

PROGRAMMATIC AGREEMENT
AMONG
THE NATIONAL SCIENCE FOUNDATION,
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION, AND
THE NEW MEXICO STATE HISTORIC PRESERVATION OFFICER
REGARDING
POTENTIAL CHANGES TO
SACRAMENTO PEAK OBSERVATORY OPERATIONS

WHEREAS, the National Science Foundation (NSF) Directorate for Mathematical and Physical Sciences, Division of Astronomical Sciences (AST) has identified the need to divest several facilities from its portfolio to maintain the balance of assets needed to deliver cutting-edge science capability for the community and the nation. The Sacramento Peak Observatory in Sunspot, Otero County, New Mexico, is one of the facilities identified for divestment;

WHEREAS, the Sacramento Peak Observatory is located within the Lincoln National Forest; all of the structures and most of the buildings are NSF property (with the exception of the post office and the fire station, which are privately owned), the land under those structures is public land owned by the United States government and managed by the United States Forest Service (USFS), and the Sacramento Peak Observatory is operated pursuant to a Land Use Agreement between NSF and the USFS; the National Solar Observatory (NSO) is a federally funded research and development center (FFRDC) that currently operates the Sacramento Peak Observatory on behalf of NSF;

WHEREAS, the decision regarding the potential changes to operations at the Sacramento Peak Observatory with reduced NSF funding is considered a federal undertaking and triggers compliance with Section 106 (54 United States Code [U.S.C.] Section [§] 306108) of the National Historic Preservation Act of 1966, as amended (54 U.S.C. §§ 300101, *et seq.*) (NHPA), and the NHPA's implementing regulations, "Protection of Historic Properties" (Title 36 *Code of Federal Regulations* (C.F.R.) Part 800);

WHEREAS, the Sacramento Peak Observatory is eligible for listing in the National Register of Historic Places (NRHP) as a historic district with 63 contributing resources, including the Richard B. Dunn Solar Telescope (DST) (see Attachment A for list of the contributing resources);

WHEREAS, the demolition of historic properties that contribute to the NRHP-eligible historic district would result in a finding of adverse effect under Section 106;

WHEREAS, on August 24, 2016, NSF formally initiated Section 106 consultation with New Mexico's State Historic Preservation Office (SHPO);

WHEREAS, on December 2, 2016, NSF initiated Section 106 consultation with the following Native American tribes: Mescalero-Apache Nation, Hopi Tribe, Pueblo of Zuni, and Fort McDowell Yavapai Nation;

WHEREAS, on December 12, 2016, the Hopi Tribe responded that no historic properties significant to them were affected by the project; the Pueblo of Zuni responded on May 18, 2017, that they wished to continue to receive information on the project; no other tribal responses were received;

WHEREAS, NSF contacted the Kiowa Tribe of Oklahoma via email and telephone in March and April 2017 to ascertain their interest in participating but received no response; thus, no further consultation with the Kiowa Tribe was done;

WHEREAS, the USFS was invited to participate as an Invited Signatory; additional Consulting Parties (Apache Point Observatory, NSO, Kevin Reardon, and Mr. Keith Morin) were identified for this undertaking and invited to participate in this Section 106 consultation process;

WHEREAS, NSF, in collaboration with the USFS and in consultation with the SHPO, established the area of potential effects (APE) as defined at 36 C.F.R. § 800.16(d), included as Attachment B, and the SHPO agreed with the APE in a letter dated July 11, 2017;

WHEREAS, the *Proposed Changes to Sacramento Peak Observatory Operations: Historic Properties Assessment of Effects* (CH2M HILL, 2017) was prepared on behalf of NSF and provided to the SHPO and the other Consulting Parties in October 2017;

WHEREAS, on November 21, 2017, the SHPO agreed to continue consultation and commence with the preparation of this Programmatic Agreement (PA);

WHEREAS, in accordance with 36 C.F.R. § 800.6(a)(1)(i)(C), NSF provided the Advisory Council on Historic Preservation (ACHP) the required documentation and invited it to participate in its Section 106 consultation process; the ACHP notified NSF that it would participate in the consultation via a letter dated December 22, 2017;

WHEREAS, NSF relies on formal processes within the scientific community (e.g., National Academies decadal surveys, senior-level reviews, and other advisory committees subject to the Federal Advisory Committee Act) to provide input on science priorities, and these formal reviews have repeatedly recommended divestment from the telescopes located at the Sacramento Peak Observatory. The Portfolio Review Committee, a subcommittee of NSF Mathematical and Physical Sciences Advisory Committee composed solely of external members of the scientific community, was charged with recommending a balanced portfolio to maximize the science recommended by National Academy of Sciences surveys of the field, which are carried out every decade. To enable NSF to better address decadal survey science, the resulting Portfolio Review Committee Report (NSF AST, 2012), released in August 2012, recommended the divestment of a number of telescopes from the federal portfolio. With respect to the Sacramento Peak Observatory, the report recommended maintaining full operations of the Sacramento Peak Observatory's DST until approximately two years prior to the completion of the Daniel K. Inouye Solar Telescope (DKIST), which is being constructed in Hawai'i and will begin scientific operations in 2020;

WHEREAS, based upon input from the scientific community, NSF developed preliminary alternatives to address changes to operations resulting from reduced NSF funding for the Sacramento Peak Observatory;

WHEREAS, given the range of potential outcomes associated with this undertaking, as well as a lack of information regarding whether any potential collaborator(s)/interested parties are identified (and any specific needs of any new collaborator(s)/interested parties), this PA has been prepared in compliance with 36 C.F.R. § 800.14(b)(1)(ii) to determine appropriate measures to cover the range of potential outcomes;

