

U.S. ENVIRONMENTAL PROTECTION AGENCY
JOINT
NUTRIENT AND BIOLOGICAL CRITERIA DEVELOPMENT
Request for Applications

SUMMARY

Request for Applications (RFA) for Office of Water (OW), Office of Science & Technology (OST), Health and Ecological Criteria Division (HECD) nutrient and biological criteria development. This action announces the availability of funds from the Environmental Protection Agency's (EPA) Office of Science & Technology (OST), Health and Ecological Criteria Division (HECD), under Statutory Authority of Section 104(b)(3) of the Clean Water Act. This assistance program is described in the Catalog of Federal Domestic Assistance Section 66.436. There are no cost-sharing or matching requirements.

EPA seeks to award financial assistance to States, Tribal governments, universities, and other eligible agencies under the authority of Section 104(b)(3) of the Clean Water Act to support eutrophication research within various ecoregions and waterbodies nationwide and to support the development and implementation of biological assessments and criteria. The focus of this research will serve to better understand the complex relationships among nutrient loading and physical and biological responses of water bodies. Funding will be provided to compile appropriate data, analyze nutrient relationships within specific ecoregions, determine reference conditions for specific waterbody types in a geographic framework, derive numeric nutrient criteria that are protective of all types of waterbodies (lakes, reservoirs, rivers, streams, estuaries, coastal waters, or wetlands) and their associated downstream receiving waters, refine EPA's published ecoregional criteria

recommendations (January 2001, February 2002, and January 2003) including defining better the relationship between nutrient levels and use impairments. EPA and other Federal agencies will assist these efforts by providing a standardized database format as well as supplemental data (as needed and available) to facilitate the sharing of data, particularly in ecoregions that are data limited. Funding will also be provided to support the development and implementation of biological assessments and criteria into water quality standards programs by States and Tribes including such activities as, conducting state-wide assessments, compiling bioassessment databases, analyzing biological data, developing indexes, reference conditions, classification systems, holding workshops and meetings, revising water quality standards, improving designated aquatic life uses and maintaining and operating technical support capabilities/ centers for the States and Tribes.

For nutrients, the focus for FY 2003 funds will be on five broad areas: (1) Data collection and processing to support nutrient reference condition determination and criteria development, especially to refine TN, TP, Chlorophyll-a, and water clarity databases; (2) collection and compilation of estuarine/coastal and wetland nutrient data; (3) preparation (to be conducted by States and Tribes only) and implementation of nutrient criteria development plans, especially those which are coordinated for adjacent EPA Regions and having multi-state application;(4) refining EPA's criteria, which were announced in January 2001/February 2002/ January 2003, to consider local ambient conditions/ waterbody

types/designated uses; and (5) linking nutrient criteria to specific designated uses.

For biological assessments and criteria, the focus for FY 2003 will be on providing direct technical support to the States and Tribes for the development and implementation of biological criteria into their water quality standards programs.

For this competition, the Program anticipates awarding either grants or cooperative agreements. These funds will be awarded under 104(b)(3) of the Clean Water Act. Projects that request combining funds within a subject area for States/Tribes across EPA Regions will also be considered. Awards will range from approximately \$20,000 to a maximum of \$70,000 per project (maximum of \$87,430 per region) with performance periods extending from 12 to 24 months for nutrients and from \$5,000 to \$20,000 (maximum of \$27,000 per region) for biocriteria. EPA encourages cost sharing among applicants and will add funds to existing grants or cooperative agreements, where feasible, to reduce administrative costs.

Agencies and organizations selected for funding will be knowledgeable in the areas of water quality data analyses and data management, in addition to demonstrating a strong ability to leverage resources.

State water pollution control agencies, Federally recognized Indian Tribal Governments, institutions of higher education, interstate agencies, and other public or nonprofit private agencies, institutions, organizations and individuals are eligible to apply for this program.

In accordance with Federal statutes and regulations and EPA policies, no person on grounds of race, color, age, sex, national origin, or disability shall be excluded from participation in, denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from the

Environmental Protection Agency. EPA reserves the right to reject all proposals or applications and make no awards.

