



Restoration Research Grant Program Application Package

www.chesapeakebaytrust.org / 410-974-2941

AT A GLANCE

The Restoration Research Grant Program funds key restoration questions focused on the effectiveness of stream practices.

Grant Workshop

January 9th from 1 pm to 3 pm
Truxtun Park's Pip Moyer Recreation Center

Deadline

5:00 p.m., March 19, 2015

Submit Your Application by following instructions at:

www.cbtrust.org/restorationresearch

Background and Goal of the Grant Program

The Chesapeake Bay Trust (the Trust), the Maryland Department of Natural Resources, and the United States Environmental Protection Agency (EPA) announce a request for proposals for its Restoration Research Grant Program.

Efforts to restore the Chesapeake Bay and its tributaries call for a significant increase in the number of watershed restoration projects intended to improve both water quality and habitat. Questions about the performance and function of some of these practices to meet those two goals persist, in the regulatory community as well as the restoration practitioner community.

The goal of this grant program is to answer several key restoration questions. It is the hope of the funding partners that answering these questions will ultimately lead to increased confidence in proposed restoration project outcomes, clarification of the optimal site conditions in which to apply particular restoration techniques, information useful to regulatory agencies in project permitting, and information that will help guide monitoring programs. While research is needed in the realm of

many different restoration practices, this year's opportunity is dedicated to key restoration research questions that focus on stream practices, as opposed to traditional stormwater management in the upland or other restoration practices.

Additional Resources to Support Project Development

Grant Workshop Opportunity

A workshop to support the research projects and answer questions will be held January 9th from 1 pm to 3 pm at the Truxtun Park's Pip Moyer Recreation Center located at 273 Hilltop Lane, Annapolis, Maryland.

Literature Review

A list, though not exhaustive, of relevant literature is presented in the "Additional Resources" section on the grant webpage. All applicants are required to begin their proposals with a survey of the literature to support the specific question and methodology chosen. Investigators may propose with funds from this grant program to:

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- a. expand the literature review and produce a literature synthesis, if they can make the case that enough is known about a question; or
- b. answer a component of the question with a research project. Research projects may include:
 - i. experimental or descriptive work in the field;
 - ii. experimental work in the laboratory; and/or
 - iii. modeling studies.

Project List

Given budget constraints, investigators are encouraged to couple efforts with planned or completed restoration projects where appropriate. The grant applicant is encouraged to compile the list of potential projects of interest. However, the Trust staff and collaborators will provide project list(s), though not exhaustive, of relevant restoration projects for consideration, as available. These project lists will be presented in the “Additional Resources” section on the grant webpage. See this grant program website for details or contact the Trust staff.

Key Restoration Questions and Methodological Guidance

Members of the regulatory and restoration communities worked together to identify several key restoration questions on which to focus this initial effort. Applicants must focus on one or more of these questions by proposing specific hypotheses to test. **The methods must be robust and scientifically defensible.** Methodological guidance for all descriptive and/or experimental projects is provided after each key restoration question and is provided for all projects after the key restoration questions section.

Key Restoration Questions

The following eight research questions are organized into these three themes:

- A. Effectiveness at accomplishing water quality and habitat goals;
- B. Construction techniques; and
- C. Stability.

Projects Must Include

All proposals must conclude with a section describing the products of the work at a minimum to include:

- a. at least one scientific paper in the peer-reviewed scientific literature;
- b. a talk at a restoration conference for the practitioner audience; and
- c. annual presentations to the regulatory community at regulatory training events for the duration of the study period.

Key Restoration Questions and Methodological Guidance

The eight key research questions are discussed below, organized by the three themes noted earlier.

A. **Effectiveness at accomplishing water quality and habitat goals**

The following key restoration questions provide information needed to determine what stream restoration techniques are most effective at accomplishing water quality goals (reducing nutrients and sediment) and/or changing geomorphology for the benefit of habitat creation/enhancement and other biological goals in various site and watershed conditions.

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These questions are grouped into the following two categories: a) differences among restoration techniques and b) effects of site condition on outcomes of a restoration technique(s).

Differences among restoration techniques:

1. What is the impact on nutrient and sediment loads (flow and concentration) of different stream restoration techniques (e.g., regenerative stormwater conveyance, natural channel design, valley restoration/legacy removal, other), keeping site conditions constant?
2. What is the impact on habitat and biological factors of different stream restoration techniques (e.g., regenerative stormwater conveyance, natural channel design, valley restoration/legacy removal, other), keeping site conditions constant?
3. Considering impacts on nutrients, sediment, habitat, hydrology, and biological resources of both short-term construction activities and long-term project function: Do different design types result in a net ecological benefit relative to pre-project conditions? To answer this question, trade-offs (reductions in function vs. increases in functions) would be considered.