WHEREAS, technical terms related to the NHPA are included in Attachment C, "References and Definitions," along with references for citations in the PA and links to those references;

WHEREAS, NSF has conducted its Section 106 consultation process concurrently with, but separate from, its National Environmental Policy Act (42 U.S.C. §§ 4321, *et seq.*) (NEPA) review process;

WHEREAS, the undertaking could result in four possible outcomes, which are currently the subject of NSF's NEPA review, including continued science-and education-focused operations by interested parties with reduced NSF funding; transition to partial operations by interested parties with reduced NSF funding; mothballing of facilities; and demolition and site restoration (although if the USFS identifies for itself or others an interest in retaining any of the buildings, NSF would transfer title and all future maintenance responsibilities for those buildings to the USFS);

WHEREAS, under the proposed outcomes involving continued science-and education-focused operations (whether in full or in part), NSF would continue to oversee the management and operations of the Sacramento Peak Observatory and would, therefore, continue to be the entity responsible for approving any future activities requiring NSF's compliance with Section 106;

WHEREAS, NSF's preliminary alternatives were published in the *Federal Register* on July 5, 2017, as part of NSF's scoping process under NEPA. The notice also stated NSF's intention to initiate consultation under Section 106 of the NHPA and to evaluate potential effects on the Sacramento Peak Observatory, and provided dates to specifically initiate public involvement under Section 106 per 36 C.F.R. § 800.2(d). Letters to potentially interested parties, agencies, and New Mexico elected officials were also sent. Notification of NSF's NEPA and Section 106 processes was also given through social media announcements, website updates on the AST website, scientific digests and blogs, and newspaper public notices. A public scoping meeting was held in Alamogordo, New Mexico, on July 20, 2016, to discuss the preliminary alternatives and NSF's compliance with both NEPA and the NHPA, seek input from the public on the preliminary alternatives, and identify Consulting Parties to participate in NSF's Section 106 consultation process under the NHPA. Two individuals informed NSF that they wished to participate in NSF's Section 106 consultation process as Consulting Parties at that time and one additional individual requested to participate in NSF's process as a Consulting Party after the DEIS was issued;

WHEREAS, because of the presence of the NRHP-eligible historic district, NSF has determined, in consultation with the SHPO and ACHP, that all four possible outcomes for implementing the undertaking have the potential to result in adverse effects on historic properties due to the potential demolition of some or all components of the NRHP-eligible historic district;

WHEREAS, NSF recognizes that two of the potential outcomes – (1) continued science-and education-focused operations by interested parties with reduced NSF funding and (2) transition to partial operations by interested parties with reduced NSF funding – can be implemented only if a collaborator(s) comes forward with viable plans to provide additional non-NSF funding in support of their science- and education-focused operations; if implementation of either of these two potential outcomes is selected by NSF but a determination is later made that the selected outcome is ultimately not feasible, NSF could select one or both of the remaining potential outcomes analyzed in the NEPA process (mothballing of facilities and/or demolition and site restoration), unless the USFS identifies an interest in retaining any of the buildings or structures for itself or others;

WHEREAS, NSF has consulted with the SHPO, the ACHP, the USFS, and the other Consulting Parties on ways to avoid, minimize, and/or mitigate the adverse effects that the proposed undertaking could have on historic properties pursuant to the regulations implementing Section 106 of the NHPA, 36 C.F.R. Part 800;

WHEREAS, NSF provided the public with an opportunity to express their views on resolving potential adverse effects during the NEPA public scoping and DEIS meetings and associated public comment periods; all comments received from the public on cultural resources during the NEPA process were considered in the development of this PA;

WHEREAS, NSF consulted with the SHPO, ACHP, USFS, and the other Consulting Parties in the development of this PA; the SHPO and ACHP are Signatories herein; the USFS is an Invited Signatory; the other Consulting Parties have been asked to execute this PA as Concurring Parties;

WHEREAS, to keep the Consulting Parties informed and to communicate the process for implementing the Stipulations in this PA, NSF has committed to provide the Consulting Parties with a final copy of this PA for their records;

NOW, THEREFORE, NSF, the SHPO, ACHP, and USFS agree that NSF will ensure that the following Stipulations are implemented to address the potential adverse effects of the proposed undertaking on historic properties and agree that these Stipulations will govern the undertaking and all of its parts.

STIPULATIONS

NSF will ensure that the following measures are carried out:

I. Preservation Principles

- A. To the extent that science- and education-focused operations continue, the following stipulations shall apply:
1. **Avoidance of Adverse Effects.** NSF will make every effort to avoid adverse effects on buildings and structures that contribute to the NRHP-eligible historic district by encouraging any new collaborator(s) to use as many contributing resources as practicable, provided that such use facilitates science- and education-focused operations. If the collaborator(s) does not intend to use a contributing resource and recommends demolition of any such resource, NSF will first consider mothballing in accordance with Stipulation I.B.2., below, for possible future use prior to making any decision to demolish a contributing resource. If NSF, after considering mothballing, ultimately decides to demolish a contributing resource, NSF shall follow the requirements set forth in I.B.1., I.B.3., and I.B.4., below. NSF will remain responsible for Section 106 compliance for undertakings involving the buildings and structures as long as it retains ownership of them. USFS will remain responsible for Section 106 compliance for any activity in the future that involves ground disturbance/archaeology.
 2. **Training.** Key facility staff of any new collaborator(s) will attend a one-time historic preservation awareness training to encourage awareness of the history of the Sacramento Peak Observatory and its context and significance, to familiarize staff with activities that would require NSF's compliance with Section 106, to understand the role and responsibilities of USFS as the managers of the public land at the site, and to minimize the potential for adverse effects to historic properties. Such training, which will be provided by NSF via a qualified historic preservation professional who is familiar with, and knowledgeable about, the Sacramento Peak Observatory, will occur within 180 calendar days (or as soon as practicable thereafter) of the commencement of operations by the collaborator(s). NSF will provide the SHPO and USFS with an opportunity to comment on the content of such training.
- B. To the extent that demolition or mothballing of any historic properties occurs, or transition of Sacramento Peak Observatory to USFS for other uses occurs, the following stipulations shall apply:
1. **Required Documentation Prior to Change in Disposition of any Historic Property.** Prior to a change in disposition (whether it be demolition or transition to USFS ownership for other uses) of any historic property, NSF will ensure, in addition to the New Mexico state inventory forms previously provided to the SHPO, the preparation of a National Register nomination form, in accordance with the National Register Bulletin, "Guidelines for Completing National Register of Historic Places Form" for the historic district within the APE (NR Form). NSF shall comply with the following process in preparing the NR Form:
 - a. Within 90 days following issuance of its final agency action regarding changes to operations at Sacramento Peak Observatory, NSF will prepare a draft outline of the contents of the NR Form;
 - b. After it is completed, NSF shall provide the draft outline of the NR Form to the SHPO and USFS for a 30-day review and comment period;
 - 1) Following the close of the 30-day review and comment period referenced in Stipulation I.B.1.b., above, NSF shall address any comments received from the SHPO and USFS and

prepare a final NR Form; and

- 2) NSF shall provide a digital copy of the final NR Form to the SHPO and USFS upon completion of the document. Figures, maps, photos, and any other attachments must be provided as separate files with a resolution of 2,000 X 3,000 pixels at 300 dots-per-inch resolution or greater.
2. **Mothballing in Accordance with Historic Preservation Standards.** In the event NSF identifies the need to mothball historic properties with the intent that science- and education-focused operations would resume within 3-5 years, NSF will follow the guidance in the NPS Preservation Brief 31, "*Mothballing Historic Buildings*" and *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*, as appropriate, with implementation of the following measures:
 - a. NSF shall prepare the NR Form described in Stipulation I.B.1., above; and
 - b. To avoid an adverse effect, NSF shall ensure that a cyclical maintenance plan that includes repairs, as needed, is prepared and implemented.
 3. **NSF Funding of an Interpretive Exhibit.** In the event NSF issues a final agency decision regarding changes to operations at Sacramento Peak Observatory in which demolition of a contributing resource is included, NSF agrees to the following:
 - a. In the event of demolition of the entire Sacramento Peak Observatory, NSF will contribute a maximum of \$100,000.00 toward an interpretive exhibit and/or signage to tell the story of the Sacramento Peak Observatory. The interpretive exhibit, which could be displayed at a museum such as the New Mexico Space History Museum, and/or signage, would be based on the NR Form required under Stipulation I.B.1., above, and would be done in consultation with the SHPO and USFS; or
 - b. If the USFS requests retention of any contributing resources for itself or others, Stipulation I.B.3.a., above, shall not apply and NSF will determine, following consultation with the SHPO and USFS, what the appropriate contribution for an interpretive exhibit and/or signage would be, if any, but under no circumstances would the contribution exceed \$100,000.
 4. **Effort to Reuse or Donate Historically Significant Equipment and Artifacts.** In the event that NSF issues a final agency action regarding changes to operations at Sacramento Peak Observatory in which demolition, transfer, or mothballing of historic properties occurs, NSF will identify any historically significant equipment and artifacts associated with historic properties that will not be repurposed for further scientific or educational use, and if feasible, NSF will:
 - a. Contact relevant scientific/educational institutions for possible reuse of the equipment and artifacts; or
 - b. Contact an appropriate museum to determine if any of the equipment and/or artifacts can be donated to the museum's collection.

II. General Provisions

- A. **Documentation of Actions Demonstrating Compliance with this PA.** So long as NSF remains the owner of the Sacramento Peak Observatory and provided this PA remains in effect, NSF will submit updates every 6 months, beginning 6 months following the effective date of this PA, regarding the progress of compliance with this PA to the SHPO, the ACHP, and the USFS. If the SHPO or USFS has any concerns regarding the implementation of this PA, Section II.H. Dispute Resolution, herein, may

be used to address those concerns. To keep the public and Consulting Parties apprised of the status of the implementation of the Stipulations in this PA, NSF will maintain a status report on the AST website with relevant information.