DATES

For Nutrients:

Two hard copies and an electronic version (WordPerfect or compatible software) of each proposal should be submitted to the Regional Nutrient Coordinator responsible for the State or Tribe in which the requestor is located (see list of Regional Nutrient Coordinators below). The Regional Nutrient Coordinators reserve the right of first refusal and will forward application materials to applicants selected for funding. All final award decisions will be approved by EPA Headquarters. **All proposals must be submitted to the Regional Nutrient Coordinators by May 12, 2003.** Award decisions and notifications of rejection will be made by June 2, 2003.

For Biocriteria:

Two hard copies and an electronic version (WordPerfect or compatible software) of each proposal should be submitted to EPA Headquarters, the Biocriteria Program Manager. **All proposals must be submitted to the Biocriteria Program Manager at the address shown below by May 12, 2003.** The EPA Biocriteria Program Manager will send copies of all the submitted proposals to each EPA Regional Biocriteria Coordinator for review. Each Regional Biocriteria Coordinator will make a recommendation to approve or reject any proposal in their region in accordance with the criteria described below. In consultation with the Regional Biocriteria Coordinators, Headquarters will review each project and recommendation, and with Headquarters concurrence, the recommended projects will be funded and

managed through the Regional grants administration offices. **Award decisions and notifications of rejection will be made by Headquarters by June 2, 2003.**

For pre-application assistance or any questions related to the biological assessment and criteria portion of this request for applications, please contact the Biocriteria Program Manager.

For pre-application assistance or for any questions related to the nutrient portion of this request for applications please contact the respective Regional Nutrient Coordinator or the Nutrient Program Manager.

ADDRESSES

For Nutrients:

REGIONAL NUTRIENT COORDINATORS

Region 1

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US EPA Region III
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Region 5

Dave Pfeifer

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Region 6

Philip Crocker

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Region 7

Gary Welker

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Region 8

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For Biocriteria:
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FOR FURTHER INFORMATION CONTACT

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I. OVERVIEW

Nutrients:

The National Water Quality Inventory: 1998 Report to Congress Executive Summary cites nutrients (nitrogen and phosphorus) as one of the leading causes of water quality impairment in our Nation's rivers, lakes and estuaries. Between 30-50% of surveyed waters were impaired due to nutrient enrichment. The 2000 Report to Congress chronicles similar impairments. Nutrients have been implicated in the large hypoxic zone in the Gulf of Mexico, acute human health effects caused by elevated concentrations of nitrate in Mid-Western States' drinking water supplies, hypoxia observed in several East Coast States, and *Pfiesteria*-induced fish kills and human health problems in the coastal waters of several East Coast and Gulf States. Concerns regarding the scale of the problem, and the tremendous variability of nutrient conditions, both natural and cultural, throughout the Nation have limited the national response to the nutrient problem.

Until recently, national water quality criteria for nutrients (nitrate-nitrogen and phosphorus) focused only on human and aquatic organism health, not on the potential to cause eutrophication. In 1976, in EPA's publication entitled Quality Criteria for Water (also known as the Red Book), EPA presented ambient water quality criteria for nitrates, nitrites, and phosphorus. The criterion for nitrate-nitrogen is 10 mg/L in domestic water supplies for the protection of human and animal health. The phosphorus criterion (0.10 µg/L elemental phosphorus) was derived to protect marine and estuarine waters. This criterion was based on a conservative estimate to protect against the toxic effects of elemental phosphorus bioconcentration within estuarine and marine organisms.

In order to better understand nutrient enrichment and its assessment, the Agency held a National Nutrient Assessment Workshop (see Proceedings of the National Nutrient Assessment Workshop: December 4-6, 1995, EPA 822-R-96-004). In June 1998, EPA developed a National Strategy for the Development of Regional Nutrient Criteria which provided for expanded efforts to reduce nutrient enrichment of the Nation's waters.

