00 feet, the chord azimuth and distance being;

48. 338° 27' 14" 133.01 feet;  
49. 327° 57' 20" 86.90 feet along same;

Thence along the same on a curve to the left with a radius of 365.00 feet, the chord azimuth and distance being;

50. 325° 06' 28" 36.27 feet;  
51. 322° 15' 36" 89.55 feet along same;

Thence along the same on a curve to the right with a radius of 435.00 feet, the chord azimuth and distance being;

52. 329° 09' 32" 104.50 feet;  
53. 336° 03' 28" 17.62 feet along same;

Thence along the same on a curve to the left with a radius of 365.00 feet, the chord azimuth and distance being;

54. 332° 25' 35" 46.24 feet;  
55. 328° 47' 42" 43.96 feet along same;  
56. 337° 54' 28" 53.11 feet along same;

Thence along the same on a curve to the left with a radius of 65.00 feet, the chord azimuth and distance being;

57. 329° 50' 37" 18.24 feet;

58. 321° 46' 45" 73.94 feet along same;

Thence along the same on a curve to the right with a radius of 85.00 feet, the chord azimuth and distance being;

59. 324° 25' 01" 7.82 feet;

60. 327° 03' 17" 30.07 feet along same;

61. 57° 03' 17" 70.00 feet along same to the point of beginning and containing an area of 2.6653 acres, more or less.



Description Prepared By:  
Engineering Partners Inc.

*Ronaldo B. Aurelio*

RONALDO B. AURELIO  
Licensed Professional Land Surveyor  
Certificate Number 7564  
Expires April 30, 2014

Hilo, Hawaii, March 10, 2014

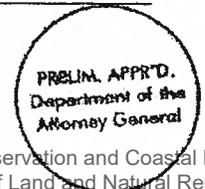


SUBJECT FURTHER, that:

1. The Lessee shall submit construction plans of the Sublessee's improvements to the Land Division, Department of Land and Natural Resources, State of Hawaii, for the Chairperson of the Board of Land and Natural Resources' approval prior to constructing any improvements on the premises.

2. The Sublessee shall comply with all the conditions of Conservation District Use Permit No. HA-3568, as approved by the Board of Land and Natural Resources' Findings of Fact, Conclusions of Law, and Decision and Order issued on April 12, 2013.

IT IS UNDERSTOOD that except as provided herein, should there be any conflict between the terms of General Lease No. S-4191 and the terms of the Sublease, the former shall control; and that no further sublease or assignment of any interest of the premises or any portion thereof shall be made without the prior written consent of the Board of Land and Natural Resources.



IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board of Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this 9th day of April, 2015.

STATE OF HAWAII

Approved by the Board of Land and Natural Resources at its meeting held on June 27, 2014. *R*

By *[Signature]*  
WILLIAM J. ASIA, JR. CARTY S. CHANG  
Interim Chairperson  
Board of Land and  
Natural Resources

LESSOR

APPROVED AS TO FORM:

*[Signature]*  
JULIE H. CHINA  
Deputy Attorney General

Dated: October 24, 2014

UNIVERSITY OF HAWAII, a public body corporate and the public university of the State of Hawaii

By *[Signature]*  
David Lassner  
Its President

APPROVED AS TO FORM:

*[Signature]*  
Print Name: Frank Davidson  
Carlsmith Bell  
Title: Partner  
Dated: 2/9/15

By *[Signature]*  
Jan Grouvia  
Its VP for Administration

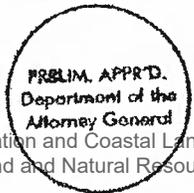
By *[Signature]*  
Donald O. Straney  
Its Chancellor, UH Hilo

LESSEE/SUBLESSOR

TMT INTERNATIONAL OBSERVATORY LLC, a Delaware limited liability company

By *[Signature]*  
Edward C. Stone  
Its EXECUTIVE DIRECTOR

SUBLESSEE



STATE OF HAWAII )  
 ) SS.  
CITY AND COUNTY OF HONOLULU )

On this 09th day of February, 2015, before me appeared David Lassner and Jan Gouveia, to me personally known, who, being by me duly sworn, did say that they are the David Lassner, President and Jan Gouveia, VP for Administration, respectively, of the UNIVERSITY OF HAWAII, a body corporate, and that the seal affixed to the foregoing instrument is the corporate seal of said University and that the foregoing instrument was signed and sealed in behalf of said University by authority of its Board of Regents, and the said Jan Gouveia and David Lassner acknowledged said instrument to be the free act and deed of said University.



Brenda H. Shin

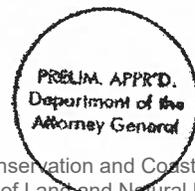
Notary Public, State of Hawaii

Brenda H. Shin

My commission expires: 7-08-15

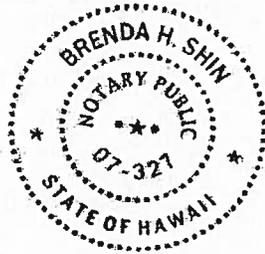


Doc Date none at time of notary # Pages 6  
Brenda H. Shin First Circuit  
Doc. Description Consent to sublease and Non-Exclusive Easement Agreement Between The International Observatory LLC + the UH  
Brenda H. Shin 2-06-15  
Notary Signature Date  
NOTARY CERTIFICATION



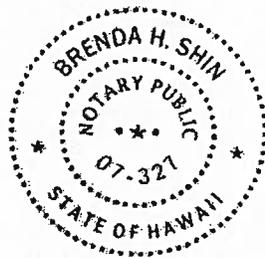
STATE OF HAWAII )  
 ) SS.  
COUNTY OF )

On this 9th day of February, 20 15, before me appeared Donald Straney, to me personally known, who, being by me duly sworn, did say that he/she is the Chancellor, UH Hilo, of the UNIVERSITY OF HAWAII, a body corporate, and that the seal affixed to the foregoing instrument is the corporate seal of said University and that the foregoing instrument was signed and sealed in behalf of said University by authority of its Board of Regents, and the said Donald Straney acknowledged said instrument to be the free act and deed of said University.



Brenda H Shin  
Notary Public, State of Hawaii

Brenda H. Shin  
My commission expires: 07/08/15



*none at time*  
Doc Date of notarization # Pages 6  
Brenda H Shin First Circuit  
Doc Description Consent to sublease  
and Non-Exclusive Easement Agreement  
Between TMT International Observatory LLC + the UH  
Brenda H Shin 2/09/15  
Notary Signature Date  
NOTARY CERTIFICATION



**SCIENTIFIC COOPERATION AGREEMENT**

**BETWEEN**

**TMT INTERNATIONAL OBSERVATORY LLC**

**AND**

**THE UNIVERSITY OF HAWAII**

**CONCERNING THE DESIGN, CONSTRUCTION AND OPERATION  
OF THE THIRTY METER TELESCOPE  
ON  
MAUNA KEA, HAWAII**

**EXHIBIT "C"**

Received  
Office of Conservation and Coastal Lands  
Department of Land and Natural Resources  
State of Hawaii  
Jun 17 2022 16:07

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## SCIENTIFIC COOPERATION AGREEMENT

THIS AGREEMENT is made this 28 day of July, 2014, by and between TMT INTERNATIONAL OBSERVATORY LLC, a Delaware limited liability company ("TIO"), and the UNIVERSITY OF HAWAII, a public body corporate and the public university of the State of the Hawaii ("UH"), and shall be effective as provided in Section XV below.

