

PROGRAMMATIC AGREEMENT  
AMONG  
THE NATIONAL SCIENCE FOUNDATION,  
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION, AND  
THE PUERTO RICO STATE HISTORIC PRESERVATION OFFICER  
REGARDING  
POTENTIAL CHANGES TO  
ARECIBO OBSERVATORY OPERATIONS  
IN THE VICINITY OF ARECIBO, PUERTO RICO

**WHEREAS**, the Arecibo Observatory site (AO site) is a federal facility owned and primarily funded by the National Science Foundation (NSF), a federal agency. As of the date of this agreement, University of Central Florida (UCF) receives funding from NSF via a Cooperative Agreement to operate and maintain the AO site for the benefit of research communities;

**WHEREAS**, the AO site was listed in the National Register of Historic Places (NRHP) in 2008 as the National Astronomy and Ionosphere Center (NAIC) Historic District for national significance under Criterion A because of its contribution to the history of the science of ionosphere studies and the development of radio and radar astronomy in the United States, and under Criterion C because it represents a significant work of engineering;

**WHEREAS**, NSF conducted an intensive building survey in June 2018 to evaluate buildings, structures, and objects that were not evaluated as a part of the 2008 NRHP nomination or that were constructed between 2008 and 2015;

**WHEREAS**, the NRHP Registration Form, as updated in 2020 and based on the 2018 building survey, describes 30 buildings, one site, and three structures, of which thirteen buildings and two structures have been identified as contributing resources to the NAIC Historic District based on consultation with the Puerto Rico State Historic Preservation Officer (PR SHPO) and are therefore considered to be historic properties (see Attachment A for a map of the historic district and Attachment B for a list of contributing resources); 17 buildings, one site, and one structure were evaluated and determined not to be contributing to the NAIC Historic District and are therefore not considered to be historic properties;

**WHEREAS**, NSF acknowledges that the AO site holds significant cultural importance to the people of Puerto Rico as a source of inspiration and pride; in addition, it is culturally and scientifically iconic, both nationally and internationally;

**WHEREAS**, this Programmatic Agreement (PA) supercedes the 2017 Programmatic Agreement, as described below and as shown in full in Attachment C; this PA has been prepared in compliance with Section 106 (54 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), and references and technical terms related to the NHPA are included in Attachment D;

**WHEREAS**, during 2006-2015, NSF considered potential operational changes and reduction in funding of the AO site based on the results of formal processes within the scientific community (e.g., decadal surveys, senior-level reviews, and other advisory committees subject to the Federal Advisory Committee Act), with details of this process documented in the 2017 Programmatic Agreement (Attachment C);

**WHEREAS**, based on the input NSF relied upon from the scientific community, NSF developed preliminary alternatives to address changes to operations from reduced NSF funding for the AO site. Because such changes would be driven by the requirements of any NSF award to fund operations, or, alternatively, could involve a transfer of property out of federal control, the proposed changes to operations at the AO site constituted a federal undertaking subject to Section 106 of the NHPA the NHPA's implementing regulations, "Protection of Historic Properties" (36 C.F.R. Part 800);

**WHEREAS**, during 2016-2017, NSF conducted a National Environmental Policy Act (NEPA) review that evaluated five possible Action Alternatives for consideration: Alternative 1 – *Collaboration with Interested Parties for Continued Science-focused Operations with Reduced NSF Funding*, Alternative 2 – *Collaboration with Interested Parties for Transition to Education-focused Operations*, Alternative 3 – *Mothballing Facilities*, Alternative 4 – *Partial Demolition and Site Restoration*, and Alternative 5 – *Complete Demolition and Site Restoration*; details of this process are documented in the 2017 Programmatic Agreement (Attachment C);

**WHEREAS**, on July 5, 2016, NSF initiated its Section 106 consultation process pursuant to the NHPA; NSF conducted its Section 106 consultation process concurrently with, but separate from, its NEPA review process;