One goal of the Strategy is to stimulate research by a wide range of organizations and individuals that will enhance State and Tribal understanding of relationships among nutrient causal and response variables. Another goal is the development of ecoregional numeric nutrient criteria and standards by waterbody type (e.g., streams, estuaries, wetlands) for States and Tribes to use in their water quality protection programs. This RFP is intended to support these efforts.

Over the past five years, the National Nutrient Program has committed approximately 6.5 million dollars for the collection of nutrient data primarily from rivers, streams, lakes, and reservoirs. These funded projects have helped provide the States with necessary information to set nutrient criteria. In an effort to ensure that all waterbody types are covered, EPA is expanding its focus to fund projects that stimulate activities related to the generation and compilation of wetland and estuarine/ coastal data, as well as projects that perform analyses on data previously collected for lakes, reservoirs, and streams.

In a separate effort, EPA has developed National nutrient criteria technical guidance manuals for lakes and reservoirs (completed 4/2000), rivers and streams (completed 7/2000), estuaries and coastal waters (completed October 2001), and wetlands (final Draft in December 2003)

[www.epa.gov/OST/standards/nutrient.html]. States/Tribes may use these documents to derive criteria which can form the basis of water quality standards. National criteria specific to Omernik's Level III ecoregions and aggregations of level III ecoregions (nutrient ecoregions) have been derived using causal (e.g., total nitrogen and total phosphorus concentrations) and response data (e.g., chlorophyll *a* concentrations and water clarity measurements) contained in existing databases such as STORET, and USGS databases such as NAWQA, HBN and NASQAN. Nutrient criteria for lakes/reservoirs and rivers/streams have been developed by the Agency for all 14 nutrient ecoregions. Seventeen ecoregional nutrient documents were published in January 2001, nine more documents were published in February 2002, and three remaining in January 2003. The 29 documents result in criteria coverage of 100% of the Nation's freshwaters (excluding wetlands). These documents are also on the nutrient website. EPA recommends that States and Tribes use EPA's criteria as a starting point toward developing more refined criteria. Refined criteria may consider several elements such as waterbody classification, more localized water body conditions, historical trends, downstream uses, and specific uses within a waterbody/watershed.

EPA expects that States and Tribes will want to use the waterbody type guidance documents and nutrient criteria as a guide in developing numeric levels for nutrients that support the designated uses of the waterbody as part of State and Tribal water quality standards. In lieu of National criteria, States/Tribes may implement site-specific numeric nutrient criteria which better fit their ecoregions and afford maximum protection of their local waterbodies. Further, development of site-specific criteria will ensure that States and Tribes are well-prepared to implement the numeric nutrient criteria as State/Tribal standards once National criteria are developed.

In order to develop ecoregional criteria, it may be necessary for States and Tribes to compile and analyze existing, often disparate, data sets. In some cases, new data must be collected to properly assess waterbody conditions relative to nutrient loadings. EPA is proposing to stimulate the collection of these data through financial assistance to eligible organizations and individuals.

EPA cannot fund data collection in every State or Tribe, and has therefore developed a National database application to compile and analyze the data collected under previously awarded grants/cooperative agreements. The database application can facilitate the sharing of data within nutrient ecoregions which cross multiple State/Tribal boundaries. Thus, State/Tribal agencies with limited or no nutrient data may utilize data collected by other sources within their ecoregion to establish criteria. EPA is specifying uniform data collection and data format methods to ensure that data meet rigorous quality assurance requirements needed for criteria calculations and that the database application maintains consistency for State/Tribal users.

EPA will evaluate proposals on their scientific merit and ensure that the applicant is responsive to State and Tribal data needs and has addressed quality assurance/quality control issues (see Evaluation Criteria below). Further, EPA will try to ensure that all the nutrient ecoregions of the country are covered by the funding awarded. To that end, grants and cooperative agreements will be selected based on merit, geographic distribution, and even coverage of all ecoregions.