### RECITALS

WHEREAS, the optical and infrared regions of the electromagnetic spectrum have shown great scientific potential for contributing to our understanding of the astronomical universe;

WHEREAS, the summit area of Mauna Kea is exceptionally well-endowed as a site for observations in these wavelengths;

WHEREAS, TIO and UH believe that the best interests of both parties are to be served through a program of close scientific cooperation centered around the TMT Telescope (as defined below) and related facilities;

WHEREAS, the operation of the TMT Telescope on Mauna Kea will greatly benefit the educational and research programs at UH;

WHEREAS, TIO and UH have a common interest in ensuring that the development of the Mauna Kea site will enhance the effective operation of the TMT Telescope; and

WHEREAS, the presence of the TMT Telescope on Mauna Kea will bring substantial community benefits, in addition to educational and research benefits;

NOW, THEREFORE, in consideration of the mutual agreements herein contained, TIO and UH agree as follows:

#### I. DEFINITIONS

For purposes of construing the provisions of this Scientific Cooperation Agreement, the following definitions apply:

**"Base Support Facilities"** refers to any possible headquarters in Hawaii for the operations of TIO on Mauna Kea.

**"BLNR"** stands for the Board of Land and Natural Resources of the State of Hawaii.

**“HELCO”** stands for the Hawaii Electric Light Company, Inc., the public utility which provides electricity to the Mauna Kea Observatories (as defined below).

**“IfA”** stands for the Institute for Astronomy, an organized research unit of the University of Hawaii at Manoa.

**“Information Station”** is the building and associated infrastructure (access, parking, utilities) near the Mid-Level Facilities which is used as a public information building.

**“Infrastructure Improvements”** are any capital improvements made for the common good of the Mauna Kea Observatories including, but not limited to, roads, power, telephone and communications installations, and the Mid-Level Facilities.

**“Instruments”** include cameras, spectrometers, and other special-purpose equipment used to detect and analyze light, together with computers, test equipment, and tools required to equip the Facilities.

**“Major Astronomical Facilities”** are: UH 88-inch Telescope, Canada-France-Hawaii Telescope (CFHT), NASA Infrared Telescope Facility (IRTF), United Kingdom Infrared Telescope (UKIRT), James Clerk Maxwell Telescope (JCMT), Caltech Submillimeter Observatory (CSO), Keck I, Keck II, VLBA Antenna, Subaru, Gemini North, and the Submillimeter Array. Future telescope facilities forming a part of the Mauna Kea Observatories shall be considered “Major Astronomical Facilities” unless otherwise agreed in writing by UH.

**“Mauna Kea Observatories”** includes, but is not limited to, the Mauna Kea Science Reserve, the astronomical facilities and infrastructure improvements on Mauna Kea, and UH operations which support the astronomical facilities on Mauna Kea.

**“Mauna Kea Observatory Access Road”** is the roadway between the Mid-Level Facilities and the Mauna Kea summit including roadways currently in use through the Mauna Kea Science Reserve.

**“Mauna Kea Science Reserve”** is the land in the summit area of Mauna Kea consisting specifically of land which is leased by UH from the BLNR under General Lease S-4191.

**“Mauna Kea Users’ Committee”** is the committee established by UH to serve as the official forum in which the Major Astronomical Facilities may discuss aspects of the management of the Mauna Kea Observatories. The committee is chaired by the Director of the IfA. Currently, each Major Astronomical Facility is entitled to two representatives on the Mauna Kea Users’ Committee.

**“Mid-Level Facilities”** include, but are not limited to, the Information Station, bedrooms, laboratories, common areas, and offices at Hale Pohaku on Mauna Kea.

“MKSS” stands for Mauna Kea Observatories Support Services, which is operated by UH through the IfA, and is responsible for providing services to support the Mauna Kea Observatories.

“MKSS Oversight Committee” is the committee established by UH to oversee the activities and management of MKSS and to recommend changes to the Director of the IfA. Currently each Major Astronomical Facility is entitled to one representative on the MKSS Oversight Committee.

“Principal Parties” are TIO and UH, and refer to the Principal Parties to this SCA.

“SCA” stands for this “Scientific Cooperation Agreement Between TMT International Observatory LLC and the University of Hawaii Concerning the Design, Construction, and Operation of the Thirty Meter Telescope on Mauna Kea, Hawaii,” and to which is attached the Sublease.

“Sublease” is the Sublease and Non-Exclusive Easement Agreement between TIO and UH, and approved by BLNR, attached hereto as Attachment A, including the exhibits thereto.

“Subleased Premises” refers to the land subleased to TIO by UH with the approval of the BLNR. The Subleased Premises are a portion of that certain land area leased to UH by BLNR and described in General Lease S-4191, which is included as Exhibit A of Attachment A hereto, and which Subleased Premises are shown and described in Exhibits C-1 and C-2 of Attachment A hereto; Exhibits A, C-1, and C-2 of Attachment A hereto are incorporated herein by reference.

“TIO Board” refers to the governing and policy setting body for TIO.

“TMT Director” means the Observatory Director for the TMT Telescope.

“TMT Facilities” include, but are not limited to, the TMT Telescope and enclosure; the support building (the space necessary to support scientific observers and technical personnel while at the summit); together with Instruments, electrical conductors, cableways and tunnels; driveways and parking lots; power, telephone and communications conduits and lines; and access roads within the border of the Subleased Premises. “TMT Facilities” does not include the Mid-Level Facilities, the Base Support Facilities, or any other facilities outside the Subleased Premises.

“TMT Infrastructure Contribution” has the meaning set forth in Section VI.D.1.c below.

“TMT Parties” refers to the members of TIO.

“TMT Telescope” means the Thirty Meter Telescope on Mauna Kea, to be located on the Subleased Premises and used for astronomical observations.

## II. LOCATION OF THE TMT FACILITIES

The Sublease (Attachment A) specifies the location on Mauna Kea where the TMT Facilities will be situated.

## III. INTERACTION BETWEEN TIO AND UH

Day-to-day interaction between the Principal Parties regarding design, construction and operation of the TMT Facilities shall usually be carried out by specified representatives of TIO and UH or their designees. In the case of UH, the specified representative will normally be the IfA Director (or the designee of the IfA Director) and, in the case of TIO, this will normally be the Project Manager for the TMT Facilities (during construction) and the TMT Director (during operations, commencing at first light).

## IV. SOLE RESPONSIBILITIES OF UH

### A. Management of the Mauna Kea Observatories

UH shall provide a forum to allow the Major Astronomical Facilities which form a part of the Mauna Kea Observatories to discuss, on an equal footing, aspects of the management of the Mauna Kea Observatories. Such a forum currently exists and is referred to as the Mauna Kea Users' Committee. TIO shall be entitled to appoint two representatives to the Mauna Kea Users' Committee. Should this committee be replaced with another forum at some time in the future, TIO shall be entitled to participate on the same basis as the other agencies, entities, or persons operating Major Astronomical Facilities. Since UH, the Sublessor under the Sublease, is the Lessee with the State of Hawaii, it is recognized that final responsibility for management of the Mauna Kea Science Reserve resides with UH.

## V. SOLE RESPONSIBILITIES OF TIO

### A. Design, Fabrication, Construction, Installation, and Operation of the TMT Facilities

TIO shall be solely responsible for securing the funding for the design, fabrication, construction, installation, and operation of the TMT Facilities. TIO commits to taking reasonable measures consistent with Conservation District Use Permit HA-3568 and the TMT Access Way Agreement dated September 13, 2012 by and among UH, the Smithsonian Institution Astrophysical Observatory, and the TMT Observatory Corporation to minimize inconvenience which TMT construction activities may create for other telescope facilities.

### B. Power and Communications Conduits and Lines

TIO shall fund and arrange for the installation of electric power and communications conduits from handholes near the TMT Telescope site to the TMT Facilities. These handholes

will be at the new terminus of the summit electric power and communications distribution system as indicated in Section VI.D.1.c.(ii) below. The conduits shall conform to the standards set for the summit power and communications distribution system. TIO shall also fund and arrange for connection of commercial power and communications service via these conduits to the TMT Facilities.

