



**Solicitation Information**  
23 May 06

RFP #B06395

**TITLE: Monitoring Freshwater Benthic Macroinvertebrates**

Submission Deadline: 15 June 06 @ 2:20 PM (EDT)

Questions concerning this solicitation may be e-mailed to the Division of Purchases at [questions@purchasing.state.ri.us](mailto:questions@purchasing.state.ri.us) no later than 2 June 06 @ 12:00 Noon (EDT). Questions should be submitted in a *Microsoft Word attachment*. Please reference the RFP / LOI # on all correspondence. Questions received, if any, will be posted on the Internet as an addendum to this solicitation. It is the responsibility of all interested parties to download this information.

**SURETY REQUIRED: No**

**BOND REQUIRED: No**

**Jerome D. Moynihan, C.P.M., CPPO**  
**Administrator of Purchasing Systems**

**Vendors must register on-line at the State Purchasing Website at [www.purchasing.ri.gov](http://www.purchasing.ri.gov)**

Note to Vendors:

Offers received without the entire completed three-page RIVP Generated Bidder Certification Form attached may result in disqualification.

**THIS PAGE IS NOT A BIDDER CERTIFICATION FORM**

## **INTRODUCTION**

The Rhode Island Department of Administration/Office of Purchases, on behalf of the Department of Environmental Management (RIDEM), is soliciting proposals from qualified organizations to provide technical services pertaining to the sampling and identification of benthic macroinvertebrate samples collected from selected locations on wadeable and non-wadeable streams throughout the State of Rhode Island. This is requested in accordance with the terms of the Request for Proposals and the State's Conditions of Purchase, which may be obtained at the Rhode Island Division of Purchases Home Page by Internet at [www.purchasing.ri.gov](http://www.purchasing.ri.gov).

The collection and processing of macroinvertebrate samples from rivers and streams in Rhode Island is an important component of the state's overall strategy for monitoring and assessing water quality conditions in these waterbodies. In the past, RIDEM macroinvertebrate sampling has been undertaken through the (1) application of the EPA Rapid Assessment Protocol in riffles of wadeable streams; and (2) application of an artificial substrate protocol in deeper rivers (4<sup>th</sup> order and larger). From 1991 to 2001, RIDEM supported macroinvertebrate surveys on over 40 wadeable rivers throughout the state. Each site was visited during the spring-summer season and macroinvertebrates were sampled at a minimum of 100 organisms per site visit where feasible.

Beginning in 2002, RIDEM continued to support macroinvertebrate surveys but began to vary the locations in order to reduce gaps in the data available for streams. Beginning in 2004, RIDEM re-directed the program to support demonstration of the rotating basin approach to monitoring and assessing rivers and streams. Macroinvertebrate sampling of wadeable streams occurred in the Wood River Watershed in 2004 and in a large portion of the Pawcatuck River Watershed in 2005, in conjunction with water quality sampling. Consistent with the RI Water Monitoring Strategy, RIDEM intends to continue to implement macroinvertebrate sampling as part of the rotating basin approach with 5-20% of the state's overall river miles assessed annually, contingent on available resources. RIDEM estimates that sampling will be conducted at a minimum of 50 locations annually, with a maximum not expected to exceed 100 locations in any given year.

The macroinvertebrate sampling conducted in wadeable streams followed EPA's Rapid Bioassessment Protocol I and II as outlined in EPA's guidance document *Rapid Bioassessment Protocols For Use in Streams and Rivers*, May 1989, EPA/444/4-89-001. A Quality Assurance Project Plan (QAPP) for this work was developed by a contractor and approved by EPA in October 2002.

In deeper rivers, until the fall of 2002, RIDEM applied a multiple plate artificial substrate protocol at seven locations in the Blackstone, Pawcatuck and Pawtuxet Rivers. The sampling sites corresponded with locations previously sampled quarterly by the US Geological Survey for water chemistry and other parameters. The methodology employed Fullner-multiple plate artificial substrate sets with 14 square plates. An approved QAPP has not yet been developed for this program. Details on the methodology are specified in Appendix A.

