

# Long Term Research in Environmental Biology (LTREB)

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## PROGRAM SOLICITATION

NSF 14-507

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REPLACES DOCUMENT(S):

NSF 12-501

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National Science Foundation

Directorate for Biological Sciences  
Division of Environmental Biology

**Preliminary Proposal Due Date(s) (required)** (due by 5 p.m. proposer's local time):

January 30, 2014

January 30, Annually Thereafter

**Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

August 01, 2014

August 1, Annually Thereafter

## IMPORTANT INFORMATION AND REVISION NOTES

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This revision makes the following changes:

- places the Preliminary Proposal due date annually on January 30.
- introduces a process by which highly rated but declined Full Proposals may bypass the Preliminary Proposal stage in the next review cycle.
- makes clear that individual Preliminary Proposal submission limits are reduced for each Full Proposal concurrently in deferred submission status.
- provides updated instructions for formatting biosketches.
- provides separate updated instructions for submitting the combined lists of project personnel and potential conflicts of interest.
- incorporates a reminder of the GPG requirement that the Project Summary must contain 3 distinct sections: Overview, Intellectual Merit, Broader Impacts.
- incorporates the GPG requirement for description of both Intellectual Merit and Broader Impacts in both the Project Summary and the Project Description.

Beginning in January 2014, the Division of Integrative Organismal Systems (IOS) will no longer accept proposals submitted to the LTREB solicitation. Long-term projects that address questions of a) development, mechanisms, adaptive value, or evolutionary history of behavior, b) mechanisms and processes mediating antagonistic and beneficial symbioses, c) growth, development, stress adaptation mechanisms, energetics and metabolism, or other physiological processes, and d) structural and physiological traits that underlie organisms' capacities to live in various environments will no longer be supported through LTREB. Core IOS programs supporting all of these areas are willing to entertain proposals based on long-term data ([http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=503623&org=IOS&from=home](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503623&org=IOS&from=home)).

## SUMMARY OF PROGRAM REQUIREMENTS

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### General Information

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**Program Title:**

Long Term Research in Environmental Biology (LTREB)

**Synopsis of Program:**

The Long Term Research in Environmental Biology (LTREB) Program supports the generation of extended time series of data to address important questions in evolutionary biology, ecology, and ecosystem science. Research areas include, but are not limited to, the effects of natural selection or other evolutionary processes on populations, communities, or ecosystems; the effects of interspecific interactions that vary over time and space; population or community dynamics for organisms that have extended life spans and long turnover times; feedbacks between ecological and evolutionary processes; pools of materials such as nutrients in soils that turn over at intermediate to longer time scales; and external forcing functions such as climatic cycles that operate over long return intervals.

The Program intends to support decadal projects. Funding for an initial, 5-year period requires submission of a preliminary proposal and, if invited, submission of a full proposal that includes a 15-page project description. Proposals for the second five years of support (renewal proposals) are limited to an eight-page project description

and do not require a preliminary proposal.

Continuation of an LTREB project beyond an initial ten year award will require submission of a new preliminary proposal that presents a new decadal research plan.

Successful LTREB proposals address three essential components:

**A Decadal Research Plan** that clearly articulates important questions that cannot be addressed with data that have already been collected, but could be answered if ten additional years of data were collected. This plan is not a research timeline or management plan. It is a concise justification for ten additional years of support in order to advance understanding of key concepts, questions, or theories in environmental biology.

**Core Data:** LTREB proposals require that the author has studied a particular phenomenon or process for at least six years up to the present or for long enough to generate a contemporary time series that contains six data points. These data constitute Core Data on which the new project should be based, and analysis of these data should generate new questions, on the same phenomenon or process, that provide the focus of the LTREB project.

**A Plan for Data Management and Dissemination** that details information management and plans for data sharing with the broader research community and the interested public. Data from long-term research projects have value beyond the peer-reviewed and other publications generated by the investigators collecting the data.

**Specific review criteria for LTREB proposals and renewals are explained in Section VI of the current program solicitation. Prospective applicants are advised to read this solicitation carefully.**

All proposals submitted to the LTREB program are co-reviewed by participating Clusters in the Division of Environmental Biology: Ecosystem Science, Population and Community Ecology, and Evolutionary Processes. Proposals must address topics supported by these programs. Researchers who are uncertain about the suitability of their project for the LTREB Program are encouraged to contact the cognizant program director.

Beginning in January 2014, the Division of Integrative Organismal Systems (IOS) will no longer accept proposals submitted to the LTREB solicitation. Long-term projects that address questions of a) development, mechanisms, adaptive value, or evolutionary history of behavior, b) mechanisms and processes mediating antagonistic and beneficial symbioses, c) growth, development, stress adaptation mechanisms, energetics and metabolism, or other physiological processes, and d) structural and physiological traits that underlie organisms' capacities to live in various environments will no longer be supported through LTREB. Core IOS programs supporting all of these areas will entertain proposals based on long-term data [http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=503623&org=IOS&from=home](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503623&org=IOS&from=home).

#### **Cognizant Program Officer(s):**

*Please note that the following information is current at the time of publishing. See program website for any updates to the points of contact.*

- Saran Twombly, Program Director, Division of Environmental Biology, telephone: (703) 292-8133, email: [stwombly@nsf.gov](mailto:stwombly@nsf.gov)

#### **Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):**

- 47.074 --- Biological Sciences

## **Award Information**

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**Anticipated Type of Award:** Standard Grant or Continuing Grant.