## VI. RESPONSIBILITIES SHARED JOINTLY BY TIO AND UH

### A. Research Environment

Under General Lease S-4191 between UH and BLNR (Exhibit A of Attachment A), UH is to use the Mauna Kea Science Reserve as a scientific complex. UH carries the responsibility also to protect the site from interference that may emanate from within or from outside the Mauna Kea Science Reserve.

#### 1. UH:

a. UH shall continue to protect the interests of the astronomical facilities in the Mauna Kea Science Reserve from interference emanating from within the Mauna Kea Science Reserve which would affect the scientific integrity of the sites on which the astronomical facilities are located.

b. UH shall continue to pursue actively the initiation and/or improvement of such State and County laws and ordinances as are necessary to assure that man-made light emanating from outside the Mauna Kea Science Reserve during nighttime does not over time increase significantly or change in character, so as to interfere with the effectiveness of optical or infrared observations.

c. UH shall ensure that no other astronomical facilities will be constructed or operated within an 800-foot radius surrounding the TMT Telescope during the term of the Sublease, as it may be extended pursuant to Sections 9.a., 9.b., or 9.c. thereto.

#### 2. TIO:

TIO shall conduct its activities in the Mauna Kea Science Reserve in a manner compatible with the activities of other astronomical facilities located there, and shall conform to applicable regulations established by UH and by federal, state, and county authorities for the preservation of the environmental quality and the scientific integrity of the Mauna Kea Science Reserve.

**B. Rights of Access**

**1. UH:**

UH shall ensure TIO's right of access to the Subleased Premises, to the Mauna Kea Observatory Access Road, and to the Mid-Level Facilities (to be documented separately) and shall ensure its right to have access to a handhole or handholes for the electric power, and communications described in Section V.B. above. UH shall grant to or use its best efforts to obtain for TIO such other rights of access as may be needed for utilities and cableways.

**2. TIO:**

TIO shall pay any additional costs, fees and other charges assessed by third parties (such as HELCO) associated with the rights of access described in Section VI.B.1. above.

**C. Access Roads to the TMT Facilities**

**1. UH:**

UH shall provide to TIO the use of existing roads for access to the TMT Facilities, subject to any limitation in the TMT Access Way Agreement dated September 13, 2012 by and among UH, the Smithsonian Institution Astrophysical Observatory, and the TMT Observatory Corporation. The existing roads in the vicinity of the Mauna Kea summit are shown in **Attachment B** hereto. Improvements to the access road to the TMT Telescope site are discussed in Section VI.D.1.c.(i) below.

**D. Infrastructure Improvements Shared in Common with Other Astronomical Facilities at the Mauna Kea Observatories**

UH has taken responsibility to fully or partially fund and arrange for Infrastructure Improvements to the Mauna Kea Observatories which are and will be of common benefit to all the astronomical facilities which operate there. All such Infrastructure Improvements are subject to State and County permits, approvals, and funding.

**1. Commercial Power, Data Communications Conduits and Lines, and Road Improvements**

**a. Description of Improvements:**

UH has installed commercial electric power infrastructure at Hale Pohaku and at the Mauna Kea summit. At the summit, the power is distributed by means of a distribution loop, comprising two conduits containing the electrical cables, and conforming to HELCO standards, which passes near each of the Major Astronomical Facilities. Each facility accesses the commercial power by connecting to the distribution loop at a suitable handhole near its location. UH has also provided two communications conduits from Hale Pohaku to a central point at the summit, and from there to a distribution system comprising two or more conduits

which generally follows the same path as that used for the power. UH has installed fiber-optic cable in one of these conduits. This cable is part of the Mauna Kea Observatories Communications Network, a high-bandwidth communications system which is intended to link the facilities of the Mauna Kea Observatories with each other, with base facilities, and with commercial carriers which can provide links to home institutions and other institutions around the world. UH has completed improvement and paving of the upper section of the Mauna Kea Observatory Access Road (above elevation 11,800 feet) and of the connecting roads to the existing facilities at the summit.

b. Access to Existing Improvements by TIO:

For purposes of TMT, TIO shall have access to the Infrastructure Improvements described in Section VI.D.1.a. above as follows:

(i) The TMT Facilities shall connect to the electric power and communications lines as described in Section V.B. above.

(ii) Use of the access roads within the Mauna Kea Science Reserve in accordance with Section VI.C. above.

(iii) The right to join the Mauna Kea Observatories Communications Network and to participate in the network on the same terms as other network members. The costs associated with connecting the TMT Facilities to the network shall be borne by TIO.

c. Contribution by TIO to Future Improvements:

Subject to the provisions below in this Section VI.D.1.c., TIO shall contribute a total of SIX MILLION SIX HUNDRED THOUSAND Dollars (\$6,600,000) (in first-half 2013 dollars, with escalation following the most recently published State of Hawaii All Urban Consumer Price Index) (not seasonally adjusted) ("TMT Infrastructure Contribution") toward the cost of continued development of the Mauna Kea infrastructure.

This TMT Infrastructure Contribution shall first be used to fund three specific improvements, to the extent these funds allow:

(i) Extension of the summit spur road system to the TMT Telescope site.

(ii) Extension of the summit electric power and communications distribution system from its current terminus near the Submillimeter Array to a new terminus near the TMT Telescope site.

(iii) Upgrade of the electrical power infrastructure to accommodate the eventual requirements of the TMT Facilities. This includes an upgrade to the substation at Hale Pohaku and new cable from there to the summit.

TIO shall be responsible for the design and construction of items (i) and (ii) above and for the implementation of item (iii) above, in collaboration with HELCO. The design and implementation of these improvements shall be subject to approval by UH, by HELCO, and by the Department of Land and Natural Resources of the State of Hawaii, and subject to the funds allowing for the improvements.

TIO shall make this TMT Infrastructure Contribution on or before the date that is SIXTY (60) days after the effective date of this SCA pursuant to Section XV below. UH agrees that TIO may withhold from the payment an amount equal to TIO's initial cost estimate provided to UH for any infrastructure improvements described in (i) through (iii) above. Should the sum of the approved cost estimates equal or exceed the TMT Infrastructure Contribution, then TIO may withhold the entire contribution.

Before any contracts for these improvements are let, TIO shall provide UH with a cost estimate for the improvements, which figure may include a contingency factor up to 10% and be subject to revision following the receipt of actual bids for the improvements. If UH approves this cost estimate, as revised, then UH shall authorize TIO to use all or part of its infrastructure contribution to pay for the actual cost of these improvements, as verifiable by contractors' invoices, up to a maximum amount equal to the above-mentioned cost estimate, as revised, or the entire contribution, whichever is less. Should the contractor(s) default or otherwise fail to complete these improvements necessitating additional contracts and/or expense, or should major change orders be required, then TIO shall provide UH with a new cost estimate. If UH approves this new cost estimate, TIO may continue to use all or part of its infrastructure contribution to pay for the actual cost of these improvements, as verifiable by contractors' invoices, up to a maximum amount equal to the new cost estimate or the entire contribution, whichever is less.

Should the TMT Infrastructure Contribution be insufficient to complete items (i) through (iii) above, TIO shall be responsible for providing the required additional funding.

Should the TMT Infrastructure Contribution exceed the amount needed to fund items (i) through (iii) above, then UH shall be free to use such excess funds for other Infrastructure Improvements which UH considers desirable.

Following acceptance of the work and within NINETY (90) days of the receipt of final invoices, TIO shall provide UH with a final accounting of the cost of these infrastructure improvements, and shall remit to UH the amount, if any, by which the sum withheld exceeds the actual cost.

Notwithstanding anything to the contrary in this SCA, should this SCA be terminated in accordance with Section XVII below on or prior to the fourth anniversary of the effective date of this SCA, then the TMT Infrastructure Contribution shall not be payable by TIO to UH (or shall be refunded by UH to TIO, if applicable) to the extent of any amounts not theretofore expended in accordance with this Section VI.D.1.c.