Data interpretation has historically followed the reference site approach. Rhode Island has two ecoregions: Narragansett/Bristol Lowland (NBLR) region and the Southern New England Coastal Plains and Hills (SNECPHR) region. The macrofauna surveys sampled both ecoregions. Analyses of the data utilized the Wood River as the reference station within the SNECPHR region and the Adamsville Brook as the reference station within the NBLR region. The habitat and physical scores and biological metrics of each station are compared to those of the selected reference station and given an overall bioassessment score. The information generated from this bioassessment work is used to assess the Aquatic Life Use attainment of RI rivers pursuant to Clean Water Act guidance and requirements. In addition, the data is being evaluated for the development of biocriteria.

RIDEM has also utilized macroinvertebrate sampling in the development of water quality restoration plans known as Total Maximum Daily Load (TMDLs). Sampling in support of TMDLs follows one of the protocols identified above depending on the site to be monitored. On an annual basis, RIDEM will identify any supplemental macroinvertebrate sampling needed to support the development of TMDLs. The number of locations per year will vary and is currently estimated at 10-20/year. RIDEM reserves the option of obtaining the technical services to carry out such work as part of water quality restoration studies competitively procured via RFPs for development of specific TMDLs.

DEM is now seeking proposals for technical services to support continued implementation of the macroinvertebrate sampling program. The continuation of this monitoring program will allow RIDEM to expand the current reference baseline dataset of benthic macroinvertebrate communities; evaluate water quality on additional rivers and streams; work towards the development of biocriteria; evaluate trends, including natural and pollution induced population fluctuations, in the wadeable streams throughout Rhode Island. The total number of stations to be sampled will be determined based upon public access and funding availability. Funding is currently available for a one- year period; however, it is the Department's intention to continue this agreement for a three-year period subject to continued availability of funding.

#### **INSTRUCTIONS AND NOTIFICATIONS TO BIDDERS:**

- ❖ All respondents **MUST** register online at the RIVIP's Internet website @ [www.purchasing.ri.gov](http://www.purchasing.ri.gov). Proposals must be in accordance with the guidelines outlined in this request and the state's general conditions of purchasing which can be accessed through the website.
- ❖ A fully completed and *signed RIVIP Bidder Certification Cover Sheet – All three pages* should accompany response submitted. Failure to make a complete submission inclusive of this three-page document **may result in disqualification**.
- ❖ Should there be a need for technical assistance in registering, and/or downloading any document, call the RIVIP HELP DESK@ (401) 222-2142, ext. 134. Office Hours: Monday thru Friday, 8:30 AM – 4:00 PM.

- ❖ All costs associated with developing or submitting documents in response to this request and/or in providing oral or written clarification of its content shall be borne by the respondent. The State assumes no responsibility for these costs.
- ❖ It is intended that an award pursuant to this Request will be made to a prime respondent, who will assume responsibility for all aspects of the work.
- ❖ All pricing submitted will be considered to be *firm and fixed* unless otherwise indicated herein.
- ❖ Submission in response to this solicitation are considered to be irrevocable for a period of not less than sixty (60) days following the established due date and may not be withdrawn without the express written permission of the State Purchasing Agent.
- ❖ Responses misdirected to the other State locations or which otherwise are not received by the State Division of Purchases by the established due date for any cause will be determined to be late and may not be considered. The office clock, for the purpose of registering the arrival of a document, is in the reception area of the Department of Administration (DOA), Division of Purchases, One Capitol Hill, Providence, Rhode Island.
- ❖ Respondents are advised that all materials submitted to the State for consideration will be considered to be public records as defined in Title 38, Chapter 2 of Rhode Island General Laws, without exception, and will be released for inspection immediately upon request once an award is made.
- ❖ During the life of the contract, the State reserves the right to solicit separately for selected initiatives within this scope of work.
- ❖ The State of Rhode Island has a goal of ten per cent (10%) participation by Minority Business Enterprises (MBE) in all State procurements. For further information, visit the website [www.rimbe.org](http://www.rimbe.org). To speak with an M.B.E. Officer, call (401) 222-6253.
- ❖ Interested parties are instructed to peruse the Division of Purchases website on a regular basis, as additional information relating to this solicitation may be released in the form of an addendum to this RFP/LOI
- ❖ The detail of work is outlined in the section entitled "Scope of Work". Contingent on award of a purchase order, the work should begin by, on, or about August 1, 2006. The initial contract for services is envisioned to be a multi-year contract, contingent on the continued availability of funding. Work pertaining to the first year is expected to require 11 months and end 6/30/07.
- ❖ Proposal misdirected to other State locations or which are otherwise not present in the Office of Purchases at the time of opening for any cause will be determined to be late and will not be considered. **FAXED OR E-MAILED PROPOSALS WILL NOT BE CONSIDERED.** The official time clock is located in the reception area of the Division of Purchases.