Biocriteria:

The identification of water quality degradation requires appropriate monitoring tools. Such tools help us detect and characterize the cause and source of chemical, physical and biological impairment. Bioassessments are the primary tool to evaluate the biological condition of a waterbody. Bioassessments consist of

surveys and other direct measurements of aquatic life—aquatic vegetation and algae, fish, insects, crayfish, salamanders, frogs, worms, snails, mussels, etc.—in the waterbody. Bioassessments, along with other physical and chemical assessments, are crucial for evaluating the health of a waterbody.

Aquatic life integrates the cumulative effects of different stressors such as excess nutrients, toxic chemicals, increased temperature, and excessive sediment loading. Therefore, bioassessments allow us to measure the aggregate impact of the stressors. Because biological communities respond to stresses over time, they provide information that more rapidly-changing water chemistry measurements or toxicity tests do not always produce. As such, bioassessment provides a more reliable assessment of long-term biological changes in the condition of a waterbody. The central purpose of assessing biological condition of aquatic communities is to determine how well a water body supports aquatic life.

Bioassessments reflect the condition of overall ecological integrity (i.e., when the biology is healthy, typically the chemical and physical components of a waterbody are also in good condition). Therefore, bioassessments directly assess the condition of ecosystem health, a primary goal of the Clean Water Act (CWA). Biologists and other natural resource scientists use accepted scientific principles to derive biocriteria from bioassessment data. Biocriteria are narrative descriptions or numerical values that states and tribes can adopt into water quality standards to describe a desired condition for the aquatic life in waters they have designated for aquatic life use. The standards, in turn, are used along with chemical and physical criteria to better manage water resources.

The use of biological assessment and criteria for managing the Nation's waterbodies is progressing and is equipping the states, tribal nations, and EPA with a more effective set of monitoring tools for protecting the ecological

integrity of our water resources. In recent years, progress has been made in using bioassessments to establish biocriteria. In 1994, twenty states were beginning a biological assessment program for streams and rivers, and fourteen states had biological programs in place. However, only eleven were developing or had developed biocriteria based on their monitoring programs. By 2001, most states and several tribes had established biological monitoring programs for streams and small or wadeable rivers and were using quantitative biocriteria. The development of biocriteria for bodies of water other than streams and wadeable rivers is more recent.

Bioassessments provide crucial water quality information for managing complex water quality problems. Many natural, chemical, and physical integrity factors directly influence biological integrity. Hence, attaining biological integrity reflects good waterbody health. When human activities disrupt chemical and physical integrity, biological integrity is also compromised, and ecological health declines. Bioassessments are the tool for measuring biological condition and serve three primary functions:

1. screening or initial assessment of conditions
2. characterization of impairment and diagnosis; and
3. trend monitoring to evaluate improvements or further degradation.

One use of bioassessments is to help states and tribes develop expectations for acceptable biological conditions. This is done through a technical process of establishing aquatic life goals, referred to as aquatic life uses (ALU). Biological assessments allow various levels of ALUs, so that one set of standards supports intact communities in a waterbody, and other sets of standards establish restoration goals for rural or urban streams or other altered ecosystems. Using several types, or tiers, of ALUs allows states and tribes to allocate limited resources to waterbodies in proportion to their need for protection.

II. WHAT CRITERIA MUST I MEET TO BE ELIGIBLE FOR THIS GRANT?

State water pollution control agencies, Federally recognized Indian Tribal Governments, institutions of higher education, interstate agencies, and other public or nonprofit private agencies, institutions, organizations and individuals are eligible to apply for this program.

In accordance with Federal statutes and regulations and EPA policies, no person on grounds of race, color, age, sex, national origin, or disability shall be excluded from participation in, denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from the Environmental Protection Agency.

III. HOW DO I SUBMIT AN APPLICATION?

Application Kit for Federal Assistance

The Application Kit for Federal Assistance is available at http://www.epa.gov/ogd/grants/how_to_apply.htm. This website explains how to complete SF-424A Budget Forms and describes cost principles for a Federal grant.

Proposal format and content

Each proposal should not exceed four pages of double spaced text (excluding the budget and resumes) and should be structured according to the following annotated outline:

I. Agency Overview

- One brief paragraph identifying the organization and its water quality/data analysis or biocriteria experience.
- Names, phone numbers, business addresses, e-mail addresses, and one

page abstracted resumes for Principle Investigator(s) and key associates.