**WHEREAS**, because of the presence of the NAIC Historic District, NSF determined, in consultation with PR SHPO and the Advisory Council on Historic Preservation (ACHP), that all five Action Alternatives, including the Preferred Alternative, have the potential to result in adverse effects on historic properties due to the potential demolition or mothballing of some components of the NAIC Historic District under all five Action Alternatives; for Alternatives 1 and 2, under which NSF would retain or transfer ownership, depending, in part, on the needs of any new collaborator(s), any transfer of ownership from NSF to a nonfederal entity would also have the potential for adverse effects since the federal consultation process under Section 106 would no longer be applicable to future actions by such a new owner;

**WHEREAS**, NSF, in consultation with the PR SHPO, initiated the Section 106 consultation process and established that the area of potential effects (APE) (as defined at 36 C.F.R. § 800.16(d)) includes the AO site (see Attachment A);

**WHEREAS**, during 2016-2017, NSF assessed effects on historic properties under Alternatives 1-5, and the PR SHPO concurred with the findings on December 12, 2016; all five Action Alternatives met the criteria for adverse effect;

**WHEREAS**, NSF identified Alternative 1 as NSF's Preferred Alternative in its NEPA process, recognizing that Alternative 1 could only be implemented if a collaborator(s) were to come forward with viable plans to provide additional non-NSF funding in support of their science-focused operations; because Alternative 1 was identified as NSF's Preferred Alternative, NSF, PR SHPO, and the ACHP agreed that resolution of adverse effects (the final step of the Section 106 process), would be limited to consideration of Alternative 1;

**WHEREAS**, in 2017, NSF, PR SHPO, and the ACHP executed the 2017 Programmatic Agreement ensuring that, if Alternative 1 (*Collaboration with Interested Parties for Continued Science-focused Operations with Reduced NSF Funding*) were selected, NSF would implement defined Stipulations to address adverse effects of the proposed undertaking on historic properties under Alternative 1 and that the Stipulations would govern the undertaking and all of its parts (see the 2017 Programmatic Agreement in Attachment C); further, the 2017 Programmatic Agreement provided that if implementation of Alternative 1 was not ultimately feasible, NSF must resume Section 106 consultation focusing on Alternatives 2-5;

**WHEREAS**, on November 15, 2017, NSF executed a Record of Decision selecting Alternative I, and NSF implemented Alternative 1, with UCF as the collaborator, during 2018-2023;

**WHEREAS**, during 2018-2020, NSF implemented the Stipulations of the 2017 Programmatic Agreement, including: Stipulation I.A.3., which required NSF to survey the property to evaluate the eligibility of any buildings or structures that were not previously surveyed during preparation of the 2008 National Register registration form and to provide an update to the National Register, as appropriate (addendum to the National Register accepted on October 26, 2020); Stipulation I.A.4., which required NSF to prepare an NAIC Historic District Preservation and Management Plan, consistent with the above, and to implement the Plan; Stipulation I.A.8., which required NSF to require any operator to adhere to preservation provisions, including implementation of the Historic Preservation and Management Plan, training based on this Plan, and to maintain reasonable public access;

**WHEREAS**, on August 10, 2020, a cable supporting the instrument platform of the 305-meter telescope failed; in response, UCF engaged Thornton Tomasetti to be the Engineer of Record for the necessary repairs to stabilize the structure; on November 6, 2020, a second cable failed, and, due to there being no identified safe way to repair the structure, NSF adopted Thornton Tomasetti's recommendation to decommission the telescope; on November 19, 2020, NSF reached out to the PR SHPO and ACHP to schedule a meeting to discuss the situation and any Section 106 implications; and the meeting with PR SHPO and ACHP was ultimately scheduled for December 1, 2020;

**WHEREAS**, on December 1, 2020, the instrument platform and portions of its supporting towers collapsed on their own when additional cables failed; Thornton Tomasetti was retained to perform a forensic investigation of the cable failures and telescope collapse, as well as to conduct emergency clean-up activities, with UCF and NSF; NSF provided initial notifications to PR SHPO, ACHP, NPS and environmental agencies with regard to the collapse;

**WHEREAS**, on December 7, 2020, NSF hosted a visit to the AO site for PR SHPO staff;

**WHEREAS**, on January 27, 2021, NSF provided the PR SHPO with a written update on unanticipated effects at the AO site and notification of a screening process (including coordination with the Smithsonian Institution) for items of potential historical importance in the debris;