- ❖ In accordance with Title 7, Chapter 1.1 of the General Laws of Rhode Island, no foreign corporation, a corporation without a Rhode Island business address, shall have the right to transact businesses in the state until it shall have procured a Certificate of Authority to do so from the Rhode Island Secretary of State (401) 222-3040.
- ❖ Respondents will be responsible for determining the level of success of their activities through use of appropriate process and outcome measurements. Each activity must produce an identifiable deliverable or a measurable outcome.
- ❖ Respondents are instructed to submit a **Combined Technical/Cost Proposal** response described in detail herein.
- ❖ It is intended that an award pursuant to this Request will be made to a prime contractor, who will assume responsibility for all aspects of the work. Joint venture and cooperative proposals will not be considered, but subcontracts are permitted, provided that their use is clearly indicated in the offeror's proposal, and the subcontractor(s) proposed to be used are identified in the proposal.
- The State of Rhode Island has a goal of ten per cent (10%) participation by MBE's in all State procurements. For further information, visit the web site [www.rimbe.org](http://www.rimbe.org). To speak with an M.B.E. Officer, call (401) 222-6253.
- Interested parties are instructed to peruse the Division of Purchases web site on a regular basis, as additional information relating to this solicitation may be released in the form of an addendum to this RFP / LOI

### **Equal Employment Opportunity (RIGL 28-5.1)**

**§ 28-5.1-1 Declaration of policy.** – (a) Equal opportunity and affirmative action toward its achievement is the policy of all units of Rhode Island state government, including all public and quasi-public agencies, commissions, boards and authorities, and in the classified, unclassified, and non-classified services of state employment. This policy applies in all areas where the state dollar is spent, in employment, public service, grants and financial assistance, and in state licensing and regulation. For further information, contact the Rhode Island Equal Employment Opportunity Office, at 222-3090

*Note:* This is a Request for Proposals (RFP), not an invitation for BID: *responses will be evaluated on the basis of the relative merits of the proposal, in addition to price.* There will be no public opening and reading of responses received by the Office of Purchases pursuant to this request, other than to name those offerors who have submitted proposals. All respondents are advised to review all sections of this Request and to follow instructions carefully as failure to make a complete submission as described elsewhere herein may result in rejection of the proposal.

### **Contract Period**

The term of any award resulting from this request shall be from approximately August 1, 2006 through June 30 of 2009, contingent on continued availability of funding.

### **Compensation and Payment Terms**

Compensation will be based upon the deliverables list according to the technical/cost proposal. The successful respondent will submit an invoice based on RIDEM approved deliverables.

### **Performance Evaluation**

Proposals must include a project plan including a statement of scope (both what is in-scope and any exceptions which the vendor proposes are out of scope), identification of all roles and responsibilities for the project, proposed staffing plan (with named individuals), a schedule, and detailed budget along with any other related documentation the vendor feels is relevant to the project plan.

RIDEM will review and accept invoices for payment processing in a timely manner conditional upon satisfactory completion and acceptance of (1) all evaluation requirements and (2) complete, accurate submission of scheduled deliverables.