Methodological Guidance for Questions 1, 2, and 3

- The strongest proposals will use paired series (Osenberg, et al., 2006) or BACI (before-after-control-impact) designs with sufficient replication to capture variability and control sites to capture variability due to other factors. Sample size to be used must be justified.
- Though experimental BACI designs in which researchers collaborate with existing planned restoration projects leads are the most ideal, descriptive studies that rely on existing completed projects will also be considered.

Effects of site condition on outcomes of a restoration technique(s):

4. What is the impact of land use on the nutrient, sediment, habitat, and/or biological impacts of a restoration practice of a particular type (e.g., regenerative stormwater conveyance, natural channel design, stream valley restoration/legacy removal, other)? How does site condition, such as the land use, watershed condition, and/or valley type, determine water quality, habitat, and/or biological benefit?
5. What are the water quality, habitat, and/or biological impacts of a particular project type (regenerative stormwater conveyance, natural channel design, valley restoration/legacy removal), installed in the watershed headwaters versus downstream near the receiving waters?

Methodological Guidance for Questions 4 and 5

- Factors pertaining to site condition to be included in the experimental design must be clearly articulated and a justification provided for their selection. Potentially confounding factors must be considered. Factors that are not to be included but hypothesized to have a potential effect on water quality or biological outcomes must be articulated and must be kept constant.
- Through experimental BACI designs in which researchers collaborate with existing planned restoration projects leads are the most ideal, descriptive studies that rely on existing completed projects will also be considered.

B. Construction techniques

6. What is the difference in effects on water quality (turbidity), riparian habitat, and other biological effects between stream restoration work “in the wet” (construction without diverting the stream)

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vs. work “in the dry” (construction accomplished through diversion of the water flow)? You will be required to articulate potential covariates, such as project duration, sediment type, slope, stream size, gradient, stream flow, restoration type, drainage area, and other factors.

7. Iron can occur naturally in the soil and the groundwater. What restoration techniques are associated with increases in iron concentration in the surface water or sediment and for how long do any increases persist? What is the impact of the iron on biological resources? Does the iron originate from the materials brought on site for restoration or does the iron originate from natural sources (e.g., materials brought to the site for restoration may add to the natural background levels, may exacerbate the iron concentrations that occur naturally, may oxidize the iron during construction activity, and/or other factors)?

Methodological Guidance for Question 6 and 7

- Calculate and address the initial site sediment loads prior to construction.
- Consider addressing the variability in one or more of the following factors: substrate type, gradient, stream size, stream flow, land use, restoration type, and area disturbed.
- Consider using existing information and/or models, such as for the sedimentation rate.
- Project could be a modeling exercise.

C. Stability

8. What design and construction factors, such as construction material type, material size, and/or extent of keying a structure into the bank, are correlated with structural instability for certain site conditions, such as soil type, hydrology, slope, flow, vegetation, and/or contributing drainage area? *Note:* This question acknowledges that there is debate in the community about the definition of the term “stability” and acceptable levels of movement of stream materials.

Methodological Guidance for All Projects

- Perform a literature review prior to the application and use the results to support the proposed project. This should be done during the proposal development stage.
- Propose a literature review and describe how the literature review findings will be used to support the proposed project.
- Describe the issue, methods, anticipated results, and how the results will inform the key restoration questions.
- Use robust and scientifically defensible methods.
- Explain the proposed scientifically defensible methods.
- List the project type, design, site location, and all relevant information to ensure the reviewers that: a) the project(s) can and will be used and b) the project(s) can and will inform the key restoration question(s).
- Describe the quality assurance and quality controls for project management, data generation and acquisition, assessment and oversight, and data validation and usability.
- Outline expected obstacles and contingency plan(s).
- Describe the anticipated key restoration answer(s).

Methods must be scientifically defensible in order for the results to be useful for the end users and to submit a scientific paper.

Criteria

All projects will be evaluated on the following criteria:

- Ability to successfully and objectively answer one or more of or a component of one or more of the key restoration questions described earlier;
- Use of scientifically robust methods, including sampling regimes and parameters, statistical analysis appropriate to addressing the proposed hypothesis;
- Demonstration that project sites selected for study will be available and accessible, as proposed;
- Organization and lead staff qualifications;
- Transferability of the results; and
- Stated willingness and plan to submit data to the Trust and partners no later than one year from when the data was compiled.