- B. If a Potential Outcome Is Selected by NSF in a Final Agency Action, but Implementation of It Is Later Determined Infeasible.** If one of two potential outcomes (continued science- and education-focused operations by collaborator(s)/interested parties with reduced NSF funding, or the transition to partial operations by interested parties with reduced NSF funding) is selected by NSF in a final agency action and a determination is subsequently made that the selected outcome is ultimately not feasible to implement, NSF will notify the SHPO, the ACHP, and the other Consulting Parties and will follow the provisions of I.B. of this PA.
- C. Unanticipated Effects.** If unanticipated effects on historic properties occur during implementation of the undertaking, NSF will, in compliance with 36 C.F.R. § 800.13(b)(3), determine actions that it can take to resolve potential adverse effects and notify, via phone and email, the SHPO, the USFS, and, as appropriate, the other Consulting Parties within two business days of NSF's awareness of such effects. Any such notification would describe the property, the unanticipated effect, and proposed actions to resolve any adverse effects. After receipt of such notification, the SHPO, the USFS, and the other Consulting Parties will respond with any comments within two business days of the notification by phone or email. NSF will consider any recommendations received regarding proposed actions, and then determine and implement appropriate actions. NSF will provide the SHPO, the USFS, and the other Consulting Parties, as appropriate, with a report of the actions when they are completed. This Stipulation shall not apply if NSF is no longer the owner of the Sacramento Peak Observatory.
- D. Post-agreement Discoveries.** If NSF continues to own the Sacramento Peak Observatory and it is managed by a collaborator(s)/interested party, all unanticipated discoveries of historic properties and human or burial remains within the APE revealed during any activity associated with implementation of the proposed undertaking will be addressed in the following manner:
1. The entity carrying out activities that result in unanticipated discoveries of historic properties will promptly notify NSF, who will notify the SHPO, the USFS (specifically, the Forest Archeologist for the Lincoln National Forest), and the other Consulting Parties, as appropriate, by phone or email of the discovery within two business days of NSF's awareness of the discovery.
 2. If NSF determines, in consultation with the SHPO, that the discovery is eligible for listing in the NRHP, NSF will initiate consultation with the USFS and the other Consulting Parties to draft a plan with measures that will avoid, minimize, and/or mitigate adverse effects. If an agreement is reached regarding such a plan, NSF will implement the plan. If the discovery is made during demolition activities (if any), demolition in the affected area must cease until the discovery process in this Stipulation has been concluded either through a finding that the property is not eligible for listing in the NRHP or through finalization of the plan referenced herein.
 3. If NSF, the SHPO, the USFS, and the other Consulting Parties cannot reach agreement regarding the development of a treatment or mitigation plan, then the matter will be referred to the ACHP for guidance. NSF will consider the ACHP's guidance in reaching its final decision regarding implementation of the plan.
 4. If any previously unidentified human or burial remains are discovered during implementation of the undertaking, the contractor/collaborator(s) will immediately cease any ground-disturbing work and promptly notify NSF. NSF will then notify the SHPO, the USFS (specifically, the Forest Archeologist for the Lincoln National Forest), and the other Consulting Parties, as appropriate, of

the discovery by phone or email within two business days of NSF's awareness of the discovery. All parties will adhere to applicable state and federal laws regarding the treatment of human or burial remains.

E. Response to Emergency. In the event NSF proposes an emergency undertaking as an essential and immediate response to a disaster or emergency declared by the President, or the Governor of New Mexico, or in response to another immediate threat to life or property, the following process will be followed:

1. NSF will notify the SHPO via telephone and email within two business days of commencing the emergency undertaking.
2. NSF will include a summary of all emergency undertakings in the status report referenced in Stipulation II.A., above.
3. This Stipulation shall apply only to undertakings that are implemented within 30 calendar days after the disaster or emergency has been formally declared by the appropriate authority, although NSF may request an extension of the period of applicability from the ACHP prior to the expiration of the 30 calendar days.
4. Immediate rescue and salvage operations conducted to preserve life or property are exempt from the provisions of Section 106 and this PA.

F. Meetings or Conference Calls. Meetings or conference calls regarding the undertaking and/or implementation of the Stipulations in this PA may be requested at any time by the Signatories for the duration of this PA.

G. Transfer out of NSF Ownership. If the Sacramento Peak Observatory is transferred out of NSF ownership, the terms of this PA shall not apply after transfer.

H. Dispute Resolution

1. **Signatories.** In the event one of the Signatories objects to the manner in which any term of this PA is implemented, the following dispute resolution process will be followed:
 - a. The objecting Signatory will notify all other Signatories to this PA, in writing, of the objection or disagreement, request written comments on the objection or disagreement within 10 business days following receipt of such notification, and then proceed to consult with the Signatories to resolve the objection. If at any time during consultation NSF determines that the objection or disagreement cannot be resolved through consultation, NSF will forward all documentation relevant to the dispute to the SHPO, or if the objection is raised by the SHPO, NSF will forward all documentation relevant to the dispute to the ACHP. Within 30 calendar days after receipt of all pertinent documentation, the SHPO or, as appropriate, the ACHP, will provide NSF with comments and recommendations, which NSF will consider in reaching its final decision regarding the dispute. Any comment provided by the SHPO or, as appropriate, the ACHP, will be understood to pertain only to the subject of the dispute. All other actions under this PA that are not the subject of the dispute will remain unchanged.
 - b. Unless all Signatories agree that the dispute warrants a cessation of work, neither NSF nor its collaborator(s)/interested parties will be required to cease work on the proposed undertaking while the dispute is being reviewed.
2. **The Public and Concurring Parties.** At any time during the implementation of the Stipulations set forth in this PA, any member of the public, including any Consulting Party who has decided

not to sign this PA as a Concurring Party, and any Concurring Party may continue to participate in the Section 106 consultation process as follows:

- a. Any member of the public may raise an objection to NSF pertaining to the treatment of a historic property associated with implementation of the proposed undertaking, provided that title to the Sacramento Peak Observatory buildings and structures is retained by NSF. In the event such an objection is raised by a member of the public, NSF will consult with the SHPO regarding the objection, and following such consultation, will provide the objecting member of the public with a decision on the objection. If NSF and the SHPO are unable to resolve the objection, they will consult with the ACHP. NSF will consider any recommendation on the objection provided by the ACHP before making its final decision on the matter. NSF will communicate its final decision to the objecting member of the public and the SHPO.
- b. Any Concurring Party may raise an objection to NSF pertaining to the treatment of a historic property associated with implementation of the proposed undertaking. In the event such an objection is raised by a Concurring Party, NSF and the SHPO will consult regarding how to resolve the objection and following such consultation, will provide the objecting Concurring Party with a decision on the objection. If NSF and the SHPO are unable to resolve the objection, they will consult with the ACHP. NSF will consider any recommendation on the objection provided by the ACHP before making its final decision on the matter. NSF will communicate its final decision to the objecting Concurring Party and the SHPO.