2. Other Infrastructure Improvements to the Mauna Kea Observatories

It may become necessary or desirable for the greater benefit of the Mauna Kea Observatories to construct Infrastructure Improvements beyond those described in Section VI.D.1. above. If such Infrastructure Improvements are funded entirely by contributions from new funding sources (e.g., new astronomical facilities which join the Mauna Kea Observatories) and/or UH, then TMT shall enjoy access to such improvements on an equal footing with the other astronomical facilities. If such Infrastructure Improvements require contributions from some or all of the astronomical facilities for which there are signed agreements with UH, then TIO shall have access to such improvements, and TIO shall be liable to contribute to the cost of such improvements, only if and to the extent that TIO and UH have agreed in writing to such access and contributions. If TIO elects to participate in any such improvements, TIO and UH shall negotiate in good faith to determine the fair share of the cost of such improvements which TIO shall contribute. The amount of this fair share shall be set forth in separate written agreements and normally shall be based on the fractional utilization by TIO of any such improvements. In cases where utilization is not readily quantifiable, the share paid by TIO shall not exceed a fraction, the numerator of which is ONE (1), and the denominator of which is the number of Major Astronomical Facilities, including the TMT Telescope.

E. Operations and Maintenance

1. UH:

a. UH shall provide services on a basis of no profit, no loss to TIO through MKSS. Such services may include, but shall not be limited to: food and lodging; fuel, water and utilities; data communications; road maintenance; snow removal; weather forecasting; emergency services; public information, outreach and educational services including access control and facilities; and general administration.

b. The cost of MKSS services shall be shared among the astronomical facilities operating or under construction at the time the costs are incurred. For some services the costs may be allocated to each facility as shares. For others a rate will be set and the charge to the facility will be based on actual utilization of that service. Each year, in its budget, MKSS will establish the shares and rates so that projected costs equal projected revenue for each service. MKSS will adjust said shares and rates if actual expenditures or revenues differ significantly from the projections.

c. TIO, or its designee, shall be represented on the MKSS Oversight Committee, which reviews MKSS activities, recommends changes to the activities, and reviews and makes recommendations on the MKSS budget.

2. TIO:

a. TIO shall provide the funds necessary to operate and maintain the TMT Facilities.

b. TIO shall pay its share of the cost of MKSS services as described in Section VI.E.1. above. Said share shall include all MKSS services except that data communications is not included until TIO becomes a participant in the Mauna Kea Observatories Communications Network.

c. TIO shall fund the cost of operating and maintaining the power and communications lines from the handhole described in Section V.B. above to the TMT Facilities.

**F. Sublease; Order of Precedence**

a. Immediately upon execution of this SCA, and for so long as this SCA shall remain in force, UH and TIO shall each fulfill all of their respective obligations, as Sublessor and Sublessee, respectively, as specified in Attachment A hereto.

b. In the event of any conflict between the terms of this SCA and the Sublease, the Sublease shall be controlling.

**VII. DELEGATION OF RESPONSIBILITIES BY TIO**

TIO may delegate certain of its obligations and responsibilities hereunder to other agents for the purpose of constructing or operating the TMT Facilities. However, it is understood and agreed that TIO shall remain ultimately responsible for the obligations and responsibilities undertaken by it in this SCA.

**VIII. ASSIGNMENT OF RIGHTS BY TIO**

Any proposed assignment of ownership rights to the TMT Facilities shall require the consent of UH and shall be to the same person or entity to which the Sublease (or any rights therein) is to be assigned in accordance with Section 23 of the Sublease. In the event that TIO decides that it would be beneficial to involve yet further parties in the construction and/or operation of the TMT Facilities, TIO shall so notify UH so as to provide adequate time for UH to review the proposed terms and conditions of such partnership and to obtain the necessary prior consent of the UH Board of Regents, the State of Hawaii Board of Land and Natural Resources, and any other bodies whose consent is required under the terms of the Lease, the Sublease, or other agreements and documents; provided, however, that nothing in this SCA shall be interpreted or construed to require that TIO obtain any consent or approval of UH, the UH Board of Regents, the State of Hawaii Board of Land and Natural Resources, or any other entities or bodies regarding any parties to be admitted as liability limited company members of TIO or regarding any use of Federal grant funds for construction and/or operation of the TMT Facilities. TIO shall further provide UH with written assurance that such new party or parties concur with this SCA and that they are legally bound to abide by it. In any case, TIO shall not assign or transfer any of its rights under this SCA without the prior written consent of UH.

## IX. SCIENTIFIC COOPERATION

In recognition of the potential for scientific interaction between TIO and UH which the TMT Facilities offer, and of the contribution of UH in making the site available for TIO, TIO and UH agree on the following matters with regard to the operational phase of the TMT Facilities.

### A. UH Use of the TMT Facilities

1. Recognizing UH's considerable investment in the development of Mauna Kea as an astronomical site, UH shall be entitled to a guaranteed fraction of the observing time on the TMT Telescope. The UH observing time shall be allocated to proposals sponsored by UH as follows:

a. During each calendar year, UH shall be entitled to seven and one-half percent (7.5%) of the observing time after engineering time has been subtracted from the total time. Engineering time is telescope time whose purpose is not astronomical research (astronomical research includes demonstration science), but is rather the development, modification, or maintenance of the TMT Telescope, including commissioning of Instruments. During the third and subsequent years after first light, and for the purpose of determining the UH entitlement to observing time, engineering time may include time allocated to an extended shutdown of the TMT Telescope for the purpose of major repair or improvements, provided the shutdown has been approved by the TIO Board.

b. The UH observing time shall be equally distributed over the seasons of the year and the phases of the Moon.

c. In the event of a major failure of the TMT Facilities, the resulting lost observing time shall be accommodated by reducing the UH entitlement and the entitlement of the TMT Parties in the same proportion.

d. Only proposals having a UH-affiliated Principal Investigator, and forwarded by the IfA Director, shall be considered in scheduling the UH allocation of observing time. UH shall be solely responsible for evaluation and selection of proposals to be included in the UH allocation of time. The selection shall be made on the basis of scientific merit. There shall be no restrictions on the eligibility of co-investigators to collaborate on observing programs utilizing the UH observing time.

e. Detailed scheduling of observing time is the responsibility of the TMT Director.

f. In the event that UH and one or more of the TMT Parties each forward proposals for the same time-critical observation, the TMT Director shall attempt to achieve a resolution satisfactory to TIO and UH. If this cannot be achieved, selection between the proposals shall be done by the TMT Director on the basis of scientific merit.

g. TIO and UH recognize that, in order to achieve the full scientific potential of the TMT Telescope, it may be necessary to adopt innovative and flexible approaches to the scheduling of the TMT Facilities. Policies for scheduling of observations shall be approved by the TIO Board and shall in general apply to UH in the same manner as they apply to the TMT Parties.

2. UH-sponsored observers shall receive technical and logistic support while at the TMT Facilities and shall have access to the TMT Facilities, all on the same basis as TIO-sponsored observers.

3. UH-sponsored personnel shall be subject to the authority of the TMT Director when using the TMT Facilities and shall follow all rules, policies and procedures of TIO.

4. Data obtained by UH observers during UH time on TMT shall be subject to TIO's data rights policy which will include a period of time during which the data will be proprietary to UH, consistent with the proprietary period applicable to the TMT Parties, and after which such data will be released to all of the TMT Parties.

**B. UH Participation in TMT Facilities Instrument Development**

TIO shall provide UH with opportunities to participate in the development of Instruments for the TMT Facilities. Any decision concerning awarding Instrument proposals to UH shall be in TIO's sole discretion.

**C. UH Participation in the TIO Board**

UH shall be entitled to appoint one member to the TIO Board, which member shall have non-voting observer status.

**D. UH Participation in TIO Science Advisory Committee**

UH shall be entitled to have either one representative or representation in proportion to its share of observing time, whichever is greater on the TIO Science Advisory Committee.