Eligible Applicants

Both not-for-profit entities (academic institutions, non-profit organizations) and for-profit entities are permitted to apply. The strongest proposals will show committed partnerships with various types of organizations. Organizations need not be based in Maryland, but the work conducted with these funds must occur in Maryland.

Funding Available and Timeline

Funding partners have allocated \$800,000 for this grant program. Literature reviews will be funded at a level of less than \$50,000 and must be concluded within six (6) months of execution of award contract. Field and laboratory research will generally be less than \$400,000, applicants may request more with additional justification. Project timeframe for research projects should be commensurate with the goals of the project; however, the upper end of the project time limit is five years.

Eligible Budget Items

Budget and Match

- Cash and in-kind match is not required, but output is a criterion on which the project will be judged. Preference will be given to projects with the most robust research plan. Therefore, leveraging funds and indicating matching resources may result in higher scores.
- Appropriateness and scale of budget, including research personnel time, will be evaluated.

The Trust **does not fund** the following:

- Endowments, deficit financing, individuals, building programs, annual giving, direct mail fund raising, or venture capital.
- Mitigation activities.
- Political lobbying.
- Reimbursement for a project that has been completed or materials that have been purchased.

Review and Selection

The Trust evaluates each proposal on a case by case basis. Funding partners reserve the right to fund projects and budget items that advance their mission and meet their specific priorities and criteria. The Trust and funding partners may request that grant applicants include additional collaboration with other grant applicants prior to receiving the grant award.

Successful applicants (i.e., grantees) will be asked to sign a grant agreement, in which the grantee agrees to:

- Disseminate research results in at least three training sessions for regulators/policy makers (one per year, which could include the year(s) immediately following the grant period);
- Provide the Trust with the research data produced as part of this grant. Grant agreements shall specify the data to be delivered and delivery schedules for the data. The timeframe for data delivery may be up to one year from the completion of the work and may be made publically available for use; and
- Commit to submit one or more publications as a result of the work to a peer reviewed scientific journal.

Contact

For technical assistance with projects, please contact:

Sadie Drescher
410-974-2941 ext. 103
sdrescher@cbtrust.org

Application Submission Instructions and Deadlines

Applicants must submit proposals using our Online Grants System, found at www.cbtrust.org/grants/researchrestoration by **5:00 pm on March 19, 2015**. Late applications will not be accepted, and the **online funding opportunity closes promptly at 5:00 pm**. To use this system, applicants must register at least 24 hours in advance of submitting an application. **Applicants are strongly encouraged to submit at least a few days prior to the deadline** given potential for high website traffic on the due date. The Trust cannot guarantee availability of Online Grant System technical assistance on the deadline date.

Grant awards will be announced in May 2015.

All applicants will receive a letter stating the funding partnership's decision. An application may be declined, partially awarded, or fully awarded. If approved, the Trust will send a grant agreement letter with grant conditions and due dates of status and final reports. Grantees must sign and return the grant agreement letter with original signatures. The Trust will mail the check to the requesting organization when (a) the Trust receives the signed grant agreement and (b) any award contingencies have been satisfied. In cases where the grantee fails to submit a status report or final report by the due date, the Trust reserves the right to terminate the grant agreement and require a refund of funds already transferred to the grantee.

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When the project is complete, grantees are required to complete final reports, including submission of all invoices/receipts. Organizations with outstanding final reports will not be awarded additional grants. In cases where the grantee fails to submit a status report or final report by the due date, the Trust reserves the right to terminate the grant agreement and require a refund of funds already transferred to the grantee.

Proposal Instructions

When completing the online application process, you will be asked for the following information:

Project Title: List the title of your project

Organization Information

- 1) Organization name
- 2) Address and Phone Number
- 3) Mission of Organization
- 4) Organization Type
- 5) Employer Identification Number (EIN)

An Executive Officer and Project Lead must be identified for all proposals and must be different individuals. Both individuals must be staff or board members of the applicant organization.

Executive Officer of Requesting Organization: Name, Title, Address, Phone, and E-mail

Project Officer: Name, Title, Address, Phone, and E-mail

Grant Information:

- 1) Amount of funding requested
- 2) Grant Period: enter project start and end dates
- 3) In which county will the project be located?
- 4) In which stream, river or watershed will the project be located?
- 5) Latitude and longitude (in decimal degrees) of project site

Project Abstract

In a text box, you will be asked to provide a brief (3-4 sentences) summary of the project, including details such as type of project and main objectives, including hypothesis to be tested.