If an objection is made pursuant to either Stipulation II.H.1. or II.H.2., NSF, in consultation with the SHPO, will determine whether the objection warrants a cessation of work on the proposed undertaking while the objection is being reviewed.

This Stipulation (Stipulation II.H.) shall not apply if NSF is no longer the owner of the Sacramento Peak Observatory when an objection is raised.

- I. **Professional Qualifications.** All work carried out pursuant to this PA will be developed and/or implemented by or under the direct supervision of a person or persons meeting or exceeding the minimum professional qualifications, appropriate to the affected resource(s), listed in the *Secretary of the Interior's Professional Qualification Standards* (36 C.F.R. Part 61, Appendix A) and amended in 1992.
- J. **Electronic Copies.** NSF will provide the SHPO, the ACHP, the USFS, and each of the other Consulting Parties with one legible, full-color, electronic copy of the fully executed PA and its Attachments no more than 30 calendar days after full execution. If the electronic copy is too large to send via email, NSF will provide each Consulting Party with a copy of the executed PA via a CD or in any reasonable medium available.
- K. **Amendment.** Any Signatory may request that this PA be amended by informing NSF in writing of the reason for the request and providing the proposed amendment language. After receiving the request, NSF will notify all Consulting Parties of the proposed amendment and consult to reach an agreement. If agreed upon, the amendment would be effective on the date a copy signed by all the Signatories is filed by NSF with the ACHP.
- L. **Expiration.** If NSF retains ownership of the Sacramento Peak Observatory buildings and structures, this PA will expire 10 years from the Effective Date of this PA as defined in Stipulation II.O. herein. If Sacramento Peak Observatory is transferred out of NSF ownership, this PA shall expire upon the completion of the terms in Stipulation I.B.1. Prior to such expiration date,

NSF may consult with the SHPO, the ACHP, and the USFS to reconsider the terms of this PA and amend it in accordance with Stipulation II.K. If unresolved issues remain within two years of the expiration date of this PA, NSF will at that time consult with the SHPO and the ACHP regarding the progress of implementation of this PA and consider the appropriateness of developing a subsequent agreement or amendment to the PA.

- M. Compliance with Applicable Law and Anti-Deficiency Act Provision.** This PA will be carried out in a manner consistent with all applicable federal and state laws. No provision of this PA will be implemented in a manner that would violate the Anti-Deficiency Act. NSF shall make reasonable and good faith efforts to secure the necessary funds to implement this PA in its entirety. All obligations on the part of NSF will be subject to the availability and allocation of appropriated funds for such purposes. Nothing in this PA may be construed to obligate NSF to any current or future expenditure of resources in advance of the availability of appropriations. Should NSF be unable to fulfill the terms of this PA due to funding constraints or priorities, NSF will immediately notify and consult with the SHPO, the ACHP, and the USFS to determine whether to amend or terminate this PA.
- N. Termination.** If any Signatory to this PA determines that the terms of this PA will not or cannot be carried out, that Signatory will immediately consult with the other Signatories to develop an amendment to this PA pursuant to Stipulation II.K. If this PA is not amended following that consultation, then it may be terminated by any Signatory through written notice to the other Signatories. Within 30 calendar days following any such termination and prior to work continuing on the undertaking, NSF will notify the SHPO, the ACHP, and the USFS whether it will initiate consultation to execute a new PA under 36 C.F.R. § 800.14(b)(1)(ii) or request and consider the comments of the ACHP under 36 C.F.R. § 800.7 and proceed accordingly.
- O. Effective Date.** This PA will be executed in counterparts, with a separate page for each Signatory, and NSF will ensure that each Signatory is provided with a fully executed copy. This PA will become effective upon obtaining the signatures of NSF, the SHPO, the ACHP, and the USFS.

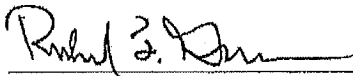
Execution of this PA by NSF, the SHPO, the ACHP, and the USFS is evidence that NSF has taken into account the effects of this proposed undertaking on historic properties and has afforded the ACHP with an opportunity to comment on the proposed undertaking.