**WHEREAS**, on March 10, 2021, NSF issued a Dear Colleague Letter: Intent to support a Workshop to Explore Novel Ideas for Future Scientific, Educational, and Cultural Activities with the Arecibo Observatory (NSF 21-055);

**WHEREAS**, on March 29, 2021, PR SHPO provided a written response to NSF's January letter, indicating that emergency clean-up may be guided by 36 C.F.R. § 800.12, but that clean-up operations beyond those necessary to the immediate emergency should undergo normal Section 106 consultation;

**WHEREAS**, on April 29, 2021, NSF provided a written update to PR SHPO, including a response to the PR SHPO's March letter;

**WHEREAS**, in April-June 2021, NSF hosted the Workshop to Explore Novel Ideas for Future Scientific, Educational, and Cultural Activities with the Arecibo Observatory;

**WHEREAS**, on June 3, 2021, NSF and UCF provided, via a virtual meeting, updates on the emergency clean-up activities to ACHP, PR SHPO, and other interested members of the public; both the SHPO and ACHP agreed with the approach that NSF had been taking and that UCF had been implementing;

**WHEREAS**, on December 7, 2021, NSF, Jacobs Engineering, and Thornton Tomasetti provided an update, via a virtual meeting, to the PR SHPO, the ACHP, and interested parties to describe the completion of the emergency clean-up activities; ultimately, 14,000 damaged panels out of the 39,000 total panels and their supporting structure (approximately 35%) were removed but not replaced, and 225 feet of the concrete rim wall was repaired; the three towers, each of which lost the top portion during the collapse, were stabilized and appropriate repairs were made (scaffolding was erected, cracked and loose concrete was removed, structural testing was performed, and the tops of the towers were leveled and sealed to protect them from water intrusion); a hurricane-proof temporary roof was placed on the damaged Learning Center and permanent repairs in alignment with the original design were implemented; minor repairs to the Science and Visitor Center were completed; the Cable Car House had sustained damage, but the contributing portion of this structure was retained with minor repairs and stabilization;

**WHEREAS**, in 2022, NSF determined that since the 305-meter telescope is no longer operational, and consistent with what was learned during the 2021 workshop, it would be appropriate to consider a new model that would allow for multiple uses of the AO site, including enhanced STEM education and outreach with some targeted science operations on the site for which NSF would maintain the Puerto Rico Coordination Zone established by the Federal Communications Commission (FCC), which requires applicants for new and modified radio facilities below 15 GHz to provide notification of their proposed operations to the AO site at the time their applications are submitted to the FCC (47 C.F.R. § 1.924); to this end and to help determine the viability of this option, NSF issued a solicitation for the proposed Arecibo Center for STEM Education and Research (ACSER) on October 13, 2022, which had a proposal deadline of February 28, 2023;

**WHEREAS**, under this proposed new model, NSF would maintain the 12-meter telescope on the AO site in a safe stowage status such that it could be put into operation if there is a successful proposal from NSF's merit review process, including a team with the appropriate level of personnel effort and expertise to use it;

**WHEREAS**, this proposed new model generally fits into the description of Alternative 2, as defined in NSF's 2017 NEPA process, with future operations involving a variety of education-focused activities, with the potential for continued use of existing facilities to support astronomical or atmospheric science; under this Alternative, NSF could transfer or retain the property, although NSF has no plans to transfer the property at this time;

**WHEREAS**, this proposed shift to Alternative 2 requires NSF to resume consultation under Section 106 per Stipulation III of the 2017 Programmatic Agreement;

**WHEREAS**, on February 3, 2023, NSF provided PR SHPO and the ACHP with an update regarding the proposed transition to Alternative 2 and, on March 30, 2023, sent a letter to the PR SHPO initiating the renewed Section 106 consultation, confirming the APE and the recently updated list of historic properties, and identifying potential adverse effects under Alternative 2 consistent with the 2016 assessment of effects and PR SHPO response dated December 12, 2016; the letter was also provided to the ACHP and interested members of the public (Justin Walsh, Beth O'Leary, Holly Norton, and Wayne Donaldson) who are collectively referred to herein as the "Archaeology Working Group" or "Consulting Parties;"