**E. TMT Facilities Attribution**

In all publications and news releases regarding results obtained from work performed at the TMT Facilities, the TMT Telescope shall be given appropriate credit in a form approved by TIO. Results obtained at the TMT Facilities by IfA faculty shall have credit for these results also given to "the University of Hawaii, Institute for Astronomy" in any publications or news releases.

**F. Interaction with News Media**

Except for the publication of scientific results, external communications regarding the TMT Telescope or the TMT Facilities shall be reasonably coordinated between TIO and UH. UH

and/or TIO may request one another to coordinate specific media events. Each party shall keep the other informed of press releases, filming and live television transmissions.

**X. INSURANCE**

TIO shall, at all times, maintain insurance as required under the Sublease.

**XI. ATTORNEY'S FEES**

Except as otherwise provided in Attachment A hereto, TIO and UH shall each pay their own attorney's fees and any other legal expenses.

**XII. DISPUTE RESOLUTION**

Any dispute relating to or arising as a result of or in connection with this SCA, if not resolved by negotiation, shall be submitted first to non-binding mediation with Dispute Prevention & Resolution, Inc. and if such mediation is not concluded within six (6) months after submission, then shall be decided in legal or equitable proceedings in accordance with Hawaii law in any court having jurisdiction in the State of Hawaii. Such mediation shall take place in the County of Honolulu, State of Hawaii. Each party shall bear its own costs and fees for such mediation and the fees and expenses of the mediator shall be borne by the parties equally.

**XIII. GOVERNING LAW: SEVERABILITY**

The validity, construction and performance of this SCA and the legal relations between the Principal Parties shall be governed by and construed in accordance with the laws of the State of Hawaii. In the event any provision of this SCA shall be held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions of this SCA shall remain in full force and effect.

**XIV. AMENDMENTS TO THIS SCA**

This SCA may be amended in writing at any time by mutual agreement of the Principal Parties.

**XV. TERM OF THIS SCA**

This SCA shall become effective on the effective date of the Sublease and shall terminate as provided in Section XVII below.

## XVI. RENEGOTIATION OF THIS SCA

If the Master Lease (as defined in the Sublease) is replaced with a New Master Lease (as defined in the Sublease) as contemplated by Section 9.a. of the Sublease or other master lease between UH and the BLNR pursuant to Section 9.b. of the Sublease and the Sublease is not thereafter terminated or if the term of the Sublease is extended pursuant to Section 9.c. of the Sublease, the Principal Parties agree to negotiate in good faith any revisions to this SCA proposed at the time by either TIO or UH, provided that the material terms of this SCA shall be substantially the same and not changed.

## XVII. TERMINATION

This SCA shall be terminated upon the first of any of the following events to occur:

1. Mutual written agreement of the Principal Parties.
2. Termination of the Sublease (Attachment A), including as it may be extended pursuant to Sections 9.a., 9.b., or 9.c. thereto.
3. Termination of management or operation of the TMT Facilities by TIO or its assignee, if any, as approved under Section VIII above.

## XVIII. DISPOSITION OF TMT FACILITIES ON TERMINATION

Disposition of the TMT Facilities on termination of this SCA shall be conducted pursuant to the provisions of the Sublease.

## XIX. COUNTERPARTS

This SCA may be executed in counterparts, each of which so executed shall, irrespective of the date of its execution and delivery, be deemed an original (including counterparts delivered by facsimile or email), and said counterparts together shall constitute one and the same agreement binding all of the parties hereto.

*[Remainder of page intentionally left blank; signature page follows.]*

IN WITNESS WHEREOF, the parties hereto have executed this Scientific Cooperation Agreement as of the day and year first above written.

FOR THE UNIVERSITY OF HAWAII:

TMT INTERNATIONAL  
OBSERVATORY LLC:

By David Lassner  
Name: David Lassner  
Title: President  
Date: 7/28/14

By Edward C. Stone  
Name: Edward C. Stone  
Title: Executive Director  
Date: 7/23/14

By Howard Todo  
Name: Howard Todo  
Title: Vice-President for Budget and Finance  
Date: 7/28/14

By Donald Straney  
Name: Donald Straney  
Title: Chancellor, University of Hawai'i at Hilo  
Date: 28 July 14

Approved as to form:

By Lawrence S. Okinaga  
Name: Lawrence S. Okinaga, Carlsmith Ball LLP  
Title: Special General Counsel  
Date: 07/28/2014

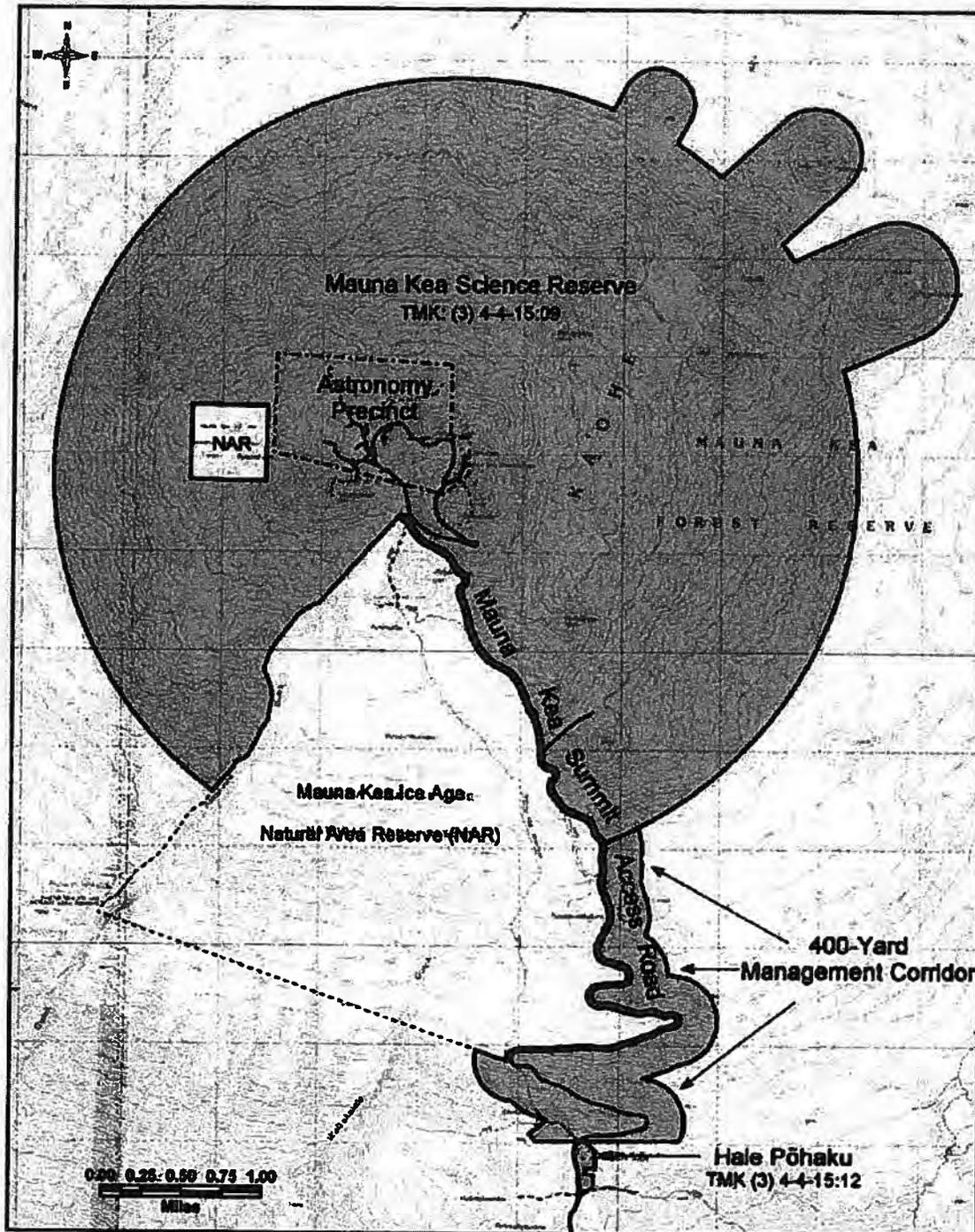
**Attachment A to Scientific Cooperation Agreement Between TIO and UH**