**Estimated Number of Awards:** 6 to 8 per year

**Anticipated Funding Amount:** \$750,000 to \$1,500,000 per year, pending availability of funds.

## **Eligibility Information**

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#### **Who May Submit Proposals:**

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the Grant Proposal Guide, Chapter I, Section E.

#### **Who May Serve as PI:**

There are no restrictions or limits.

#### **Limit on Number of Proposals per Organization:**

There are no restrictions or limits.

#### **Limit on Number of Proposals per PI or Co-PI: 2**

All LTREB proposals are reviewed by one or more of the appropriate, participating core programs in the Division of Environmental Biology. The Division limits the number of preliminary proposals on which a given individual may participate, as PI, co-PI, or sub-award Lead, to **no more than two in any year**. "PI, co-PI, or lead senior investigator of a subaward" refer to the role an individual would play in a full proposal including all parts of a collaborative proposal. Exercised options to defer an Invited Full Proposal submission or bypass subsequent Preliminary Proposal submission count against this limit. Participating in a proposal as other senior personnel does not count toward this limit.

Submission of an LTREB preliminary proposal in response to this solicitation will count toward the annual limit of 2 submissions per individual to the Division. An investigator who submits an LTREB preliminary proposal that is appropriate for review by one of the participating clusters in DEB will be allowed to participate, as PI co-PI, or sub-award Lead, in only one other preliminary proposal submitted to DEB.

LTREB renewal proposals for the second five years of funding do not count toward this limit, because preliminary proposals are not required for these renewals. If an individual is eligible to submit an LTREB renewal proposal, he or she may participate in up to 2 preliminary proposals submitted to the Division in the same year.

It is the responsibility of the submitters to confirm that the research team is within these eligibility guidelines. Changes to the team post-submission to meet eligibility limits will not be allowed.

## Proposal Preparation and Submission Instructions

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### A. Proposal Preparation Instructions

- **Letters of Intent:** Not required
- **Preliminary Proposals:** Submission of Preliminary Proposals is required. Please see the full text of this solicitation for further information.
- **Full Proposals:**
  - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg).
  - Full Proposals submitted via Grants.gov: NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=grantsgovguide](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)).

### B. Budgetary Information

- **Cost Sharing Requirements:** Inclusion of voluntary committed cost sharing is prohibited.
- **Indirect Cost (F&A) Limitations:** Not Applicable
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

### C. Due Dates

- **Preliminary Proposal Due Date(s) (required)** (due by 5 p.m. proposer's local time):
  - January 30, 2014
  - January 30, Annually Thereafter
- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):
  - August 01, 2014
  - August 1, Annually Thereafter

## Proposal Review Information Criteria

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**Merit Review Criteria:** National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

## Award Administration Information

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**Award Conditions:** Standard NSF award conditions apply.

**Reporting Requirements:** Standard NSF reporting requirements apply.

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# I. INTRODUCTION

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Many important questions in ecology, ecosystem science, and evolutionary biology can only be addressed with long-term data. Research areas include, but are not limited to, the effects of natural selection or other evolutionary processes on populations; the effects of interspecific interactions that vary over time and space; population and community dynamics for organisms that have extended life spans and long turnover times; feedbacks between ecological and evolutionary processes; pools of materials such as nutrients in soils that turn over at intermediate to longer time scales; and external forcing functions such as climatic cycles that operate over long return intervals. Investigators often are constrained in addressing questions in these areas by the relatively short support periods associated with typical research awards. In recognition of this problem, the Division of Environmental Biology (DEB) encourages investigators to apply for LTREB awards. These awards are designed to provide the funding to maintain an ongoing, long-term research project for a period of a decade or longer.

The usefulness of long-term data sets extends beyond typical scientific publications. Therefore, a means of sharing data with other investigators in order to stimulate synthesis and the generation of novel ideas is an important requirement of all proposals. The results also should be of interest to and available to the general public. To take advantage of the unique informational aspects of long-term projects, LTREB investigators will be required to implement mechanisms of data sharing in the broadest manner possible.

# II. PROGRAM DESCRIPTION

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The Long Term Research in Environmental Biology Program intends to support decadal projects. Funding for an initial, 5-year period requires submission of a preliminary proposal and, if invited, submission of a full proposal following the guidelines described in Section V and the additional review criteria in Section VI, below.

Essential components of an LTREB proposal include:

**Decadal Research Plan:** Proposals must address questions that require long-term data collection to be answered. Investigators must present a research plan that spans at least ten years. This plan should clearly articulate important questions that cannot be addressed with data that have already been collected, but could be answered if ten additional years of data were collected. It is not a research timeline or management plan, but rather is a concise justification for ten additional years of support in order to advance understanding of key concepts, questions, or theories in environmental biology. The decadal plan is a critical component of an initial 5-year proposal, and questions or hypotheses outlined in this framework must guide any subsequent renewal.

**Core Data:** LTREB proposals require that the author has studied a particular phenomenon or process for at least six, recent years, or for long enough to generate a contemporary time series that contains six data points. Analysis of these data should generate new questions, focusing on the same phenomena or processes, that provide the justification for LTREB support.