**WHEREAS**, if implementation of Alternative 2 is ultimately not feasible, NSF will initiate Section 106 consultation on a new undertaking;

**WHEREAS**, if NSF ultimately issues a decision to implement Alternative 2, NSF may require use of all or a portion of the AO site;

**WHEREAS**, on May 3, 2023, NSF held a virtual consultation meeting with representatives from the PR SHPO, ACHP, and the Archaeology Working Group; additional Section 106 consultation meetings were held on June 7, 2023, June 30, 2023, August 8, 2023, August 10, 2023, and August 14, 2023; and

**WHEREAS**, NSF has determined, in consultation with PR SHPO and the ACHP, that circumstances are present that warrant the development of this PA, in accordance with 36 C.F.R. § 800.14(b)(1)(ii),

**NOW, THEREFORE**, NSF, PR SHPO, and the ACHP agree that NSF will ensure that, if Alternative 2 (*Collaboration with Interested Parties for Transition to Education-focused Operations*) is selected by NSF, the following Stipulations are implemented to address adverse effects of the proposed undertaking on historic properties under Alternative 2 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:

The following Stipulations address adverse effects to historic properties associated with implementation of Alternative 2 under the following two scenarios: a) NSF retains ownership of the AO site (Stipulation **I.A.**, below); and b) Proposed NSF transfer of ownership of the AO site to a non-federal entity (Stipulation **I.B.**, below).

### I. PRESERVATION PROVISIONS

**A. NSF Retains Ownership of the AO site.** In the event NSF retains ownership of the AO site and a new collaborator(s) begins education-focused operations at and management of the AO site, the following provisions shall apply:

- 1. 305-meter Telescope Preservation Options Study.** Within twelve months of selection of a new collaborator(s), NSF will conduct a study, by qualified professionals, to review options for preservation of the remaining components of the 305-meter telescope (e.g., the towers, rim wall, the dish, the cable car house, and the salvaged items stored onsite), including appropriate documentation (such as the story of the collapse of the platform and partial damage of the dish and the impact of this on the AO Site). NSF will provide a draft of this study to the ACHP, PR SHPO, and the Archaeology Working Group and provide for a 90-day review period for any comments. Following the completion of the study, NSF will determine what is feasible for implementation and notify the ACHP, PR SHPO, and the Archaeology Working Group about which option has been selected for implementation, however, if feasible, NSF will select and implement an option that retains the components for visual and historical interest. If NSF seeks to implement an option that would involve physical removal of a remaining component of the 305-meter telescope that contributes to the significance of the historic property, NSF will provide a justification for why retention of such components

is not feasible and conduct a Section 106 consultation to evaluate the proposed action as a new undertaking and amend this PA upon completion of that consultation as appropriate. Until an option has been selected and implemented, NSF will control vegetation around existing structures to the extent that it is safe to do so.