### **Completion and Acceptance Criteria**

- Approved QAPPs for macroinvertebrate sampling programs.
- Collection of macroinvertebrate samples properly documented, including quality assurance. Number and location of stations to be specified annually.
- Habitat assessments completed and properly documented for each location at which a sample is collected.
- Taxonomic identification completed and properly documented, including quality assurance.
- Calculation of metrics completed and documented.
- Data interpretation and analysis completed and documented.
- Final report incorporating adequate documentation of prior tasks.

### **Instructions for Proposal Content and Format:**

***NOTE: TECHNICAL AND COST PROPOSAL documents will not be submitted separately but are to be combined into one complete submission; Proposal format will include:  
1) Technical Proposal information presented first based on elements described below  
2) Itemized Cost Proposal documentation.***

Consistent with the Scope of Work (SOW) described in this proposal the Technical Proposal content must include, at a minimum, the following information for RIDEM to review:

### **BACKGROUND AND PREVIOUS EXPERIENCE:**

- ❖ **A Completed and signed three-page RIVIP bidder certification cover form.** Form is downloadable from [www.purchasing.state.ri.us](http://www.purchasing.state.ri.us).
- ❖ **A Completed and signed W-9 Taxpayer Certification Form,** downloadable from [www.purchasing.state.ri.us](http://www.purchasing.state.ri.us)
- ❖ **Company Introduction:** Respondents are to include a complete description and other relevant information documenting organizational structure and the agency's expertise and length of experience relative to the service requested.
- ❖ **Relevant Experience:** Respondents are to describe their prior experience in macroinvertebrate sampling and taxonomic identification and include a representative list of projects completed involving such work.
- ❖ **Existing Workload:** Respondents should describe their capacity to add this project to their existing workload within the timeline expressed.

### **ORGANIZATION AND STAFFING:**

- ❖ **Staff Qualifications:** Respondents are to include an overview of experienced personnel presently on staff, prior experience and/or qualification of key personnel to be assigned to the project. Staff assignments and concentration of effort for each staff member are to be addressed. Respondents must demonstrate that staff has appropriate knowledge and depth of experience to execute the tasks.
- ❖ **Sub-Consultants:** As applicable, disclosure of any sub-consultant agencies' organizational structure and business background as well as the type of work they will perform must be documented in response to this RFP. The qualifications of subcontractors to perform tasks must be documented. Full disclosure of the proposed team to be assigned to this project is required in the Technical Proposal.

### **PROJECT WORK PLAN:**

- ❖ **Project Approach:** Respondents are to provide a detailed technical synopsis of their proposed services based on the SOW requested by RIDEM, including any technical or personnel issues that will or may be confronted at each stage of the project. Proposals that depart from or materially alter the terms, requirements or SOW as defined by this RFP will be rejected and considered non-responsive.

- ❖ **Work Plan:** Proposals must include a project plan including a statement of scope (both what is in-scope and any exceptions which the vendor proposes are out of scope), identification of all roles and responsibilities for the project, proposed staffing plan (with named individuals – see Supplemental Terms & Conditions paragraphs 44 – 50), key risks, a schedule, and detailed budget along with any other related documentation the vendor feels is relevant to the project plan. Project plans must include a deliverables based work breakdown structure identifying all top level deliverables, all work to be completed by vendor, and any work the vendor assumes the state will be completing.
- ❖ **Project Manager:** Vendor must provide a project manager to serve as the main interface with the RI DEM. Project must be managed by a person of adequate expertise in macroinvertebrate sampling and identification as well as interpretation of data for water quality assessment purposes. The project manager must have experience with projects that are comparable in size and scope.
- ❖ **Reporting Requirements:** Any reports generated will be submitted both in hard copy and electronically for ease of review. The successful respondent will be prepared to discuss and review findings in a coordinated team meeting environment should this be required.
- ❖ **Supplemental Information:** Respondents are encouraged to submit any other information deemed useful to provide RIDEM with sufficient relevant information to evaluate the consultant’s qualifications and approach to the project.