**Plan for Data Management and Dissemination:** Data from long-term research projects have value beyond the peer-reviewed and other publications generated by the investigators collecting the data. Other researchers may develop new perspectives on the same long-term data or new ideas may arise from a combination of long-term data sets. Also, long-term data are expected to be of special interest to the public. Therefore, all proposals must describe details of information management and plans for data sharing with the broader research community and the interested public. This plan should be submitted as a Supplementary Document, following guidelines in the NSF Grant Proposal Guide.

**LTREB Renewals:** To implement the decadal time frame intended for LTREB projects, proposals for renewed support during a second, five-year period do not require submission of a preliminary proposal. Instructions for writing a renewal proposal are provided in Section V, below. Renewal proposals will be evaluated using review criteria described in Section VI of this solicitation. Renewal proposals should be submitted to the August full proposal deadline in the fourth year of the existing award.

Continuation of LTREB projects beyond the initial ten years of support will require submission of a new preliminary proposal, based on a new decadal research plan. If a full proposal is invited, it will follow the same sequence of an initial proposal and a subsequent renewal.

All proposals submitted to the LTREB Program are co-reviewed by participating Clusters in the Division of Environmental Biology (Ecosystem Science, Population and Community Ecology, and Evolutionary Processes). Proposals must address topics supported by these core programs. Researchers are strongly encouraged to contact cognizant program officers to ensure that their projects are appropriate for the LTREB program.

Ecological research on marine populations, communities and ecosystems is not supported by LTREB and should be directed to the Biological Oceanography Program: ([http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=11696&org=OCE](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=11696&org=OCE)). However, research that examines the evolutionary dynamics of marine populations or communities will be accepted. Investigators who are uncertain about the suitability of their research for LTREB are strongly encouraged to contact the managing program director listed in this solicitation.

Beginning in January 2014, the Division of Integrative Organismal Systems (IOS) will no longer accept LTREB proposals. Long-term research that addresses questions of a) development, mechanisms, adaptive value, or evolutionary history of animal behavior, b) mechanisms and processes mediating symbiotic interactions, c) growth, development, stress adaptation, energetics, metabolism, or other physiological processes, and d) structural and physiological traits that underlie organisms' abilities to live in various environments should be submitted to appropriate core IOS programs, as noted above.

Examples of current LTREB awards can be viewed at <http://www.nsf.gov/awardsearch/> by including 'LTREB' in a title search.

## Review Process

A two-stage review process will be used by all Division core programs:

**Preliminary Proposals:** All proposers must submit a preliminary proposal that outlines the major goals of the project including the components described below. Preliminary proposals typically will be reviewed by a panel of outside experts. The Program Directors will communicate the decision to Invite/Do Not Invite full proposals via FastLane and those decisions will be based on the panel recommendations and additional portfolio considerations. Invite/Do not Invite decisions are binding.

**Deferred Full Proposal Submission:** A proposer who is invited to submit, but elects not to submit, a Full proposal may contact the managing Program Officer for guidance on deferring submission until the following year. A deferred full proposal counts as 1 against the limit of 2 preliminary proposal submissions for each PI, co-PI, or lead senior investigator of a subaward at any intervening preliminary proposal deadline.

**Full Proposals:** Invited full proposals will receive panel review and *ad hoc* review at the discretion of the program as described in Section VI of this Solicitation. Full proposals that were not invited will be returned without review.

**Preliminary Proposal Bypass:** An invited full proposal that a panel ranks in the top category (e.g., High Priority), but that is not recommended for funding may exercise a one-time bypass of the preliminary proposal stage of the next review cycle and be submitted as an invited full proposal at the next full proposal deadline, using the original preliminary proposal number. The bypass submission counts as 1 against the limit of 2 preliminary proposal submissions for each PI, co-PI, and lead senior investigator of a subaward at the bypassed stage; the lead PI must notify the managing program officer of intent to exercise the bypass before the bypassed preliminary proposal deadline. The option to exercise a bypass is limited to the preliminary proposal deadline immediately following the invited full proposal review and may not be deferred.

## III. AWARD INFORMATION

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LTREB awards are not to exceed \$90,000 per year (direct and indirect costs) and \$450,000 over a 5-year (60 month) effort. NSF anticipates making 6 new awards annually, pending availability of funds. Involvement of undergraduate and graduate students is encouraged. Researchers may request up to one month of salary per year. These requests must be justified carefully and proposers are encouraged to contact the cognizant program director prior to proposal development. Because data management is a key aspect of these research projects, the proposed budget can include the establishment or periodic upgrading of information technology to provide for data sharing with other researchers and the general public. In general, funds will not be provided to purchase major equipment. Under unusual circumstances, the purchase of major equipment (over \$5,000) will be entertained if these expenses are well justified. Support from the LTREB Program does not preclude support from other NSF programs.

The number of awards made through the LTREB program is subject to the availability of funds.

## IV. ELIGIBILITY INFORMATION

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### Who May Submit Proposals:

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the Grant Proposal Guide, Chapter I, Section E.

### Who May Serve as PI:

There are no restrictions or limits.

### Limit on Number of Proposals per Organization:

There are no restrictions or limits.

### Limit on Number of Proposals per PI or Co-PI: 2

All LTREB proposals are reviewed by one or more of the appropriate, participating core programs in the Division of Environmental Biology. The Division limits the number of preliminary proposals on which a given individual may participate, as PI, co-PI, or sub-award Lead, to **no more than two in any year**. "PI, co-PI, or lead senior investigator of a subaward" refer to the role an individual would play in a full proposal including all parts of a collaborative proposal. Exercised options to defer an Invited Full Proposal submission or bypass subsequent Preliminary Proposal submission count against this limit. Participating in a proposal as other senior personnel does not count toward this limit.