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Signatory:

National Science Foundation



Richard F. Green, Ph.D., Division Director
Division of Astronomical Sciences

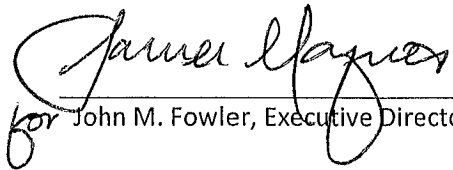
Date 3 Aug 2018

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Signatory:

Advisory Council on Historic Preservation


for John M. Fowler, Executive Director

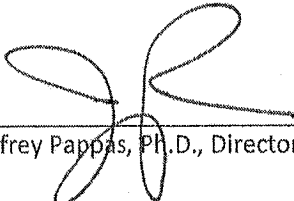
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Signatory:

New Mexico State Historic Preservation Office



Jeffrey Pappas, Ph.D., Director

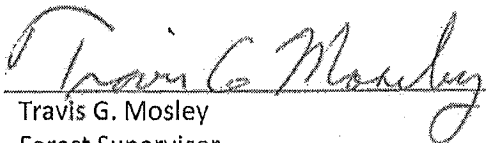
Date 8/2/18

INVITED SIGNATORY PAGE

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Invited Signatory:

United States Forest Service



Travis G. Mosley
Forest Supervisor
Lincoln National Forest

Date

8/3/18

CONCURRING PARTY SIGNATURE PAGE

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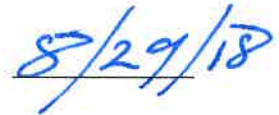
Concurring Party:

Association of Universities for Research in Astronomy



Mattias Mountain, Ph.D., President

Date

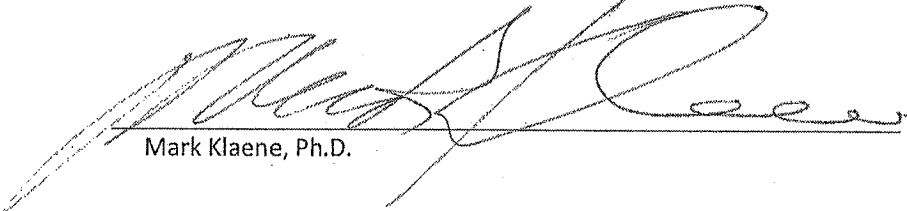


CONCURRING PARTY SIGNATURE PAGE

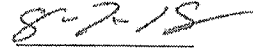
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SACRAMENTO PEAK OBSERVATORY OPERATIONS

Concurring Party:

Apache Point Observatory


Mark Klaene, Ph.D.

Date



CONCURRING PARTY SIGNATURE PAGE

PROGRAMMATIC AGREEMENT
AMONG
THE NATIONAL SCIENCE FOUNDATION,
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION, AND
THE NEW MEXICO STATE HISTORIC PRESERVATION OFFICER
REGARDING
POTENTIAL CHANGES TO
SACRAMENTO PEAK OBSERVATORY OPERATIONS

Concurring Party:



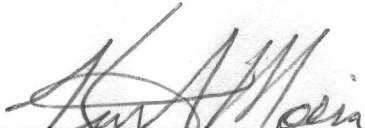
Kevin Reardon, Ph.D.

Date 03 August, 2018

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Concurring Party:



Mr. Keith Morin

Date 8/20/18

Attachment A
Evaluated Resources

Evaluated Architectural Resources at Sacramento Peak Observatory

Surveyed Building/Structure Name (Building Number) ¹	Year Built	Description	Function	Contributing to NRRHP ² -eligible Historic District?
Grain Bin Dome (3002)	1950	First telescope dome built at Sac Peak; 25-foot grain silo, converted from a grain bin from a Sears and Roebuck catalogue	Solar telescope (not in active use)	Contributing
John W. Evans Solar Facility [housed in the Big Dome] (3000)	1952	30-foot dome on concrete walls, concrete block building adjacent and a "slide-off" building on raised tracks; contains a 16-inch coronagraph and a 12-inch coelostat	Solar telescope (not in active use)	Contributing ³
Patrol Dome (ISOON Building) (3009)	1960-1963	20-foot dome on concrete wall attached with a one-story hyphen to the Hilltop Dome	Solar telescope (not in active use)	Contributing
Hilltop Dome (3040)	1963	Concrete block laboratory building attached to the Patrol Dome	Solar telescope (not in active use)	Contributing
Richard B. Dunn Solar Telescope (DST); formerly Vacuum Tower Telescope (3042)	1969	136-foot tower, 220-foot shaft below ground, concrete walls and an attached, two-story, concrete laboratory building with a thermal plastic vinyl roof	Solar telescope	Contributing ³
Visitor Officers Quarters (VOQ) (3013)	1952	Two-story wood frame apartment building with 5 apartments	Residential	Contributing
Redwood Family Housing (3014ns)	1952	One-story wood frame duplex	Residential	Contributing
Redwood Family Housing (also known as Director's House) (3015)	1952	One-story wood frame ranch house	Residential	Contributing
Redwood Family Housing (3016ns)	1952	One-story wood frame duplex	Residential	Contributing
Redwood Family Housing (3017)	1952	One-story wood frame ranch house	Residential	Contributing
Redwood Family Housing (3018)	1952	One-story wood frame ranch house	Residential	Contributing
Redwood Family Housing (3019)	1952	One-story wood frame ranch house	Residential	Contributing
Redwood Family Housing (3020ns)	1952	One-story wood frame duplex	Residential	Contributing
Redwood Family Housing on Hound Dog Hill (3044)	1958	One-story wood frame ranch house	Residential	Contributing

Redwood Family Housing on Hound Dog Hill (3045)	1958	One-story wood frame ranch house	Residential	Contributing
Redwood Family Housing on Hound Dog Hill (3046)	1958	One-story wood frame ranch house	Residential	Contributing
Redwood Family Housing on Hound Dog Hill (3047)	1958	One-story wood frame ranch house	Residential	Contributing
Redwood Family Housing on Hound Dog Hill (3048)	1958	One-story wood frame ranch house	Residential	Contributing
Redwood Family Housing on Hound Dog Hill (3049)	1958	One-story wood frame ranch house	Residential	Contributing
Relocatable Housing (3061)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3062)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3063)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3064)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3065)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3066)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3067)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3068)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3069)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3070) (also known as the Recreation House)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3071)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3072)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3073)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3074)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3075)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3076)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3077)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3079)	1966	One-story, "foldable," ranch house	Residential	Contributing