## **COST PROPOSAL**

The cost proposal will reflect completion of the project, itemized by task. Specific targets for the volume of work (e.g. number of samples) are provided and should be used as assumptions in completing costs proposals. Costs must be projected for the three-year project period, segregated by year. Each task will correspond to a deliverable identified in the work plan provided by the vendor as part of the proposal package.

Additionally, in Task 7, RIDEM is seeking costs for expert advice that may be required on occasion. The cost proposal for this task should consist of a list of available personnel and corresponding hourly rates as well as other incidental costs such as travel to meetings, etc.

- ❖ Cost proposal prices submitted will be considered **firm and fixed**.
- ❖ Cost proposal must include hourly rates
- ❖ Funding expected to be available for this project for the first year is approximately \$50,000.

<p><b>Note: Failure to fully disclose annual costs could result in disqualification.</b></p>
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## EMAILED QUESTIONS

E-mailed questions may be submitted in accordance with the terms described on page 1 of this solicitation.

SUBMISSION REQUIREMENTS AND DUE DATE see page 1

All document pages are to be numbered in consecutive order.

Combined TECHNICAL/COST PROPOSAL (“original” plus seven (7) copies) submissions are to be either mailed or hand-delivered in a sealed envelope marked: “**RFP #B06395: Monitoring Freshwater Benthic Macroinvertebrates**” by the date and time listed on page 1 of this solicitation.

RI Dept of Administration  
Division of Purchases, 2<sup>nd</sup> Floor  
One Capitol Hill  
Providence, RI 02908

**NOTE:** Proposals misdirected to other State locations or which are otherwise not presented in the Division of Purchases by the scheduled due date and time will be determined to be late and may not be considered. Proposals faxed or emailed to the Division of Purchases will not be accepted. The “official” time clock is located in the Division of Purchases Reception area.

## EVALUATION AND SELECTION

The State will establish a Technical Review Committee that will evaluate and score combined Technical/Cost proposals received utilizing the following criteria resulting in a final ranking and recommendations selection:

### **SELECTION CRITERIA:**

1. (15 Points) – Overall quality and responsiveness of the proposal.
2. (15 Point) – Relevant work experience of organization. Vendor capacity, capability and qualifications.
3. (15 Points) – Relevant work experience and qualifications of personnel assigned to the project.
4. (10 Points) – Demonstration of managerial approach that will result in the successful and timely completion of the project.

5. (20 Points) – Description of each task, including cost per task, and timing and allocation of staff effort is included, reasonable and acceptable.
6. (10 Points) – Scope of procedures and technical protocols used by organization are included and acceptable.
7. (15 points) – Lowest responsive cost proposal will be divided by the bidder's costs proposal. The resulting quotient is then multiplied by 15 to calculate the number of points awarded.

Upon final selection approval, all respondents will be notified by the State, via a posting on the Division of Purchases website, that a final selection has been made.

Notwithstanding the above, the State reserves the right to accept or reject any or all options, bids, proposals, to award on the basis of cost alone, and to act in its best interest.

At any point during the review process, any proposal found to be substantially non-responsive will be dropped from further consideration.

The State may, at its sole option, elect to require presentation(s) by respondents clearly in consideration for award. Other submissions, certifications, or affirmations may be required, as appropriate.

The State reserves the right to make an award or multiple awards or to reject any or all proposals based on what it considers to be in its best interest.

## **SCOPE OF WORK**

RIDEM is seeking proposals from qualified organizations, including academic institutions and professional firms, for the collection and identification of benthic macroinvertebrates, and analysis and interpretation of data from samples collected at RIDEM-selected rivers and streams throughout the state. The goal of the sampling conducted pursuant to this RFP will be to evaluate instream biological conditions relative to reference conditions via the interpretation of macroinvertebrate data.

The general objectives of this biological monitoring program are as follows:

- To develop or update Quality Assurance Project Plans (QAPPs) which will also serve as a monitoring plan for the project.
- To collect benthic macroinvertebrate samples and data on physical/habitat parameters at RIDEM selected and established sites;
- To identify macroinvertebrates;
- To score physical factors and determine habitat assessment;

- To compile and manage data, conduct data analyses and interpretation of results;
- To present the data in a hard copy and electronic format;
- To make recommendations for improving the biological monitoring program through refined metrics or other means.