Submission of an LTREB preliminary proposal in response to this solicitation will count toward the annual limit of 2 submissions per individual to the Division. An investigator who submits an LTREB preliminary proposal that is appropriate for review by one of the participating clusters in DEB will be allowed to participate, as PI co-PI, or sub-award Lead, in only one other preliminary proposal submitted to DEB.

LTREB renewal proposals for the second five years of funding do not count toward this limit, because preliminary proposals are not required for these renewals. If an individual is eligible to submit an LTREB renewal proposal, he or she may participate in up to 2 preliminary proposals submitted to the Division in the same year.

It is the responsibility of the submitters to confirm that the research team is within these eligibility guidelines. Changes to the team post-submission to meet eligibility limits will not be allowed.

## V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

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### A. Proposal Preparation Instructions

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**Preliminary Proposals (required):** Preliminary proposals are required and must be submitted via the NSF FastLane system, even if full proposals will be submitted via Grants.gov.

The following exceptions and additions to the NSF GPG apply to preliminary proposals submitted to this solicitation:

Submission of a Preliminary Proposal is required to be eligible for invitation for a Full Proposal. Preliminary proposals that are not compliant with NSF guidelines may be returned without review. It is the submitting organization's responsibility to ensure that the proposal is compliant with all applicable guidelines.

For collaborative projects, a single preliminary proposal should be submitted by the lead institution **ONLY**. The collaborative partners should be indicated in the list of personnel in the project description, as described below.

Preliminary proposals must contain the items listed below and adhere to the specified page limitations. No additional information, beyond that described below, may be provided as an appendix or by links to Web pages. Figures and tables must be included within the specified page limit. All elements of the proposal, including legends and tables, must meet the formatting requirements for font size, characters per inch, margins, etc., as specified in the current NSF GPG.

**Note:** Due to changes in FastLane formatting, use of proposals created before January, 2013 as the basis for new submissions may introduce proposal display and content errors, in particular to the Project Summary. It is the responsibility of the submitter to ensure that all sections of the proposal display correctly, submission prior the deadline is advised.

Preliminary proposals should contain a description of the proposed research in sufficient detail to allow reviewers to assess the major ideas presented, the feasibility of the approaches to be used, and the ability of the project to advance knowledge in evolutionary biology, ecology, or ecosystem studies. Preliminary proposals must include the following components:

**Cover Sheet:** Select the LTREB program solicitation from the pull-down list, and check the box indicated for a preliminary proposal. Entries on the Cover Sheet are limited to the Principal Investigator and a maximum of four co-Principal Investigators. Beginning Investigators (individuals who have not been a Principal Investigator or a co-Principal Investigator on a Federally-funded award with the exception of doctoral dissertation, postdoctoral fellowship or research planning grants) must check the box for "Beginning Investigator" on the proposal Cover Sheet. Leave blank the fields for Requested Amount, Requested Duration, and Starting Date for the project. Additional FastLane instructions can be found below in section V.D.

**Project Title:** The project title must begin with 'LTREB Preliminary Proposal:', followed by the substantive title.

**Project Summary (1 page):** Provide an overview of the proposed research, addressing separately the intellectual merit and the broader impacts of the project. The summary should be informative to those working in the same or related field(s) and understandable to a scientifically or technically literate reader. **Preliminary proposals that do not contain the Project Summary, including an overview and separate statements on intellectual merit and broader impacts, will be returned without review.**

Project Description: **Maximum 5 pages total**, containing the following two sections:

**I. Personnel (This section is limited to one page. Any remaining space should be left blank).** Provide a list of project personnel plus each person's institutional affiliation and one sentence describing this person's role(s) in the project. Divide the list into two sections. The first section of the list must contain all PI(s), co-PIs, and subaward lead senior investigators, including those from all parts of a collaborative proposal. The second section of the list should contain other senior personnel and may include post-doctoral researchers. Any individual for whom a biographical sketch is included in the preliminary proposal must be on one of these lists. You should not list undergraduate or graduate students, technicians, or other participants.

**II. Project (This section is limited to four pages. We suggest the use of the sub-sections listed below, organized as appropriate).**

1. Conceptual Framework
2. Decadal Research Plan and rationale for 10 years of data collection
3. Proposed Research, including questions or hypotheses and the research approach
4. Broader Impacts

**References Cited** are limited to 3 pages; see the GPG for format.

**As a Supplementary Document no longer than 1 page**, include a description of the long-term (6 or more years) core data that provide the basis for the proposed research. As described above, the proposer should have studied a particular process or phenomenon for at least six, recent years or for long enough to generate a contemporary time series that includes six data points. These data should be presented as a table that includes, for each measured variable, the location at which data were collected and the time period over which data were collected. Enough detail should be provided to allow reviewers to understand how these data provide the basis for the proposed research. For example, if the proposed research is to compare traits across four species, the table should indicate data available for each trait for each of the four species and the time frame over which these data have been collected. If the research questions address the role of fire on a biological process, the PI must demonstrate at least 6 years of data on fire at all proposed study sites.