- 2. Update to the NAIC Historic District Preservation and Management Plan.** Within six months following the completion of Stipulation **I.A.1.**, above, NSF will update the NAIC Preservation Principles and Management Strategies to reflect the option selected by NSF for preservation of the remains of the 305-meter telescope, towers, rim wall, and Cable Car House. Such revised NAIC Preservation Principles and Management Strategies shall not interfere with the ability of the collaborator(s) to conduct education-focused operations and the potential continued use of facilities to support astronomical or atmospheric science at the AO site while preserving its historic integrity.
- 3. Training.** NSF will ensure that the key facility staff of the collaborator(s) will receive an initial, one-time historic preservation awareness training to encourage awareness of the historic and cultural significance of the AO site and to minimize the potential for adverse effects to historic properties. Such training, which will be funded by NSF, will be updated to address the option selected by NSF (in consultation with the ACHP, PR SHPO, and the Archaeology Working Group) for preservation of the remains of the 305-meter telescope, towers, rim wall, and Cable Car House and any other updates made to the NAIC Historic District Preservation and Management Plan. The training will be administered by a qualified historic preservation professional who is familiar with and knowledgeable about the AO site and its importance to Puerto Rico and the local community, and will occur within 18 months (or as soon as practicable thereafter) of any new award. NSF will provide PR SHPO an opportunity to comment on the updates to the content of such training.
- 4. Public Access.** The collaborator(s) will allow reasonable public access to the AO site provided that such access does not unduly interfere with the collaborator's use of the property for education-focused operations and the potential continued use of facilities to support astronomical or atmospheric science, and is consistent with health, safety, and security guidelines.
- 5. Use of Historic Properties (inclusive of all resources contributing to the NAIC Historic District other than the remaining components of the 305-meter telescope).** NSF will make every effort to avoid adverse effects on contributing buildings by requiring the collaborator(s) to prioritize and make all reasonable efforts to use as many contributing buildings as practicable, provided that such use facilitates the support of education-focused operations. If the collaborator(s) identifies a contributing building(s) or structure(s) that is no longer needed to support education-focused operations and recommends demolition, NSF will first consider mothballing in accordance with Preservation Brief 31: Mothballing Historic Buildings, issued by the U.S. Department of the Interior, National Park Service, for possible future use, prior to demolition. All mothballed buildings will also be subject to the following maintenance schedule, which will allow such buildings or structures to be returned to active use within 120 days:
  - a. Inspections of the interior of the building or structure.** Conduct quarterly inspections of the interior of each mothballed building or structure to check for pests, signs of moisture, and to adjust ventilation or air conditioning as needed to avoid mold growth.

- b. **Gutters, storm drains, and crawl spaces.** Check and clean out gutters and storm drains every six months (or in accordance with the same schedule followed for the rest of the campus), and check any crawl spaces for pests.
- c. **Painting and inspections of the exterior of the building or structure.** Clean and paint the exterior of each mothballed building or structure as needed every 12 months (or in accordance with the same scheduled followed for the rest of the campus), conduct pest inspections/treatment, and update the building or structure file.

If, following the maintenance schedule set forth above, it is determined that repairs, pest control, or mold abatement are needed to maintain a building or structure in a condition where it can be put back into service, NSF will determine whether such building or structure should be repaired/treated or demolished. NSF shall make its determination on whether to repair/treat or demolish such building or structure based on the the following factors: a) the likelihood that the building or structure will be used within the next five years; b) the extent of the repairs/treatment needed to place the building or structure back into service; and c) the availability of funds to carry out such repairs/treatment. If a decision is made to carry-out the repairs/treatment, then such repairs/treatment shall be made in accordance with the NAIC Historic District Preservation Principles and Management Strategies. If a decision is made to reject the repairs/treatment, such building or structure shall be demolished in accordance with the provisions set forth herein.

- 6. **Demolition of historic properties.** If the collaborator(s) identifies a contributing building(s) or structure(s) that is no longer needed to support education-focused operations and recommends demolition, NSF shall determine whether mothballing such building(s) or structure(s) is warranted or whether demolition is appropriate. NSF shall base its determination on the following factors: a) the likelihood that the building or structure will be used within the next five years; b) the condition of the building or structure and whether repairs are needed; and c) the availability and appropriateness of using funds to continue maintenance and inspection of the building or structure. If NSF determines that demolition is warranted, NSF will notify the PR SHPO, in writing, of its decision to demolish such building or structure, including an explanation of the basis for its decision, and a request for the PR SHPO’s recommendation regarding the appropriate method of documentation to be prepared prior to any NSF-approved demolition. Such recommendation by the PR SHPO for pre-demolition documentation could include the following::
  - a. **HABS/HAER documentation.** For such building(s)/structure(s) identified as contributing to the NAIC Historic District, NSF will ensure that any such contributing resource(s) is documented in accordance with National Park Service (NPS) Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER) standards prior to demolition;
  - b. **Other option for documentation.** A different option for documenting the contributing resource(s) (such as an amendment to the National Register nomination, a virtual resource, or other documentation) is recommended for NSF’s consideration; or
  - d. **No additional documentation.** The resource(s) does not require additional documentation beyond the National Register Nomination.

If documentation is prepared pursuant to this provision, NSF will ensure that such documentation is made available via the NSF website so that it is easily accessible by members of the public.