RIDEM has identified a series of tasks that may be required to execute the sampling program and is seeking costs proposals for each task. Please note that RIDEM reserves the option of contracting for **any combination of these tasks** via a final scope of work that will be identified annually and reflect the specific program sampling objectives for that sampling season. For example, in lieu of contracting for all six tasks, RIDEM may chose to collect samples using its own staff and contract only for taxonomic identification and data interpretation (Task 4-6).

### **Project Tasks and Deliverables**

The following tasks are to be carried out and deliverables to be developed by the contractor:

#### **Task 1 - Quality Assurance Project Plans (QAPPs):**

##### Subtask (1 –a): Develop or Update Existing QAPP:

All macroinvertebrate sampling conducted pursuant to this RFP must be done in conformance with a Quality Assurance Project Plan (QAPP). Proposals should indicate whether the contractor has previously developed a QAPP for the type of sampling being specified in the RFP. The selected contractor may be asked to develop or update the Quality Assurance Project Plan (QAPP) that will also serve as a monitoring plan for the project on an annual basis. Identification of sampling locations will be provided to the contractor by RIDEM, typically no later than July 15 of a given year. The QAPP describes and defines the contractor’s Standard Operating Procedures and specific field and laboratory procedures, methods and controls that will be applied following both the Scope of Work outlined in this Request For Proposals and both of EPA’s Rapid Bioassessment Protocol (RBP) guidance documents (*Rapid Bioassessment Protocols For Use In Streams And Rivers*, May 1989, EPA/444/4-89/001 and *Rapid Bioassessment Protocol for Use in Wadeable Streams and Rivers*, July 1999, EPA 841-B-99-002). Specifically, the Single Habitat Approach, outlined in EPA’s 1999 RBP guidance document, should be followed as discussed in Task 2 below. EPA’s 1989 RBP document should be utilized as guidance for selection of metrics and metrics application as discussed in Task 4 below. The QAPP shall conform to the USEPA New England’s *Compendium of Quality Assurance Project Plan Requirements and Guidance*, October 1999, for developing QA/QC plans. A draft QAPP will be submitted to RIDEM for review. A final QAPP will be submitted for EPA review no later than August 15, 2006 or another date approved by RIDEM.

Task 1(a) Deliverable: An updated EPA approved QAPP for wadeable streams.

##### Subtask 1-b: Development QAPP for Non-Wadeable Rivers:

RIDEM’s may request the contractor develop a QAPP for macroinvertebrate sampling of non-wadeable rivers using an artificial substrate protocol as specified in Appendix A and consistent with EPA’s *Macroinvertebrate Field and Laboratory Methods for Evaluating the Biological Integrity of Surface Waters*, EPA 600/4-90-030 (Nov 1990). Development of a QAPP should

include the following steps: (1) initial meeting with DEM to select protocol, (2) preparation of a draft QAPP, (3) revision of the draft based upon DEM or EPA comments, and (4) production of a final QAPP which DEM will submit to EPA for approval.

The QAPP update shall conform to the USEPA New England's *Compendium of Quality Assurance Project Plan Requirements and Guidance*, October 1999, for developing QA/QC plans. A draft QAPP will be submitted to RIDEM for review. A final QAPP will be submitted for EPA review no later than August 15, 2006 or another date approved by RIDEM.

Task 1(a) Deliverable: An EPA approved QAPP for non-wadeable streams.

Task 2 – Pre-sampling Field Reconnaissance:

At the discretion of the RIDEM, the contractor may be directed to conduct field investigations to identify suitable sampling locations within targeted rivers and streams and verify or obtain access to sample such locations. RIDEM would provide a preliminary sampling design for a particular watershed or river segment or segments. A meeting with RIDEM would occur prior to field activities. Field reconnaissance would be done to verify the feasibility of sampling at particular locations. This task would include documentation of sampling locations, identifying alternate sampling locations, documenting directions to the locations, recording the geographic coordinates using GPS equipment and documenting stream or river conditions via digital photography. All locational data shall be delivered in RI State Plane Coordinates (US feet, North American Datum, 1983). Each point shall include a unique ID, the x, y, coordinates; documentation on method used to collect data (i.e., differential GPS, interpolation from aerial photo or topographic map, etc.) and estimated accuracy of location. Reports shall be submitted in both hard copy and electronic format. The electronic data can be ESRI shapefile, excel spreadsheet, MS-Access database or comma-delimited text.