**Although data management is an important aspect of LTREB proposals, a Data Management Plan is not required for preliminary proposals.**

**Biographical Sketches (2-page limit per individual)** should be included for each person listed on the Personnel page. It should follow the format described in the GPG with the exception that because they commonly present difficulties in adhering to the page limit "(e) Collaborators & Other Affiliations" may be left out of the biographical sketch. However, the information requested in "(e) Collaborators & Other Affiliations" must be listed in a separate document, described below: this separate document is in lieu of or in duplication of information included in the biographical sketches.

**No budget should be submitted.** Please leave blank the Requested Amount box on the FastLane Cover Sheet.

**A combined Conflict of Interest document:** Provide as a Supplementary Document a single document that includes the Biographical Sketch part "(e) Collaborators & Other Affiliations" for all persons including a biographical sketch in this preliminary

proposal. This document is provided in lieu of or in duplication of information the GPG requests as part of the biographical sketches and is used to help identify potential conflicts or bias in the selection of reviewers. For each person include, as described in the GPG, (1) Collaborators and Co-Editors, (2) Graduate Advisors and Postdoctoral Sponsors, and (3) Thesis Advisor and Postgraduate-Scholar Sponsor. In addition, this document should list other potential conflicts including (4) spouse or other relative, and (5) any other individuals with whom or institutions with which the senior personnel (PI, co-PIs, and any named personnel) have financial ties, including advisory committees, boards of directors, or prospective employers (specify type). Note: Conflicts of interest involving junior authorship on a multi-authored papers (>5 authors) may be limited to the senior author.

**A Consolidated Personnel List.** The template found at <http://www.nsf.gov/bio/deb/debcoitemplate.XLSX>, contains a single tab. Please read the instructions carefully and follow guidance. Using the template, compile an Excel Workbook that provides information for all persons listed on the Personnel page of the project description. The completed file must include the FastLane proposal ID (Not the Temporary ID #) assigned after submission of your proposal. The completed file should be submitted by email to [debcoi@nsf.gov](mailto:debcoi@nsf.gov) within three business days of proposal submission.

Applicants must include the above documents, prepared in accordance with standard NSF formatting guidelines).

Applicants must complete the Proposal Classification form. This form is required for all submissions to the BIO Directorate; FastLane will not allow processing of your proposal without it.

**No other supplementary documents or appendices are permitted for preliminary proposals.**

Items that should NOT be included in a preliminary proposal:

Budget, Budget Justification, Facilities, Equipment and Other Resources, Current and Pending Support, Letters of Collaboration, **Data Management Plan**, Postdoctoral Mentoring Plan, RUI Impact Statement, Certification of RUI Eligibility, or any other Supplementary Documents.

**Full Proposal Preparation Instructions:** Proposers may opt to submit proposals in response to this Program Solicitation via Grants.gov or via the NSF FastLane system.

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg). Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov). Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: ([http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=grantsgovguide](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov).

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.4 of the Grant Proposal Guide provides additional information on collaborative proposals.

**Important Proposal Preparation Information:** FastLane will check for required sections of the full proposal, in accordance with *Grant Proposal Guide* (GPG) instructions described in Chapter II.C.2. The GPG requires submission of: Project Summary; Project Description; References Cited; Biographical Sketch(es); Budget; Budget Justification; Current and Pending Support; Facilities, Equipment & Other Resources; Data Management Plan; and Postdoctoral Mentoring Plan, if applicable. If a required section is missing, **FastLane will not accept the proposal.**

Please note that the proposal preparation instructions provided in this program solicitation may deviate from the GPG instructions. If the solicitation instructions do not require a GPG-required section to be included in the proposal, insert text or upload a document in that section of the proposal that states, "Not Applicable for this Program Solicitation." Doing so will enable FastLane to accept your proposal.

*Please note that per guidance in the GPG, the Project Description must contain, as a separate section within the narrative, a discussion of the broader impacts of the proposed activities. Unless otherwise specified in this solicitation, you can decide where to include this section within the Project Description.*

**For new LTREB projects, full proposals will be accepted only from PIs who have submitted Preliminary Proposals and have been invited to submit a full proposal. LTREB Renewal proposals requesting the second five years of funding are excepted from the required Preliminary Proposal.**

**Note:** Due to changes in FastLane formatting, use of proposals created before January, 2013 as the basis for new submissions may introduce proposal display and content errors, in particular to the Project Summary. It is the responsibility of the submitter to ensure that all sections of the proposal display correctly, submission prior the deadline is advised.

The full proposal should not deviate substantially from the preliminary proposal in scope or in the list of personnel without prior approval of the relevant Program Director.

**Project Description (maximum 15 pages,** including Results from Prior NSF Support for PI and all co-PIs): The proposal should address the following three themes in the Project Description or where otherwise indicated:

**Conceptual Framework.** Proposals must address timely and important concepts in environmental biology. Clearly defined hypotheses must guide the research. These hypotheses must be motivated by at least 6 years of recently-collected data on the study system and must be grounded in appropriate concepts or theory.

**Decadal Research Plan:** The Project Description must include a specific section, entitled 'Decadal Research Plan,' that identifies questions or hypotheses that require an additional 10 years of investigation to be answered. These questions or hypotheses should

form the crux of the proposal. Investigators must demonstrate that the questions posed cannot be answered with data already in hand, or with data collected from typical three-to-five-year awards made by core programs. Clear justification must be provided for needing an additional 10 years of data to answer these questions. The decadal research plan should provide the overarching motivation for the initial 5-year investigation as well as for a 5-year renewal.