Project Timeline

You will be asked to complete a table listing major project tasks, with start and end dates.

Project Partnerships and Qualifications

You will be asked to complete a table listing all project partner organizations, individuals, their areas of expertise, and their role(s) in your project. Applicants are encouraged to upload a letter of support for the project from each partner outlining the partner's role in the project. Letters may be added to the Project Narrative File or uploaded as an attachment.

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Project Narrative Upload

Answer the project narrative questions and upload the MS Word or PDF file. The project narrative should not to exceed five (5) pages of text. We recommend that you copy and paste the questions to use as an outline in the project narrative to demonstrate that the narrative addresses all questions. You may add photos, letters of support, and other materials to support your project proposal as additional file attachments.

Project Narrative Questions:

1. **Introduction and Brief Literature Review.** Please discuss the background of the hypothesis you will be testing, including other relevant studies (peer-reviewed and gray literature) and their findings. How does your work build on previous activities? How does your proposed project advance the knowledge to the next level?
2. **Key Restoration Question(s):** Articulate the key restoration question(s) your project will address.
3. **Methodology:** Describe your methodology, including identification of sampling sites (if applicable), sampling regime (if applicable), sample size, parameters measured, and statistical analyses to be used.
4. **Requesting Organization and Qualifications:** Briefly describe your organization. Describe the experience your organization, the staff selected in your organization to perform this work, and the contractors selected to perform this work.
5. **Transferability:** Explain how you plan to disseminate the information (above and beyond the required participation in regulatory/policy-maker workshops described earlier).
6. **Regulatory Support:** Describe the regulatory support for your project plan, project site(s), and proposal, as appropriate.
7. **Conflict of Interest:** Projects in which there is independence between the lead investigator(s) and other phases of the project (e.g., design, build, monitor, maintain, etc.) will be ranked highest. Independence is defined as lack of involvement of the investigator(s) proposed here and the design or construction of the project(s) to be used to answer the questions in this study. Please describe any connections your project team has with the design, construction, and/or funding of the restoration project(s) that could impact *or be perceived to impact* the results and their use.

Budget Upload

You will be asked to upload your budget using the Chesapeake Bay Trust Budget Form, an excel file template. The template can be found by visiting www.cbtrust.org/forms and clicking on "**Chesapeake Bay Trust Budget Form.**"

- Please be as detailed as possible. For example, elements of construction requests (e.g., mobilization, rock costs, plant costs, contractor costs) must be listed separately. For projects in which design costs are requested, list design-related items (e.g., survey, CAD work, permit work) separately.
- For any staff cost requests, list the percentage of overall time devoted to the project by each staff member in the budget item column. Please make sure to use the “Additional Budget Justification” section in the online application. This is where you can make a strong case for staff time proposed,

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including graduate student, technician, postdoctoral researcher, and principle investigator(s) time. It is expected that all personnel included in budgets will be directly involved in the research conducted under this program. Requests that do not include full justification for personnel involved may not be fully funded.

- Be sure to see “Eligible Budget Items” section in this RFP and the “Budget Form Instructions” tab in the “Budget Form” excel spreadsheet (last tab).
- Do not evaluate volunteer hours in terms of dollars; instead, list them separately.
- Matching/leveraged resources are encouraged. Please indicate whether each match entry is applied for, pledged, or in-hand. Indicate in the narrative whether your organization has requested financial support from any other sources for the project not listed as match in the “Budget Form.”

Budget Category Information

This final online grant program component will ask applicants to enter budget category totals. These totals will be automatically calculated in the **Chesapeake Bay Trust Budget Form**. Note: Check that the project total you entered earlier in the application is correct.

For additional budget details you may add text to the online application in this “Additional Budget Justification” area. This narrative should include, in addition to general budget justification information, (a) detailed justification for staff cost requests, if requested, including a specific scope of work, specific tasks, and hours associated with those tasks and (b) the source of any construction cost estimates. Staff cost requests that are not fully justified will not be funded. Feel free to add other budget clarifications and notes here. Budgets that are detailed, justified, and itemized are ideal.

References

Osenberg, C.W., B.M. Bolker, J.S.S. White, Colette M. St. Mary, and J.S. Shima. 2006. Statistical Issues and Study Design in Ecological Restorations: Lessons Learned from Marine Reserves. *Foundations of Restoration Ecology*. Eds. Donald A. Falk, Margaret A. Palmer, and Joy B. Zedler. Washington, D.C.: Island Press. pp. 280-302.