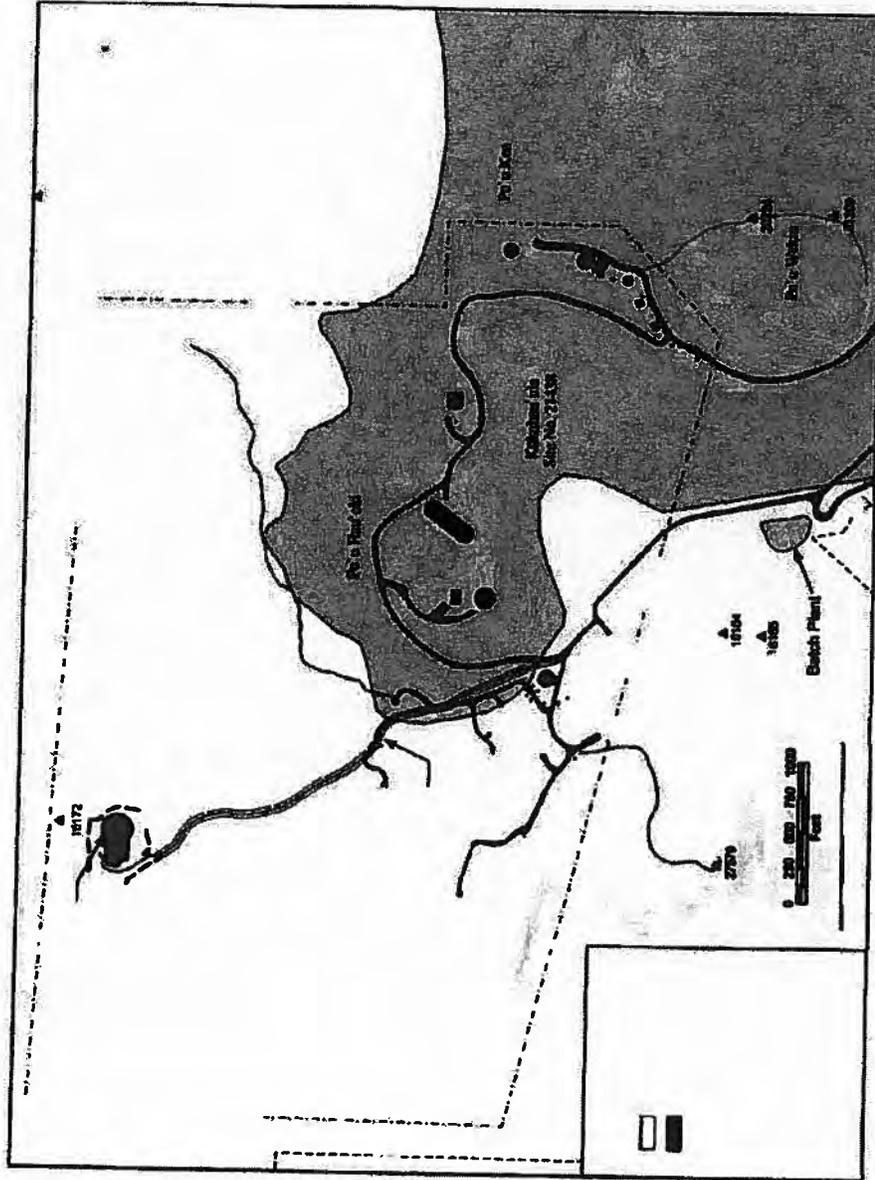
**Sublease**

**(attached)**

Attachment B to Scientific Cooperation Agreement Between TIO and UH

**Access Roads**





BOARD OF LAND AND NATURAL RESOURCES

FOR THE STATE OF HAWAII

IN THE MATTER OF

Case No. BLNR-CC-16-002

A Contested Case Hearing Re Conservation  
District Use Permit (CDUP) HA-3568 for the  
Thirty Meter Telescope at the Mauna Kea  
Science Reserve, Kaohe Mauka, Hamakua  
District, Island of Hawaii, TMK (3) 4-4-  
015:009

**CERTIFICATE OF SERVICE**

**CERTIFICATE OF SERVICE**

I hereby certify that on this day, a copy of the foregoing was duly served on the following parties  
by mail, postage pre-paid to their last known address:

Julie H. China  
Deputy Attorney General  
Department of the Attorney General  
465 South King Street, Room 300  
Honolulu, HI 96813

Counsel for the BOARD OF LAND AND NATURAL RESOURCES

Riki May Amano  
1003 Bishop Street  
Suite 1155, Pauahi Tower  
Honolulu, HI 96813

HEARING OFFICER

Richard N. Wurdeman  
Attorney at Law  
1003 Bishop Street, Suite 720  
Honolulu, HI 96813

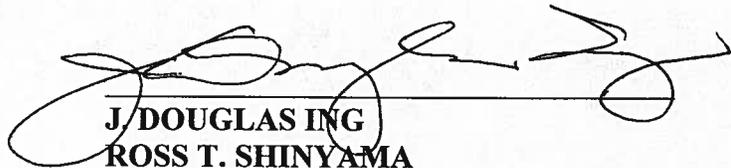
Attorney for MAUNA KEA ANAINA HOU; CLARENCE KUKAUAKAHI CHING;  
FLORES-CASE 'OHANA; DEBORAH J. WARD; PAUL K. NEVES; AND KAHEA: THE  
HAWAIIAN ENVIRONMENTAL ALLIANCE

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State of Hawaii  
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CARLSMITH BALL LLP  
Ian L. Sandison  
Timothy Lui-Kwan  
Arsima A. Muller  
1001 Bishop Street  
American Savings Bank Tower, Suite 2100  
Honolulu, HI 96813

Attorneys for THE UNIVERSITY OF HAWAII AT HILO

DATED: Honolulu, Hawaii, June 17, 2016.



**J/DOUGLAS ING**  
**ROSS T. SHINYAMA**  
**SUMMER H. KAIWE**  
Attorneys for Defendant  
**TMT INTERNATIONAL**  
**OBSERVATORY, LLC**

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A Limited Liability Law Partnership

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Attorneys for Defendant  
**TMT INTERNATIONAL OBSERVATORY, LLC**

BOARD OF LAND AND NATURAL RESOURCES

FOR THE STATE OF HAWAI'I

IN THE MATTER OF

A Contested Case Hearing Re Conservation  
District Use Permit (CDUP) HA-3568 for the  
Thirty Meter Telescope at the Mauna Kea  
Science Reserve, Kaohe Mauka, Hamakua  
District, Island of Hawaii, TMK (3) 4-4-  
015:009

Case No. BLNR-CC-16-002

**MOTION TO HAVE TMT  
INTERNATIONAL OBSERVATORY,  
LLC ADMITTED AS A PARTY IN THE  
CONTESTED CASE HEARING;  
MEMORANDUM IN SUPPORT OF  
MOTION; CERTIFICATE OF SERVICE**

**MOTION TO HAVE TMT INTERNATIONAL OBSERVATORY, LLC  
ADMITTED AS A PARTY IN THE CONTESTED CASE HEARING**

Comes Now, TMT International Observatory, LLC ("TIO), by and through its undersigned counsel, and hereby respectfully moves the Board of Land and Natural Resources or the Hearing Officer for an order admitting TIO as a party to the contested case hearing pursuant to Hawai'i Administrative Rules ("HAR") § 13-1-31(b)(2). The Motion should be granted because:

**EXHIBIT "D"**

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DEPT. OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII

LAND/TRANS. DIV.  
DEPARTMENT OF  
ATTORNEY GENERAL  
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- (1) TIO clearly has a property interest in the subject land as it has a contractual right under its sublease and/or Scientific Cooperation Agreement with the University of Hawai‘i to construct and operate the TMT Project on Mauna Kea and/or is responsible for designing and constructing the TMT Project and fulfilling mitigation measures.
- (2) TIO will be so directly and immediately affected by the contested case hearing that its interest is clearly distinguishable from the general public. The contested case hearing directly and immediately affects TIO’s contractual right and/or responsibility to construct and operate the TMT Project on Mauna Kea. This contractual right or responsibility is unique to TIO and is not shared by the general public. In addition, TIO’s interest is unique from the general public because no one in the general public can design or construct the TMT Project, and no one in the general public stands to lose more if the contested case hearing does not result in the issuance of a Conservation District Use Permit authorizing the construction of the TMT Project to proceed.