Task 2 Deliverables: (2-a) Report and maps documenting wadeable stream locations, access and describing the GPS coordinates location of sampling locations;

(2-b) Report and maps documenting non-wadeable stream locations, access and describing the GPS coordinates location of the sampling locations.

Task 3 - Collection of benthic macroinvertebrate samples and physical/habitat parameters at selected sites

The contractor may be tasked to carry out, in a manner consistent with the approved QAPPs, the collection of samples of benthic macroinvertebrate communities from rivers and streams in RI. In wadeable streams, RIDEM expects the number of samples to be collected each year to include the following: up to 50 stations on wadeable streams concentrated primarily within one to two watersheds and supplemental samples selected by RIDEM for various purposes. For wadeable streams, the approach will follow the single habitat approach as described in EPA's *Rapid Bioassessment Protocol for Use in Wadeable Streams and Rivers*, July 1999, EPA 841-B-99-002.

This involves field sampling and identification of the first 100 organisms in the field and in the laboratory. Physical factors which determine the habitat assessment for each station will be measured and quantified according to the protocol in EPA's 1999 RBP guidance manual. In the field, kick samples of 3-minute duration in riffle/run communities will be conducted. All samples will be transferred with debris from D-frame nets to small plastic bags or jars. Alcohol will be added in the field and the samples transported to the laboratory where the organisms will be sorted and catalogued.

In non-wadeable streams, the methodology will follow that described in Appendix A unless modifications are agreed to by the RIDEM following development of a QAPP. An estimated 7 stations are expected to be sampled annually with the option of adding sites in years 2 & 3.

In both situations above, the collection of samples includes proper documentation of the collection and preservation procedures, the habitat assessment and related scoring methodology and description of physical factors affecting sample collection.

Task 3 Deliverables: (3- a) Collection of samples from wadeable streams, and associated documentation;

(3-b) Collection of samples from non-wadeable streams and associated documentation;

#### Task 4 - Laboratory Processing and Taxonomic Identification of Benthic Macroinvertebrates

The contractor will provide for laboratory processing of macroinvertebrate samples consistent with the approved QAPPs. RIDEM expects that appropriate laboratory log-in/chain-of custody data sheets shall be maintained and submitted with the final report. For wadeable streams, if presorting is performed to reduce sample volume to a practicable size, the contract lab should submit a detailed protocol for combining the sample jars from each site where applicable. The contract laboratory should go through the entire sample and pick out any large, rare or unique species. These will be identified and reported as supplemental information for each location, but not as part of the 100-organism subsample. Any further subdividing of the samples must be conducted in an unbiased scientifically sound manner. It is critical that a representative 100-organism subsample be obtained with the sample, then the entire sample will not need to be processed. Once sorting is completed, enumeration and identification should proceed by counting and identifying each organism to the lowest reasonable taxonomic category with a genus minimum and species preferred. An exception to this are the chironomids, where a sub-family final identification is acceptable. Other potential exceptions should be noted in the submitted proposals. Any deviations or alternative protocols outlined in the proposals will be subject to RIDEM approval.

Quality control will be maintained by re-checking 10% of the samples. Proposals should detail procedures for re-checking samples.

Task 4 Deliverable: (4-a) For wadeable streams, final report containing taxonomic list of the species arranged phylogenetically, numbers of species, sample identification, and sort sample size;

(4-b) For non-wadeable streams, final report containing taxonomic list of the species arranged phylogenetically, numbers of species, sample identification, and sort sample size.