**Core Data Set.** Central to all successful LTREB projects is a set of core data that are already being collected continually in the laboratory or at an existing site or sites. As described above, the proposer should have studied a particular process or phenomenon for at least six, recent years or for long enough to generate a time series that includes six data points. Analysis of these data should serve as the basis for new questions, focused on the same phenomena or processes, that motivate the current proposal. Proposals should clearly state the data that have been collected, the sites at which they have been collected, how long they have been collected, if they will continue to be collected, and how these data generate the new questions posed. These data can be documented in a table or as a narrative description.

New research activities such as the addition of new sites or the initiation of a new manipulation can be proposed with the following conditions: these activities cannot compromise continued collection of the core data that form the basis for the research and must clearly improve the ability to answer questions that arise from analyses of the core data. An example is the initiation of a new, short-term experiment to reveal mechanisms responsible for observed, longer-term trends.

Questions concerning the appropriateness of an existing data set as the basis for an LTREB proposal or of new research activities should be discussed with the cognizant NSF Program Director prior to proposal development. The LTREB Program does not provide support solely for monitoring or for the analysis of long-term historical data.

**Data Management and Dissemination (Supplementary Document, 2-page maximum):** Long-term data are a valuable resource that can stimulate and support investigations well beyond the scope of the initial study. Data and metadata collected as part of an LTREB-funded project must be made available to other researchers and to the general public within a reasonable period of time after their collection. The required Data Management Plan should articulate how, where, and when the data will be archived; how and when they will be made available to the broader scientific community; and how future access to the data will be guaranteed. As data maintenance is an iterative process, the information technology used should have sufficient flexibility to allow periodic updates. Proposers may wish to consult with the cognizant program director on the best manner in which to achieve this component of the project.

**Postdoctoral Researcher Mentoring Plan:** Each project that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. FastLane will not permit submission of a proposal that is missing a Postdoctoral Researcher Mentoring Plan. See [Chapter II.C.2.j](#) of the GPG for further information about the implementation of this requirement. Multiple institutions involved in a collaborative project may submit only a single postdoctoral mentoring plan, and this must conform to the page length specified in the NSF GPG.

**Research Experiences for Undergraduates (REU):** Projects anticipating the inclusion of undergraduate research experiences are encouraged to include these as part of the research proposal itself, rather than seeking subsequent supplemental funds. Such requests should follow the guidelines for REU supplement requests ([http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=5517&from=fund](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5517&from=fund)). REU projects involve students in meaningful ways in ongoing research programs or in research projects specifically designed for or by the REU student. If the intent of the PI is to engage students as technicians, then REU funds are not appropriate. Salary support should be requested on the Undergraduate Students line of the proposal budget.

**REU, RET, and RAHSS Funds.** If Research Experiences for Undergraduates (REU), Research Experiences for Teachers (RET), or Research Assistantships for High School Students (RAHSS) funds are requested as part of the full proposal, descriptions of these activities should be included as a Supplementary Document. The description is limited to 3 pages in all circumstances. For example, if funds are requested for multiple categories of activity (REU, RET and RAHSS), or if multiple institutions on a collaborative proposal are requesting funds for one or more categories, the three page limit still applies. The entire budget for these activities should be included in Participant Support Costs, including stipends, travel, and supplies. A detailed breakdown of the budget for each separate category of request must be explained in the budget justification. Budgets for REU activities are generally under \$7,500 per student. Budgets for RET activities are generally under \$15,000 per teacher. Budgets for RAHSS activities are generally under \$6,000 per student. Funds requested for these educational supplements are in addition to the \$90,000 per year funding limit for LTREB projects.

**Biographical Sketches:** Biographical sketches should be submitted for all persons identified as PI, co-PI, Other Senior Personnel, or lead of any subaward in the full proposal and should follow the format described in the GPG with the exception that because they commonly present difficulties in adhering to the page limit "(e) Collaborators & Other Affiliations" may be left out of the biographical sketch. However, the information requested in "(e) Collaborators & Other Affiliations" must be listed in a separate document (see below): this separate document is in lieu of or in duplication of information included in the biographical sketches. Biographical sketches may also be included for post-doctoral fellows. Biographical sketches should not be included for anyone providing a "Letter of Collaboration".

**A combined Collaborators & Other Affiliations document.** Provide as a Supplementary Document a single document that includes the Biographical Sketch part "(e) Collaborators & Other Affiliations" for all persons including a biographical sketch in this proposal. This document is provided in lieu of or in duplication of information the GPG requests as part of the biographical sketches and is used to help identify potential conflicts or bias in the selection of reviewers. For each person include, as described in the GPG, (1) Collaborators and Co-Editors, (2) Graduate Advisors and Postdoctoral Sponsors, and (3) Thesis Advisor and Postgraduate-Scholar Sponsor. In addition, this document should list other potential conflicts including (4) spouse or other relative, and (5) any other individuals with whom or institutions with which the senior personnel (PI, co-PIs, and any named personnel) have financial ties, including advisory committees, boards of directors, or prospective employers (specify type). Note: Conflicts of interest involving junior authorship on a multi-authored papers (>5 authors) may be limited to the senior author.

