NATIONAL SCIENCE FOUNDATION

Long-term Ecological Research (LTER) Program

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TO: Hugh Ducklow (PAL), Barbara Bond (AND), John Blair (KNZ), Ted Gragson (CWT), Steve Carpenter (NTL), and Gene Kelly (SGS)

FROM: Henry L. Gholz and Martyn Caldwell (BIO/DEB), Phillip R. Taylor (GEO/OCE), Roberta Marinelli (OPP/ANT), and Tom Baerwald (SBE/BSCS)

RE: Preparation Guidelines for LTER 2009 Renewal Proposals

This letter contains the formal instructions for preparation of your LTER renewal proposals that will be due at NSF on **1 February 2008** via Fastlane. The instructions are basically the same as those used for the past three renewal competitions and your 2005 mid-term site reviews, with minor editorial clarifications. No new funds are anticipated for ISSE-type activities, so that the budget targets (Section 7) reflect your current budget levels plus expected inflationary step increases.

Pay particular attention to the page restrictions for each section. Starting with the 2002 competition when Fastlane submission was first required, the use of backs of printed pages for graphics was not possible, so that there were some revisions made to the maximum allowable numbers of pages for some sections over what your last renewal proposal probably contained. Specifically, the allowable pages for Section 2 were doubled to account for this. Note that there are no substitutions allowed of extra text pages for graphics pages (i.e., the 20 page limit will be strictly enforced for both the text and the graphics portions separately). Previous page limits were also expanded slightly to allow for graphic material in some other sections (again no text substitutions are allowed). The Fastlane page restrictions will be amended to enable your submissions.

Note new font guidelines as of June 2007, which should be followed for the text and figure captions (ref. Ch. II.A. of the 2007 revised Proposal and Awards Policies and Procedures Guide (or PAPP *<http://www.nsf.gov/pubs/policydocs/papp/nsf07140.pdf>):*

"a. Use of only the approved typefaces identified below, a black font color, and a font size of 10 points or larger must be used:

• For Windows users: Arial, Helvetica, Palatino Linotype, or Georgia
• For Macintosh users: Arial, Helvetica, Palatino, or Georgia

• For TeX users: Computer Modern
A symbol font may be used to insert Greek letters or special characters; however, the font size requirement still applies;
b. No more than 6 lines within a vertical space of 1 inch; and
c. Margins, in all directions, must be at least an inch."

NSF utilizes two main criteria in the review process. **Criterion 1** addresses the intellectual merit of the proposed research and **Criterion 2** addresses the broader impacts of the research; both must be addressed in the Project Summary. You are encouraged to read guidelines for review on the NSF web site, but please note that for the LTER program, these criteria are further developed into five emphasis areas:

The primary review criterion will be **scientific merit** (NSF's Criterion 1). **Information management** and technology, **site management** (including personnel, fiscal, administrative, institutional and logistical issues), **network participation** (including cross-site, non-LTER, international research, and other activities) and **outreach/education** (training of undergraduate and graduate students, K-12 Schoolyard, application of results to policy and management, etc.) are also important aspects of all LTER projects that will be addressed during the review. Each of these five criteria are evaluated with respect to quality, productivity and impact. Research both within and across sites essentially comprises Criterion 1. The "education and outreach" portion is essentially Criteron 2. IM and site management (including non-research aspects of network participation) are part of the review criteria for all NSF Centers, including LTER.

The sections of your proposal should be developed according to the guidelines below:

Section 1. (≤ 5 pages of narrative; total of 5 pages maximum*). Describe results of prior LTER support. In addition to the five maximum text pages, provide a table that lists all publications from LTER research since the last renewal, sorted into the following categories: (1) journal articles, (2) books, (3) book chapters, (4) dissertations and theses, and (5) other publications. Include a second table that lists data sets from your site that are currently available electronically and provide documentation of the use of on-line data sets by investigators and others not directly associated with your LTER program.

* The two lists of publications and data sets for Section 1 may be put into the **Supplementary Documentation** part of Fastlane (be sure to follow the format requirements).