- 7. Demolition of non-historic properties (non-contributing resources).** For any building(s)/structure(s) that is identified as non-contributing to the NAIC Historic District and is determined by NSF to warrant demolition, no documentation will be required.
  - 8. Support of National Historic Landmark Nomination.** If PR SHPO nominates the Arecibo site as a National Historic Landmark, a designation that it currently does not have, NSF will support that nomination, subject to the consent of the collaborator(s).
  - 9. New Construction.** If the collaborator(s) identifies new construction or other changes needed to the NAIC Historic District, NSF will conduct, as appropriate, a new Section 106 consultation prior to any NSF-approved new construction or modifications. In addition, if such proposed construction involves the disturbance of previously undisturbed land, NSF will evaluate whether there is a potential for impacts to archaeological resources; if there is a potential for such impacts, NSF will conduct an archaeological survey of such undisturbed land.
- B. Proposed NSF Transfer of Ownership of the AO Site to a Non-Federal Entity.** In the event NSF proposes to transfer ownership of the AO site to a non-federal entity, NSF will conduct a new Section 106 consultation prior to any NSF-approved transfer.
- C. Alternative 2 Is Selected by NSF in its Record of Decision and Implementation Is Not Feasible.** In the event NSF issues an award to a collaborator(s) in accordance with Alternative 2 and implantation of it is not feasible, NSF will notify PR SHPO, the ACHP, and the Archaeology Working Group and will initiate Section 106 consultation on a new undertaking.

## **II. DOCUMENTATION OF ACTIONS DEMONSTRATING COMPLIANCE WITH THIS PA**

So long as NSF remains the owner of the AO site and provided that this PA remains in effect, NSF will submit updates annually, beginning six months following the effective date of this PA, regarding the progress of compliance with this PA to PR SHPO and the ACHP. If PR SHPO has any concerns regarding the implementation of this PA, Section **VII. Dispute Resolution**, herein, may be used to address those concerns.

## **III. DELAYED TRANSFER OF OWNERSHIP**

In the event NSF issues an award to a collaborator(s) to manage and operate the AO site, and plans to transfer ownership of the AO site to such collaborator(s) (a non-federal entity), NSF would continue to implement Stipulation **I.A.** until the new Section 106 consultation on the transfer of the property is completed pursuant to Stipulation **I.B.**.

#### **IV. UNANTICIPATED EFFECTS**

If unanticipated effects on historic properties occur during implementation of the undertaking under Stipulation **I.A.**, 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 PR SHPO and the Archaeology Working Group, as appropriate, within 48 hours of NSF's awareness of the effects. The notification will describe the eligibility of the property and proposed actions to resolve any adverse effects. PR SHPO and the Archaeology Working Group will respond with any comments within 48 hours of the notification by phone or email. NSF will take into account the PR SHPO's and Archaeology Working Group's recommendations regarding NRHP eligibility and proposed actions, and then carry out appropriate actions. NSF will provide PR SHPO and the Archaeology Working Group, as appropriate, with a report of the actions when they are completed.

#### **V. POST-AGREEMENT DISCOVERIES**

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 under Stipulation **I.A.**, will be addressed in the following manner:

- A.** The collaborator(s), or contractor working on behalf of the collaborator(s) or NSF, carrying out such activity will promptly notify NSF, who will notify PR SHPO of the discovery.
- B.** If NSF determines, in consultation with PR SHPO, that the discovery is eligible for listing in the NRHP, NSF will initiate consultation with the PR SHPO and the Archaeology Working Group to draft a plan with measures that will avoid, minimize, and/or mitigate adverse effects. If agreement is reached regarding such a plan, NSF will implement the plan. If the discovery is made while carrying out ground disturbing activities (if any), such activities 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.
- C.** If NSF, the PR SHPO, and the Archaeology Working Group 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 address the ACHP's guidance in reaching a final decision regarding implementation of the plan.
- D.** If any previously unidentified human or burial remains are discovered during implementation of the undertaking, the collaborator(s), or contractor working on behalf of the collaborator(s) or NSF, will immediately cease any demolition work and adhere to applicable state and federal laws regarding the treatment of human or burial remains.