**Letters of Collaboration.** Supplementary Documents may include letters of collaboration from individuals whose participation is integral to the proposed project but who are neither senior personnel nor supported by subawards. This may include subsidiary involvement in some aspect of the project; cooperation on outreach efforts; or documentation of permission to access materials, data, or study sites. Letters of collaboration should focus solely on affirming that the individual or organization is willing to collaborate on the project as specified in the project description. No endorsements of the potential value or significance of the project may be included. The template that must be used for preparation of letters of collaboration is provided below.

Each letter of collaboration must be signed by the designated collaborator. Requests for letters of collaboration should be made by the PI well in advance of the proposal submission deadline, because they must be included at the time of submission. **Letters deviating from the following template will not be accepted and may be grounds for returning the proposal without review.**

**Template for letters of collaboration:**

To: NSF \_\_\_\_\_ (Program Title) \_\_\_\_\_ Program

From: \_\_\_\_\_

(Printed name of the individual collaborator or name of the organization and name and position of the official submitting this memo)

By signing below (or transmitting electronically), I acknowledge that I am listed as a collaborator on this proposal, entitled "\_\_\_\_\_(proposal title)\_\_\_\_\_" with \_\_\_\_\_(PI name)\_\_\_\_\_ as the Principal Investigator. I agree to undertake the tasks assigned to me or my organization, as described in the project description of the proposal, and I commit to provide or make available the resources specified therein.

Signed: \_\_\_\_\_

Organization: \_\_\_\_\_

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

**A Consolidated Personnel List.** The template found at <http://www.nsf.gov/bio/deb/debcoitemplate.XLSX>, contains a single tab. Please read the instructions carefully and follow guidance. Using the template, compile an Excel Workbook that provides information for all persons listed on the Personnel page of the project description. The completed file must include the FastLane proposal ID (Not the Temporary ID #) assigned after submission of your proposal. The completed file should be submitted by email to [debcoi@nsf.gov](mailto:debcoi@nsf.gov) within three business days of proposal submission.

## PROPOSAL PREPARATION INSTRUCTIONS FOR LTREB RENEWAL PROPOSALS

To implement the decadal time frame intended for LTREB projects, and following an initial 5-year LTREB award, renewal proposals for a second, five-year period will be accepted. Renewal proposals are exempt from the submission of a preliminary proposal, and should be submitted to the full proposal August deadline in the fourth year of the initial award. The project description of a renewal proposal is limited to 8 pages; all other sections described above for a full proposal must be included. Renewal proposals will be evaluated using the standard NSF Merit Review Criteria and three additional criteria described in Section VI below. Titles for renewal proposals must begin with "LTREB Renewal:" followed by the substantive title.

## B. Budgetary Information

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**Cost Sharing:** Inclusion of voluntary committed cost sharing is prohibited.

**Other Budgetary Limitations:** Proposals will be limited to \$90,000 per year and a total of \$450,000 over five years.

## C. Due Dates

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- **Preliminary Proposal Due Date(s) (required)** (due by 5 p.m. proposer's local time):

January 30, 2014

January 30, Annually Thereafter

- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

August 01, 2014

August 1, Annually Thereafter

## D. FastLane/Grants.gov Requirements

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### For Proposals Submitted Via FastLane:

To prepare and submit a proposal via FastLane, see detailed technical instructions available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail [fastlane@nsf.gov](mailto:fastlane@nsf.gov). The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

### For Proposals Submitted Via Grants.gov:

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: <http://www.grants.gov/web/grants/applicants.html>. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: [support@grants.gov](mailto:support@grants.gov). The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

**Submitting the Proposal:** Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

Proposers that submitted via FastLane are strongly encouraged to use FastLane to verify the status of their submission to NSF. For proposers that submitted via Grants.gov, until an application has been received and validated by NSF, the Authorized Organizational Representative may check the status of an application on Grants.gov. After proposers have received an e-mail notification from NSF, Research.gov should be used to check the status of an application.

## VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

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Proposals received by NSF are assigned to the appropriate NSF program for acknowledgement and, if they meet NSF requirements, for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF either as *ad hoc* reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal. In addition, Program Officers may obtain comments from site visits before recommending final action on proposals. Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in the GPG as [Exhibit III-1](#).

A comprehensive description of the Foundation's merit review process is available on the NSF website at: [http://nsf.gov/bfa/dias/policy/merit\\_review/](http://nsf.gov/bfa/dias/policy/merit_review/).

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in [Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018](#). These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

One of the strategic objectives in support of NSF's mission is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions must recruit, train, and prepare a diverse STEM workforce to advance the frontiers of science and participate in the U.S. technology-based economy. NSF's contribution to the national innovation ecosystem is to provide cutting-edge research under the guidance of the Nation's most creative scientists and engineers. NSF also supports development of a strong science, technology, engineering, and mathematics (STEM) workforce by investing in building the knowledge that informs improvements in STEM teaching and learning.

NSF's mission calls for the broadening of opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

### A. Merit Review Principles and Criteria

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The National Science Foundation strives to invest in a robust and diverse portfolio of projects that creates new knowledge and enables breakthroughs in understanding across all areas of science and engineering research and education. To identify which projects to support, NSF relies on a merit review process that incorporates consideration of both the technical aspects of a proposed project and its potential to contribute more broadly to advancing NSF's mission "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes." NSF makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.