This Motion is made pursuant to HAR § 13-1-31(b)(2) and all other applicable rules of practice and procedure, and is based upon the attached Memorandum in Support of Motion, the attached exhibit, and the entire record and files herein.

DATED: Honolulu, Hawaii, April 8, 2016.

A handwritten signature in black ink, appearing to read 'J. Douglas Ing', is written over a horizontal line.

**J. DOUGLAS ING**  
**ROSS T. SHINYAMA**  
**SUMMER H. KAIWE**  
Attorneys for Defendant  
**TMT INTERNATIONAL**  
**OBSERVATORY, LLC**

BOARD OF LAND AND NATURAL RESOURCES

FOR THE STATE OF HAWAI'I

IN THE MATTER OF

Case No. BLNR-CC-16-002

A Contested Case Hearing Re Conservation District Use Permit (CDUP) HA-3568 for the Thirty Meter Telescope at the Mauna Kea Science Reserve, Kaohe Mauka, Hamakua District, Island of Hawaii, TMK (3) 4-4-015:009

**MEMORANDUM IN SUPPORT OF MOTION**

**MEMORANDUM IN SUPPORT OF MOTION**

TMT International Observatory, LLC (“TIO”), by and through its undersigned counsel, hereby submits its Memorandum in Support of its Motion to Have TMT International Observatory, LLC Admitted as a Party in the Contested Case Hearing. The Motion should be granted pursuant to Hawai'i Administrative Rules (“HAR”) § 13-1-31(b)(2) because:

- (1) TIO clearly has a property interest in the subject land as it has a contractual right under its sublease and/or Scientific Cooperation Agreement with the University of Hawai'i to construct and operate the TMT Project on Mauna Kea and/or is responsible for designing and constructing the TMT Project and fulfilling mitigation measures.
- (2) TIO will be so directly and immediately affected by the contested case hearing that its interest is clearly distinguishable from the general public. The contested case hearing directly and immediately affects TIO's contractual right and/or responsibility to construct and operate the TMT Project on Mauna Kea. This contractual right or responsibility is unique to TIO and is not shared by the general public. In addition, TIO's interest is unique from the general public

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State of Hawaii  
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because no one in the general public can design or construct the TMT Project, and no one in the general public stands to lose more if the contested case hearing does not result in the issuance of a Conservation District Use Permit authorizing the construction of the TMT Project to proceed.

I. **BRIEF BACKGROUND**

**Procedural Background**

1. Over seven days in August and September 2011, a contested case hearing regarding the construction of the Thirty-Meter Telescope Project on Mauna Kea (“TMT Project”) was held before a Hearing Officer. TIO was not a party to this earlier contested case proceeding as it was not established until years later in May 2014. See infra.

2. On April 12, 2013, the Board of Land and Natural Resources (“BLNR” or “Board”) entered its Findings of Fact, Conclusions of Law, and Decision and Order (“BLNR’s FOFs/COLs/D&O”) and issued a CDUP for the construction of the TMT Project.

3. Mauna Kea Anaina Hou, et al. (collectively, “Appellants”) appealed BLNR’s FOFs/COLs/D&O to the Third Circuit Court of the State of Hawai‘i. On May 5, 2014, the Third Circuit Court entered its decision and order affirming BLNR’s FOFs/COLs/D&O and entered final judgment in favor of BLNR, et al.

4. The Appellants appealed the Third Circuit Court’s final judgment affirming BLNR’s FOFs/COLs/D&O to the Supreme Court of Hawai‘i. On December 2, 2015, the Hawai‘i Supreme Court issued its opinion in Mauna Kea Anaina Hou v. Board of Land and Natural Resources, SCAP-14-0000873 (December 2, 2015) vacating the Third Circuit Court’s final judgment and the CDUP. The Hawai‘i Supreme Court remanded the case “so that a

contested case hearing can be conducted before the Board or a new hearing officer, or for other proceedings consistent with [the Court's] opinion.” Id. at 6.

5. On December 29, 2015, the Hawai‘i Supreme Court entered its Judgment on Appeal remanding the case to the Third Circuit Court “to further remand to the [Board] so that a contested case hearing can be conducted before the Board or a new hearing officer, or for other proceedings consistent with the opinion.” Judgment on Appeal, dated December 29, 2015 at 2.

6. On February 22, 2016, the Third Circuit Court entered its Order for Remand vacating BLNR’s FOFs/COLs/D&O and “remand[ing] this matter to the Board of Land and Natural Resources so that a contested case hearing can be conducted before the Board or a new hearing officer, or for other proceedings consistent with the opinion.” Order for Remand, dated February 22, 2016 at 2.

#### **TIO, the TMT Project, and the Sublease**

7. TIO is a non-profit organization that was established in May 2014 to construct and operate the TMT Project. TIO’s members include The Regents of the University of California (“UC”), the California Institute of Technology (“Caltech”), the National Institutes of Natural Sciences of Japan, the National Astronomical Observatories of the Chinese Academy of Sciences, the Department of Science and Technology of India, and the National Research Council of Canada. The Association of Universities for Research in Astronomy is a TIO associate. Major funding for the TMT Project has also been provided by the Gordon & Betty Moore Foundation.

8. The TMT Project is a collaboration among UC, Caltech, and the above-identified national governmental research organizations to design, develop, construct, and operate a thirty-meter primary telescope within the Mauna Kea Science Reserve on the Mauna Kea summit in

cooperation with the University of Hawai'i ("University"). It is the only Next Generation Large Telescope or Giant Segmented Mirror Telescope planned in the northern hemisphere or in the United States. It is expected to push the frontier of technology, providing an advanced and powerful ground-based observatory capable of carrying out cutting-edge astronomical research for many years.

9. On July 28, 2014, the University and TIO entered into the Sublease and Non-Exclusive Easement Agreement between TMT International Observatory LLC and The University of Hawaii ("Sublease"). See Item D-8 of the June 13, 2014 Minutes for the Meeting of the Board of Land and Natural Resources; Item D-19 of the June 27, 2014 Minutes for the Meeting of the Board of Land and Natural Resources. Under the Sublease, the University subleased a portion of the Mauna Kea Science Reserve to TIO to construct and operate the TMT Project. TIO as a result has a contractual right under the Sublease to construct and operate the TMT Project on Mauna Kea. TIO has been designing and building the component parts for the TMT Project and is the only entity that can construct and operate the TMT on Mauna Kea.

10. The TMT Project is committed to the stewardship of Mauna Kea and will serve as a model of sustainable astronomy. Recognizing the natural beauty and cultural significance of Mauna Kea, the location and design of the TMT Project minimizes visual and physical impacts of the telescope and incorporates sustainable and energy efficient technologies, as the result of a decade long process involving community consultation, consensus building, design refinement and cooperative problem solving.

11. TIO's members have been working on the actual components of the TMT for at least the last two and a half years. In a truly global effort, and in reliance upon the earlier issued CDUP, work on the TMT has been performed in California, Japan, India, China, and Canada.