- For biocriteria a description of facilities, equipment and other supplies to be able to meet the evaluation criteria listed above.

II. Background:

- A list of available data indicating the approximate number of entries contained from 1990 forward sorted by the four waterbody types: lakes and reservoirs; rivers and streams; estuaries and coastal waters; wetlands. For the purpose of this solicitation, lakes and reservoirs are those bodies of water ten acres or larger in size, but not including the Great Lakes; estuaries are systems where freshwater and sea water meet and mix, that have an open connection to the sea; and coastal marine waters are comprised of Atlantic, Gulf of Mexico, and Pacific Ocean waters extending from the shoreline seaward to approximately three nautical miles. The focus of new data collection efforts should be in wetlands; estuaries and coastal waters; ecoregions where data are known to be lacking; as well as evaluating the relationship between nutrients and designated uses. If new data are to be collected, provide a brief summary of proposed sampling design, sampling techniques, and analytical methods.

- A brief description of data format (e.g., software, data storage and retrieval system, hardcopy storage on standard data sheets).

- The name, address, and phone number of the facility or facilities keeping these records.

- The name, business address, and phone number of the individual who will be responsible for the data retrieval, analyses, and submission of information.

- For biocriteria, a written description of the expertise as required under the evaluation criteria listed above.

III. Quality Assurance Procedures

- Brief (two to three paragraphs) statement of quality assurance procedures which will be used in constructing or transcribing data submitted or in conducting bioassessments.

IV. Funding Requirements

- The total funding requested and a budget describing how the requested funds will be spent. It is anticipated that most support will pay the costs of data collection, information retrieval, and transcription by a data analyst.

(5) Description of the Project

- A detailed description of what is proposed in the project and how the project will be carried out.

Applicants are advised to clearly mark any information they consider to be confidential. EPA will make final confidentiality determinations in accordance with Agency regulations at 40 CFR Part 2, Subpart B.

EPA reserves the right to reject applications in one or all of the RFA program areas, and, if necessary, make no awards. In addition, EPA reserves the right to retain

HOW WILL DISPUTES BE RESOLVED?

acceptable applications for 6 months beyond the predicted award date in the event that additional funds become available for this RFA. Should a dispute arise during the course of this competition, the resolution process described in 40 CFR 30.63 and Part 31, subpart F will be adhered to.

EVALUATION CRITERIA

Nutrients:

- Expertise in water quality data collection, analyses, and data management.
- Extent of data coverage (particularly for estuarine/coastal and wetland areas) and its capacity to meet State/Tribal needs.
- Familiarity with local waterbody types (i.e., lakes and reservoirs, rivers and streams, estuaries and coastal marine waters, and wetlands).
- Strong ability to leverage resources and work closely with other water resource agencies.

Biocriteria:

- Existing expertise in biological assessment and criteria development.
- Existing/immediate capability to provide technical support for States and Tribes on biological assessments and criteria development and implementation.
- Expertise with geographical influences on biological assessment and criteria development.
- Expertise with local water body types (i.e., lakes and reservoirs, great rivers, streams, small rivers, headwaters, intermittent and ephemeral systems, estuaries and coastal marine waters, and wetlands).
- Expertise in biological assessment data handling, analysis and storage.

- Adequate existing facilities, laboratories, taxonomic identification equipment, sampling equipment, etc., for the conduct of successful biological assessments and the provision of support to the States and Tribes.
- The project supports the goals and objectives of the biocriteria program for each respective Region in which it is located as well as the goals and objective of the National Program.
- The project results in biological criteria or assessment protocols, or is a crucial component of the process leading to these products.

How EPA Will Rank Nutrient and Biocriteria Applications

Applications for both nutrients and biocriteria projects will be ranked on the basis of the evaluation criteria above. Ranking for each criterion is based on a scale of 0 (does not meet the requirement) to 5 (exceeds the requirement).