#### 1. Merit Review Principles

These principles are to be given due diligence by PIs and organizations when preparing proposals and managing projects, by reviewers when reading and evaluating proposals, and by NSF program staff when determining whether or not to recommend proposals for funding and while overseeing awards. Given that NSF is the primary federal agency charged with nurturing and supporting excellence in basic research and education, the following three principles apply:

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These "Broader Impacts" may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

With respect to the third principle, even if assessment of Broader Impacts outcomes for particular projects is done at an aggregated level, PIs are expected to be accountable for carrying out the activities described in the funded project. Thus, individual projects should include clearly stated goals, specific descriptions of the activities that the PI intends to do, and a plan in place to document the outputs of those activities.

These three merit review principles provide the basis for the merit review criteria, as well as a context within which the users of the criteria can better understand their intent.

#### 2. Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board approved merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two merit review criteria are listed below. **Both** criteria are to be given **full consideration** during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. ([GPG Chapter II.C.2.d.i.](#) contains additional information for use by proposers in development of the Project Description section of the proposal.) Reviewers are strongly encouraged to review the criteria, including [GPG Chapter II.C.2.d.i.](#), prior to the review of a proposal.

When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two criteria:

- **Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to
  - a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
  - b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. NSF values the advancement of scientific knowledge and activities that contribute to achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

Proposers are reminded that reviewers will also be asked to review the Data Management Plan and the Postdoctoral Researcher Mentoring Plan, as appropriate.

### **Additional Solicitation Specific Review Criteria**

#### **Preliminary and Full Proposals**

In addition to the two standard review criteria established by the National Science Board, reviewers will evaluate preliminary and full LTREB proposals for (1) A compelling, conceptually- or theoretically-motivated decadal research plan and (2) Core Data - at least 6 years of contemporary data collected up to the present by the investigator should be in hand at the time of submission, and should motivate or provide the foundation for the research questions proposed.

Reviewers will evaluate **full proposals** for the additional criterion of (3) A plan for data management and dissemination to other researchers and the general public.

#### **LTREB Renewal Proposals**

Proposals submitted for a second, 5-year award to complete a decadal research plan will be evaluated using the standard NSF Merit Review Criteria and the following additional criteria:

1. progress made toward the decadal research plan outlined in the initial proposal
2. a description of planned research activities to complete this decadal plan
3. evidence that previously-collected data are available to the broader research community, and
4. a description of how results at the end of the ten years of funding will be integrated to resolve the original questions posed.

## **B. Review and Selection Process**

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Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review and/or Panel Review.

Reviewers will be asked to evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional program specific criteria. A summary rating and accompanying narrative will be completed and submitted by each reviewer. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF strives to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new awardees may require additional review and processing time. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director acts upon the Program Officer's recommendation.

After programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications. After an administrative review has occurred, Grants and Agreements Officers perform the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

Once an award or declination decision has been made, Principal Investigators are provided feedback about their proposals. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers or any reviewer-identifying information, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

## **VII. AWARD ADMINISTRATION INFORMATION**

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## A. Notification of the Award

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Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process).

## B. Award Conditions

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An NSF award consists of: (1) the award notice, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award notice; (4) the applicable award conditions, such as Grant General Conditions (GC-1)\*; or Research Terms and Conditions\* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award notice. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

\*These documents may be accessed electronically on NSF's Website at [http://www.nsf.gov/awards/managing/award\\_conditions.jsp?org=NSF](http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF). Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov).

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the *NSF Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=aag](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag).

## C. Reporting Requirements

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For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). Within 90 days following expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report, will delay NSF review and processing of any future funding increments as well as any pending proposals for all identified PIs and co-PIs on a given award. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through Research.gov, for preparation and submission of annual and final project reports. Such reports provide information on accomplishments, project participants (individual and organizational), publications, and other specific products and impacts of the project. Submission of the report via Research.gov constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report also must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

More comprehensive information on NSF Reporting Requirements and other important information on the administration of NSF awards is contained in the *NSF Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=aag](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag).

## VIII. AGENCY CONTACTS

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*Please note that the program contact information is current at the time of publishing. See program website for any updates to the points of contact.*

General inquiries regarding this program should be made to:

- Saran Twombly, Program Director, Division of Environmental Biology, telephone: (703) 292-8133, email: [stwombly@nsf.gov](mailto:stwombly@nsf.gov)

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: [fastlane@nsf.gov](mailto:fastlane@nsf.gov).

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: [support@grants.gov](mailto:support@grants.gov).

## IX. OTHER INFORMATION

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The NSF website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this website by potential proposers is strongly encouraged. In addition, "NSF Update" is an information-delivery system designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF [Grants Conferences](#). Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match

their identified interests. "NSF Update" also is available on NSF's website at [https://public.govdelivery.com/accounts/USNSF/subscriber/new?topic\\_id=USNSF\\_179](https://public.govdelivery.com/accounts/USNSF/subscriber/new?topic_id=USNSF_179).

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this new mechanism. Further information on Grants.gov may be obtained at <http://www.grants.gov>.

## ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 55,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

*Facilitation Awards for Scientists and Engineers with Disabilities* provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <http://www.nsf.gov>

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230
- **For General Information** (NSF Information Center): (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**
  - Send an e-mail to: [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov)
  - or telephone: (703) 292-7827
- **To Locate NSF Employees:** (703) 292-5111

## PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

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