12. TIO's members have already made cash and in-kind contributions to the TMT Project valued at more than \$304 million as of December 2015.

## II. DISCUSSION

TIO should be admitted as a party in the contested case hearing as it clearly has a property interest in the subject land as it has a contractual right and responsibility to construct and operate the TMT Project on Mauna Kea. TIO should also be admitted as a party because it will be so directly and immediately affected by the contested case hearing that its interest is clearly distinguishable from the general public.

HAR § 13-1-31(b)(2) provides:

The following persons or agencies **shall be admitted as parties . . . [a]ll persons who have some property interest in the land . . . or who otherwise can demonstrate that they will be so directly and immediately affected by the requested action that their interest in the proceeding is clearly distinguishable from that of the general public shall be admitted as parties upon timely application.**"

Id. (emphases added).

HAR § 13-1-2 defines "Person" to "mean[] as appropriate individuals, partnerships, corporations, associations, or public or private organizations of any character other than agencies." HAR § 13-1-2.

TIO clearly has "some property interest in the land" as the Sublessee under the Sublease. Under the Sublease, the University subleased a portion of the Mauna Kea Science Reserve to TIO to construct and operate the TMT Project. TIO as a result has a contractual right under the Sublease and/or the responsibility to design, construct, and operate the TMT Project on Mauna Kea. TIO's contractual right is a "property interest in the land." On this basis alone, TIO must be admitted as a party to the contested case hearing.

TIO will also be “so directly and immediately affected by the [contested case hearing] that [its] interest in the proceeding is clearly distinguishable from that of the general public.” See supra. There is no question that the contested case hearing directly and immediately affects TIO’s contractual right and obligation to construct and operate the TMT Project on Mauna Kea. Indeed, the contested case hearing squarely challenges TIO’s ability to exercise its contractual right and fulfill its obligations. This contractual right and/or obligation is unique to TIO and is not shared by the general public.

TIO’s interest is also unique from the general public because no one in the general public stands to lose more if the contested case hearing does not result in the issuance of a CDUP authorizing the construction of the TMT Project to proceed. Just as an example, TIO stands to lose time and money expended for permitting, approvals and efforts to construct the TMT Project in Hawaii. TIO also stands to lose the opportunity to build the TMT Project at the best site in the northern hemisphere and to work in collaboration with other observatories at Mauna Kea. Moreover, even if the contested case hearing does ultimately result in the issuance of a CDUP, TIO has an interest unique from the general public in ensuring that the contested case hearing is conducted in an efficient manner.

In sum, TIO should be admitted as a party in the contested case hearing as it clearly has a property interest in the subject land, as well as a contractual right to construct and operate the TMT Project on Mauna Kea. TIO should also be admitted as a party because it will be so directly and immediately affected by the contested case hearing that its interest is clearly distinguishable from the general public. The Motion should be granted and TIO should be admitted as a party in the contested case hearing pursuant to HAR § 13-1-31(b)(2).

**III. CONCLUSION**

Based on the foregoing, TIO respectfully requests that its Motion be granted and TIO be admitted as a party in the contested case hearing pursuant to HAR § 13-1-31(b)(2).

DATED: Honolulu, Hawaii, April 8, 2016.



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**J. DOUGLAS ING**  
**ROSS T. SHINYAMA**  
**SUMMER H. KAIawe**  
Attorneys for Defendant  
**TMT INTERNATIONAL**  
**OBSERVATORY, LLC**

BOARD OF LAND AND NATURAL RESOURCES

FOR THE STATE OF HAWAII

IN THE MATTER OF

Case No. BLNR-CC-16-002

A Contested Case Hearing Re Conservation  
District Use Permit (CDUP) HA-3568 for the  
Thirty Meter Telescope at the Mauna Kea  
Science Reserve, Kaohe Mauka, Hamakua  
District, Island of Hawaii, TMK (3) 4-4-  
015:009

**CERTIFICATE OF SERVICE**

**CERTIFICATE OF SERVICE**

I hereby certify that on this day, a copy of the foregoing was duly served on the following parties  
by mail, postage pre-paid to their last known address:

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Department of the Attorney General  
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HEARING OFFICER

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Attorney for MAUNA KEA ANAINA HOU; CLARENCE KUKAUAKAHI CHING;  
FLORES-CASE 'OHANA; DEBORAH J. WARD; PAUL K. NEVES; AND KAHEA: THE  
HAWAIIAN ENVIRONMENTAL ALLIANCE

Received  
Office of Conservation and Coastal Lands  
Department of Land and Natural Resources  
State of Hawaii  
Jun 17 2022 16:07

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Timothy Lui-Kwan  
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Honolulu, HI 96813

Attorneys for THE UNIVERSITY OF HAWAII AT HILO

DATED: Honolulu, Hawaii, April 8, 2016.

A handwritten signature in black ink, appearing to read "J. Douglas Ing", is written over a horizontal line. The signature is stylized and cursive.

**J. DOUGLAS ING**  
**ROSS T. SHINYAMA**  
**SUMMER H. KAIWE**  
Attorneys for Defendant  
**TMT INTERNATIONAL**  
**OBSERVATORY, LLC**

County of Hawai'i

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

GRADING PERMIT NO. 6133

Parcel: ✓ # 3653  
REC. #: 332567  
Fee: \$ 106.59  
Check only – payable to:  
County Director of Finance

Owner: TIO International Observatory, LLC Address: 100 W. Walnut St., Suite 300 Phone: (626) 395-1654  
Pasadena, CA 91105

Civil Eng. / Surveyor: M3 Engineering & Technology Corp. Address: 2051 W. Sunset Rd., Suite 100 Phone: (520) 293-1488  
License No.: Daniel H. Neff, License No. C-7714 Tucson, AZ 85704

Contractor: Goodfellow Bros., LLC Address: 68-1244 Waikoloa Rd., PO Box 383729 Phone: (808) 887-6511  
License No.: CT-36307 Waikoloa, HI 96738

Location: Mauna Kea Loop Road Tax Map Key: (3) -4-4-15:9, Hamakua District Cut (CY): Approx. 42,795 CY

Parcel Area (acre): 11,216 Acres Area to be Graded (acre): 6.9 Acres Disposal Site: Mauna Kea Stockpile Site (No Export)

Start Date: February 19, 2019 6/4/19 Completion Date: February 19, 2020 (est.) 5/31/20 Fill (CY): Approx. 26,640 CY  
(minimum 2 working days after issuance date) 5/31/20 Borrow Site: TMT Disturbed Area (No Import)

Remarks: \_\_\_\_\_

Submit to: DLNR.Intake.SHPD@Hawaii.gov

1. STATE DLNR – HISTORIC PRESERVATION DIVISION

Approved:

Received By: \_\_\_\_\_ Date: \_\_\_\_\_

LOG NO: 2018-02990  
DOC NO: 19055158

Date: \_\_\_\_\_

2. PLANNING DEPARTMENT

Approved:

Received By: \_\_\_\_\_ Date: \_\_\_\_\_

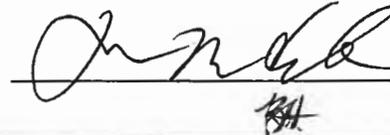


Date: 5/31/19

3. DEPARTMENT OF PUBLIC WORKS

Approved for Permit Issuance:

Received By: Oh Date: 12/1/18



Date: 5/31/19

3/6/2020

I hereby certify that ~~as requested above~~ will conform to Chapter 10 of the Hawai'i County Code.

Owner: JOSE TROIAN, AGENT FOR THE OWNER Date: Dec. 7, 2018

Return to the Department of Public Works, Engineering Division, upon completion of work.

Certification Accepted by: \_\_\_\_\_  
(DPW inspector / engineer) Lisa

Date: \_\_\_\_\_  
Received  
Office of Conservation and Coastal Lands  
Department of Land and Natural Resources  
State of Hawaii  
Jun 17 2022 16:07