#### **VI. REPORTING**

- A.** To keep the public, the PR SHPO, and the Archaeology Working Group apprised of the status of the implementation of the Stipulations in this PA, NSF will maintain a status report on the NSF website with relevant information.
- B.** NSF will invite the Signatories to this PA and the Archaeology Working Group to an annual meeting to report on the status of PA implementation. 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.

## **VII. DISPUTE RESOLUTION**

### **A. 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:

1. 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 ten (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 PR SHPO, or if the objection is raised by PR SHPO, NSF will forward all documentation relevant to the dispute to the ACHP. Within 30 days after receipt of all pertinent documentation, PR SHPO or, as appropriate, the ACHP, will provide NSF with comments and recommendations, which NSF will take into account in reaching a final decision regarding the dispute. Any comment provided by PR 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.
2. If a Signatory asserts that the dispute warrants a cessation of work, NSF or its collaborator(s), or a contractor working on behalf of NSF or its collaborator(s), will be required to cease work on the proposed undertaking while the dispute is being reviewed.

### **B. Continued Participation by 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 the Archaeology Working Group (if it has decided not to sign this PA as a Concurring Party), may continue to participate in the Section 106 consultation process as follows:

1. Any member of the public may raise an objection to NSF pertaining to the treatment of an historic property associated with implementation of the proposed undertaking. In the event such an objection is raised, NSF will consult with PR SHPO regarding the objection, and following such consultation, will provide the objecting member of the public with a decision on the objection.
2. The Archaeology Working Group, if it becomes a Concurring Party to this PA, may raise an objection to NSF and PR SHPO pertaining to the treatment of an historic property associated with implementation of the proposed undertaking. In the event such an objection is raised by the Archaeology Working Group (as a Concurring Party), NSF and PR SHPO will consult regarding how to resolve the objection. If NSF and PR 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 a final decision on the matter. NSF will communicate such a final decision to the Archaeology Working Group and PR SHPO. If any new undertaking is proposed by NSF, the Archaeology Working Group shall, as appropriate, be invited to participate in the Section 106 consultation process for that undertaking as a Consulting Party.

If an objection is made pursuant to either Stipulation **VII.B.1.** or **VII.B.2.**, NSF, in consultation with PR SHPO, will determine whether the objection warrants a cessation of work (if any) on the proposed undertaking while the objection is being reviewed.

## **VIII. PROFESSIONAL QUALIFICATIONS**

All historic preservation work carried out pursuant to this PA will be performed by (or under the direct supervision of) personnel with the applicable professional qualification standards set forth in the *Secretary of the Interior's Historic Preservation Professional Qualification Standards* proposed revised standards published in the Federal Register, 62 Fed. Reg. 33708 (June 20, 1997).

## **IX. PRINCIPLES AND STANDARDS**

The Signatories agree that the development of the preservation options referred to in Stipulation **I.A.** will be conducted in a manner consistent with the principles and standards contained in the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (36 CFR Part 68), *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* (1983, as amended), *Recommended Approach for Consultation on Recovery of Significant Information from Archaeological Sites* (ACHP, May 18, 1999, 64 Fed. Reg. 27085-27087), and any Puerto Rico guidelines, as appropriate.

## **X. ELECTRONIC COPIES**

NSF will provide PR SHPO, the ACHP, and each member of the Archaeology Working Group with one legible, full-color, electronic copy of the fully executed PA and its Attachments no more than 30 days after execution.

## **XI. AMENDMENT**

Any Signatory may request that this PA be amended by informing NSF in writing of the reason for the request and the proposed amendment language. After receiving the request, NSF will notify PR SHPO, the ACHP, and the Archaeology Working Group of the proposed amendment and consult to reach agreement. The amendment will be effective on the date a copy signed by all the Signatories is filed by NSF with the ACHP.

## **XII. EXPIRATION**

This PA will expire 15 years from the Effective Date of this PA as defined in Stipulation **XV.**, herein. Prior to such expiration date, NSF may consult with PR SHPO and the ACHP to reconsider the terms of this PA and amend it in accordance with Stipulation **XI.**

## **XIII. COMPLIANCE WITH APPLICABLE LAW AND ANTI-DEFICIENCY ACT PROVISION**

This PA will be carried out 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 PR SHPO and the ACHP to determine whether to amend or terminate this PA pending the availability of resources.