Relocatable Housing (3081)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3083)	1966	One-story, "foldable," ranch house	Residential	Contributing
Relocatable Housing (3085)	1966	One-story, "foldable," ranch house	Residential	Contributing
Main Lab (3004)	1952	Irregular plan, one-story, concrete block building with a two-story, concrete block addition	Office space, computing facility, library	Contributing
Machine/Electronics Shop (3005)	1953	Rectangular plan, metal building	Machine/electronics shop	Contributing
Welding Shop/Library (3006)	1962	Rectangular plan, metal building	Welding shop/library annex	Contributing
Storage (Quonset Hut) (3008)	1951	Quonset hut on concrete slab	Electronics storage	Contributing
Community Center (former Mess Hall) (3010)	1952	One-story, wood frame building	Kitchen, office space, community center (originally contained the post office, officer's club, and dining facilities)	Contributing
Storage (Quonset Hut) (3011)	1951	Quonset hut on concrete slab	Facilities maintenance storage	Contributing
Storage (Quonset Hut) (3012)	1951	Quonset hut on concrete slab	Community shop, storage	Contributing
Storage Building (3024)	1958	Metal frame shed	Storage	Non Contributing
Furniture Storage (Quonset Hut) (3029)	1951	Quonset hut on concrete slab	Furniture storage	Non Contributing
Civil Engineering (CE) Shop (3031)	1953	One-story concrete block and plywood building with flat roof	Carpentry, welding, electrical shops	Contributing
CE Shop (3032)	1953	Long, one-story, concrete block building	Facilities shops	Contributing
Paint Storage (3034)	1959	Small concrete block building	Paint/hazardous waste storage	Contributing
Equipment Storage/Salt Barn (3036)	1961	Wood frame, metal shed, dirt floor	Equipment storage	Contributing
Storage (3037)	1953	Concrete block	Facilities maintenance storage	Contributing
Emergency Generator Building (3038)	1962	Concrete block building on a raised concrete foundation	Emergency generator room	Contributing
Weather Station (3039)	1955	One-story, square plan, concrete block building with a flat roof	Weather station/storage	Contributing
Laundromat [formerly public restrooms] (3060)	circa late	One-story concrete block building	Laundromat, custodial storage	Contributing

	1950s			
Post Office (no building number)	1953	One-story wood framed building composed of two attached units	Post Office and Post Master's residence	Contributing ⁴
Pump Station Reservoir (3033)	1953	Concrete block building with two 10,000-gallon concrete, ground-level storage tanks	Reservoir	Contributing
Water Well Building (3050)	1953	Metal frame sheds with aluminum siding	Water well	Contributing
Water Well Building (3051)	1953	Metal frame sheds with aluminum siding	Water well	Contributing
Sewage Treatment Plant - Boiler Room (3053)	1953	Small concrete block building clad in wide, wood drop siding, mineral surface roof	Treatment plant	Contributing
Sewage Treatment Plant - Trickling Filter (3054)	1957	Small concrete block shed with a corrugated metal gable roof	Trickling filter	Contributing
Sewage Treatment Plant - Valve Station (3055)	1961	Metal frame building with a corrugated metal roof	Valve station	Contributing
Sewage Treatment Plant - Pump Station (3056)	1966	Small metal frame building with a corrugated metal roof	Pump station	Contributing
Overhead Water Tower (no building number)	1952	120-foot tall, 25,000-gallon steel elevated water tank	Water tower	Contributing