Section 2. (≤ 20 pages of narrative *plus* ≤ 15 pages of illustrations, tables and figures; 35 pages total maximum, but no substitution is allowed of narrative pages for graphics pages). Develop and explain the conceptual framework that provides the unifying ecological theme for your site. Next, describe in some detail the long-term experiments, sampling protocols and monitoring that you are doing or propose to do, and explain how these relate to your conceptual framework. Describe methods and

data analyses so that the quality of long-term efforts can be evaluated critically by reviewers. In addition, describe short-term mechanistic experiments, empirical studies, sampling programs and other approaches, such as modeling, that will be conducted. Again, describe the methods and planned analyses in detail and explain how these short-term studies relate to your conceptual framework. Conceptually integrate these efforts with your long-term studies. Because budgets normally increase at the time of renewal, there is an expectation that some new activities will be proposed.

Clearly, modeling efforts are important and should be discussed in detail as appropriate. Outline any regionalization, cross-site, or other collaborative efforts involving the LTER network that are planned, if they are not part of your core program as already described (network activities).

Finally, close this section with a synthesis that shows how your major activities will lead to a deeper understanding of the ecosystem and its relationship to other biomes represented within the LTER network.

There is no need to include detailed methodologies in the proposal text for projects that are on-going at the site. The best approach is to provide a general description of the methods in the proposal, and to give a web site address where the detailed methods manual is located. For new research efforts, more detail on methods should appear in the proposal.

Section 3. ($\leq$ 2 pages of narrative *plus* $\leq$ 1 page for figures/tables; 3 pages maximum). Describe how you manage your site. How are funding and research decisions made and actions implemented? What efforts are made to encourage non-LTER scientists from your institution or other institutions to use your site as a research platform? How are you involving a diversity of scientists at the site? Include any plans for enhancing diversity of scientists at your site. Discuss relevant institutional relations issues. Detail any major changes anticipated during the next grant phase.

Section 4. ($\leq$ 3 pages narrative *plus* $\leq$ 1 pages of tables/figures; 4 pages maximum). One of the recognized strengths and pioneering aspects of the LTER network relates to information management and technology. Describe your data and information management system. How is the data manager involved in the design of research projects? What mechanisms do you employ to get researchers to contribute their data to the LTER database? How quickly are data sets made available to other researchers? What criteria are used to limit or provide access of LTER data sets to other researchers? How often are data sets updated on the WWW? Detail anticipated major changes and why these changes are necessary or desirable.

Section 5. ($\leq$ 2 pages text *plus* $\leq$ 1 page of tables/figures; 3 pages maximum). Describe your outreach program, including educational activities at all levels, public activities, media interactions, implications/applications of your research to policy and management, etc. Then discuss the development of your outreach program over the

next grant phase. If it differs substantially from past years, describe why you have taken this new approach.

Section 6. (pages as required). Literature Cited.

Section 7. Budget pages and detailed budget descriptions. The budget for the next six years for PAL should total $820,000 per year, a 15.5% increase over the previous level. For KNZ, AND and SGS the total should be $940,000 per year, $14.6% increases over the previous levels. The budgets for CWT and NTL should total $1,240,000 per year, 10.7% increases over the previous level. These, or any, increases over current levels are subject to availability of funds in the FY 09 NSF budget. In your proposals, provide sufficient Budget Justification as required. Also describe other sources of funding, how LTER funds are leveraged at your site, and what other in-kind services are provided and by whom. Please note revised NSF policies regarding cost-sharing (Section II.D. of the PAPP).

Section 8. Provide one-page CVs for each PI and other senior scientist listed on your proposal. List only 5 publications per investigator on each CV; note accomplishments related to both NSF review criterion as appropriate.

Separate from the individual CVs, provide a cumulative, alphabetized list of all collaborators and other potential conflicts- of-interest for all of the PIs and other senior scientists for whom CVs appear in the proposal.

Section 9. Current and Pending support of each investigator.

Please contact us if you have further questions.