#### **XIV. 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 Section **XI.**, above. 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 days following any such termination and prior to work continuing on the undertaking, NSF will notify PR SHPO and the ACHP whether it will initiate consultation to execute a new Programmatic Agreement under 36 C.F.R. § 800.14(b)(3) or request and consider the comments of the ACHP under 36 C.F.R. § 800.7 and proceed accordingly.

#### **XV. 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, PR SHPO, and the ACHP.

**EXECUTION** of this PA by NSF, PR SHPO, and the ACHP evidences that NSF has taken into account the effects of this proposed undertaking on historic properties, and has afforded the ACHP an opportunity to comment on the proposed undertaking.

**SIGNATORY PAGE**

**PROGRAMMATIC AGREEMENT  
AMONG  
THE NATIONAL SCIENCE FOUNDATION,  
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION, AND  
THE PUERTO RICO STATE HISTORIC PRESERVATION OFFICER  
REGARDING  
POTENTIAL CHANGES TO  
ARECIBO OBSERVATORY OPERATIONS  
IN THE VICINITY OF ARECIBO, PUERTO RICO**

Signatory:

National Science Foundation

**Smith, Robert C.** Digitally signed by Smith, Robert C.  
Date: 2023.09.05 15:04:35 -04'00'

Date

Robert C. Smith, Ph.D., Division Director (Interim),  
Division of Astronomical Sciences

**JOLENE K JESSE** Digitally signed by JOLENE K  
JESSE  
Date: 2023.09.05 09:56:21 -04'00'

Date

Jolene K. Jesse, Ph.D., Acting Division Director  
Division of Research on Learning in Formal and Informal Settings

**ZHUANGREN  
LIU (affiliate)** Digitally signed by  
ZHUANGREN LIU (affiliate) on behalf of  
Date: 2023.09.05 16:43:21 Anne M. Johansen  
-04'00'

Date

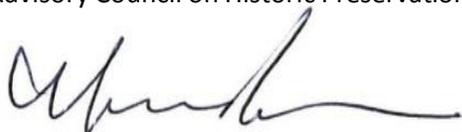
Anne M. Johansen, Division Director  
Division of Atmospheric and Geospace Sciences (GEO/AGS)

**SIGNATORY PAGE**

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ARECIBO OBSERVATORY OPERATIONS  
IN THE VICINITY OF ARECIBO, PUERTO RICO

Signatory:

Advisory Council on Historic Preservation



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Reid J. Nelson, Executive Director

Date 9.19.2023

**SIGNATORY PAGE**

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ARECIBO OBSERVATORY OPERATIONS  
IN THE VICINITY OF ARECIBO, PUERTO RICO

Signatory:

Puerto Rico State Historic Preservation Office



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Carlos Rubio Cancela, Executive Director

Date August 21, 2023

**CONCURRING PARTY SIGNATURE PAGE**

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THE PUERTO RICO STATE HISTORIC PRESERVATION OFFICER  
REGARDING  
POTENTIAL CHANGES TO  
ARECIBO OBSERVATORY OPERATIONS  
IN THE VICINITY OF ARECIBO, PUERTO RICO

Concurring Party:

Archaeology Working Group

\_\_\_\_\_ Date \_\_\_\_\_  
Milford Wayne Donaldson, FAIA

\_\_\_\_\_ Date \_\_\_\_\_  
Holly Norton, Ph.D.

 Ph.D. \_\_\_\_\_ Date 20 Aug 2023  
Beth O'Leary, Ph.D.

\_\_\_\_\_ Date \_\_\_\_\_  
Justin St. P. Walsh, Ph.D., RPA

**CONCURRING PARTY SIGNATURE PAGE**

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Date \_\_\_\_\_

\_\_\_\_\_  
Beth O'Leary, Ph.D.

Date \_\_\_\_\_

  
\_\_\_\_\_  
Justin St. P. Walsh, Ph.D., RPA

Date 19 AUGUST 2023