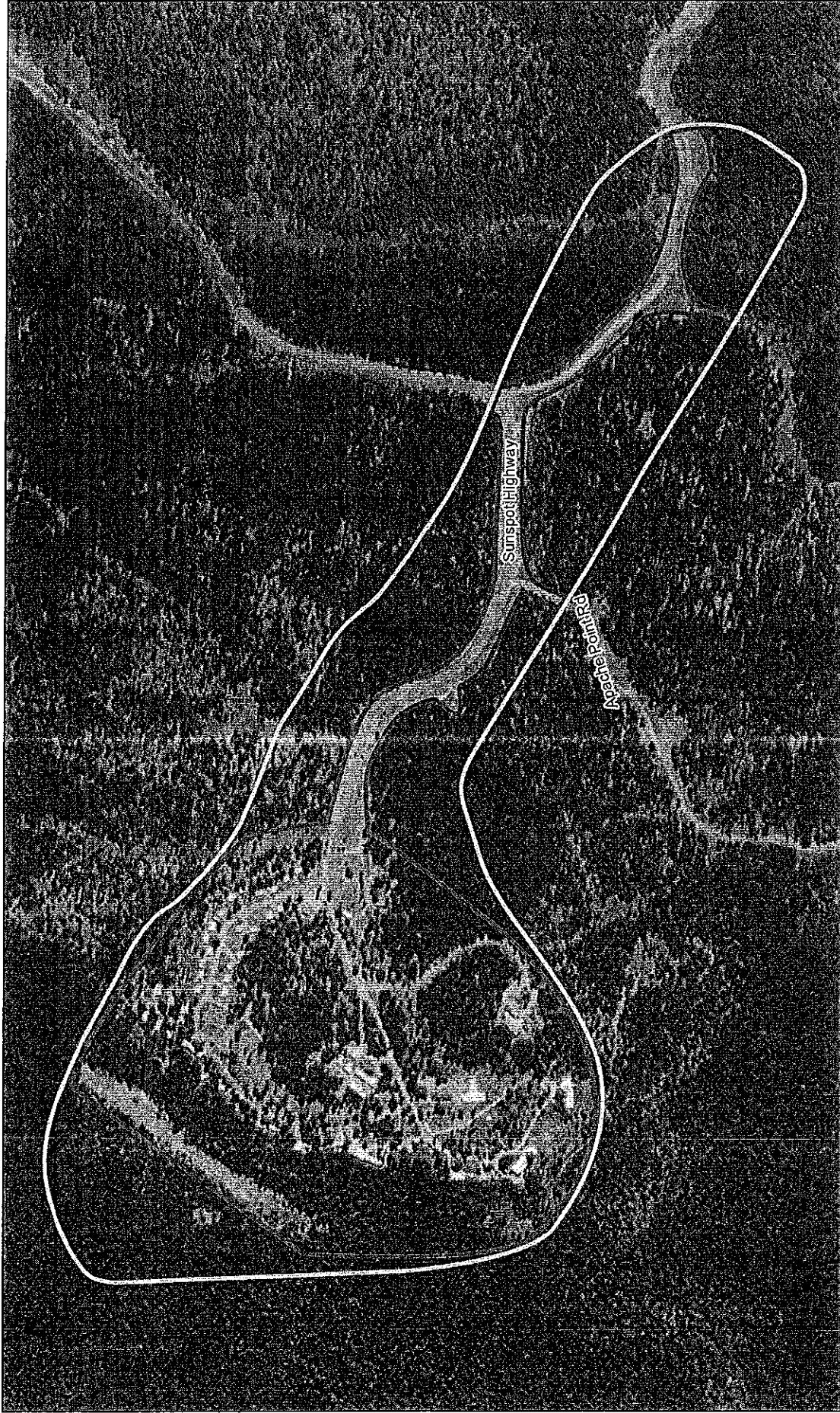
¹ This table only includes resources that were inventoried as part of the 2015 cultural resources survey. Buildings and structures that were not 45 years old at the time of the cultural resources survey, were not considered to have exceptional importance, or were not owned by NSF were not included in the historic district evaluation.

² NRHP: National Register of Historic Places

³ Also considered individually eligible for listing on the NRHP



⁴ The Post Office was evaluated later in the process, and was therefore not included in the list of 63 contributing resources that NSF submitted to the SHPO for concurrence in May 2017.

Attachment B
Area of Potential Effects Map

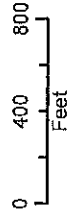
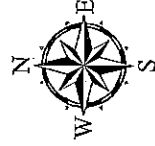


Aerial Source: National Agriculture Imagery Program (NAIP), 2016

Legend

-  Sacramento Peak Observatory Historic District Boundary
-  Area of Potential Effects (APE)

Sacramento Peak Observatory
Sunspot, New Mexico



Attachment C
References and Definitions

PA References:

- Proposed Changes to Sacramento Peak Observatory Operations: Historic Properties Assessment of Effects* (CH2M HILL; 2017).
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PA Definitions:

Adverse Effect: a change to the characteristics that qualify a historic property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association (36 CFR 800.5(a)).

Area of Potential Effects (APE): the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR 800.16(d)). It is important to understand that the effects pertain to the effects on physical historic properties (eligible for or listed in the National Register of Historic Places [NRHP]) in a specific area.

Concurring Party: Any consulting party that has been invited by the federal agency (NSF) to concur in the PA. Concurring parties have the same rights with regard to seeking amendment or termination of the PA as other signatories. The refusal of any party invited to concur in the PA does not invalidate the document (36 CFR 800.16(d)).

Consultation: the process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the Section 106 process (36 CFR 800.16(f)).

Consulting Party: Section 106 term that refers to organizations and/or individuals with a demonstrated interest in the undertaking due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties. The participation of consulting parties is subject to approval by the federal agency (in this case, NSF). Consulting parties are actively informed of and able to participate in the Section 106 process, including consultation meetings. The views of consulting parties are actively sought by NSF during the Section 106 consultation process. (36 CFR 800.2(c)(5))

Effect: an alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP (36 CFR 800.16(i)).

Historic Property: Any resource, such as a building, structure, or historic district, included in or eligible for inclusion in the NRHP, maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the NRHP criteria (36 CFR 800.16(l)).

Invited Signatory: Any party that is assigned a responsibility under the PA and is invited by the federal agency (NSF) to sign the PA. Any invited signatory that signs the PA has the same rights with regard to seeking amendment or termination of the PA as other signatories. The refusal of any party invited to become a signatory to a PA does not invalidate the document (36 CFR 800.6(c)(2)).

Signatory: Signatories include the federal agency (NSF), PR SHPO, and ACHP, and they have the sole authority to execute, amend, or terminate the PA (36 CFR 800.6(c)(1)).

Programmatic Agreement (PA): A document that records the terms and conditions agreed upon to resolve the potential adverse effects of a federal agency program or complex undertaking. For this undertaking, a PA is used to document the ways in which adverse effects are addressed because the result of the 2017 solicitation for new collaborators is undetermined and the needs of any new collaborator(s) are unknown (36 CFR 800.14(b)).

Undertaking: A project, activity, or program funded in whole or in part by a federal agency (36 CFR 800.16(y)).