#### Task 5 - Data Management, Analyses, and Interpretation

The contractor may be tasked to compile, manage, analyze and interpret data. This shall include data entry, application and calculation of metrics and indices and steps followed in data interpretation. Justification of selected metrics and indices shall be submitted to RIDEM for approval prior to the final calculations. RIDEM preferred metrics and application of metrics are outlined in the EPA 1989 RBP guidance document. RIDEM reserves the option of changing these metrics on an annual basis in consultation with the contractor. Data on the biological community and habitat for each station is scored and compared to the reference conditions. The information from these comparisons should be used to determine the assessment of each station relative to the reference station (i.e., fully supporting community, slightly impaired community, moderately impaired community, severely impaired community). The interpretation should include evaluation of the metrics and expressed expert judgement regarding the water quality condition reflected by the macroinvertebrate sampling data. Where possible, opinions on the possible causes or sources of impairment should be included for those stream locations which score low. Explanation of how the assessment is determined should be included in the proposal for RIDEM's review and approval. Any subsequent refinements to the assessment approach proposed shall be approved by RIDEM prior to being used. A meeting shall be held between the contractor and RIDEM to discuss the data results prior to development of draft final report.

Task 5 Deliverable – Final report which contains tables of metrics and indices calculations, habitat scores and percentile relative to reference station for each station. Justification and discussion of metrics and indices chosen and assessment determination for each station relative to the reference station shall be included.

#### Task 6 – Final Reports

The contractor shall develop a draft final report which presents the data and information as described in the tasks above, including but not limited to, field location and description information, sample collection and processing information, taxonomic list of organisms observed at each station, selected metrics and indices, interpretation of that data and overall assessment of each station for RIDEM review and comment. RIDEM's comments on the draft report shall be incorporated into a Final Report which will be submitted to RIDEM in hard copy and electronic format. Data must be submitted in a format to be specified by RIDEM to facilitate data transfer into RIDEM databases. RIDEM is currently using Access –based software for this purpose but anticipates changes during the project period.

Task 6 Deliverable - Final report in hard copy (three copies) and electronic format, delivered to RIDEM project officer by May 1, 2007 for the first year of the project and May 1, 2008 for the second year of the project and March 1, 2009 for the third year of the project.

Task 7. Expert Guidance- Supplemental Tasks

From time to time, RIDEM may require expert aquatic biologists to provide guidance or conduct additional work on matters related to macroinvertebrate sampling of rivers and streams.

Respondants are asked to provide a list of qualified staff and corresponding fixed-hourly rates that would apply. When such services are needed, RIDEM would develop a specific scope of work for each supplemental task and negotiate an estimate of the hours involved in completing the task.

These would be addressed as change orders to the original scope of work developed with the RIDEM.

## **Artificial Substrate Sampling Methodology**

The purpose of the macroinvertebrate sampling is to evaluate and compare current instream biological community conditions in non-wadeable streams with reference conditions. Upon until 2002, RIDEM conducted sampling of this type using Fullner-multiple plate artificial substrate sets with 14 square plates. Each plate has an area of 2.5 x2.5 inches and a thickness of 0.1 inch. RIDEM intends future sampling will conform to this size.

### **1. Deployment**

Plates would be deployed at RIDEM identified locations during the critical sampling period (August – September) in accordance with EPA’s Macroinvertebrate field and laboratory methods for evaluating the biological integrity of surface waters, EPA 600/4-90-030 (Nov. 1990). In order to minimize year-to-year sampling variability, RIDEM expects certain samplers will be deployed in the same locations and depths as they have in the past to the extent practicable. Two or three samplers will be suspended above the substrate using either a flotation devise or suspended from above with nylon rope and secured with an anchored line at a depth of approximately 1.5-2.0 feet below the surface. Following deployment, the samplers will be left in place for approximately 6-8 weeks to allow for proper organism colonization. Water quality data including waterdepth, temperature, dissolved oxygen, pH, conductivity, turbidity and relative flow will be documented in the field (e.g. notebook) at the time of deployment. Photographs will be taken at each sampling site.

### **2. Recovery**

Artificial substrate samplers will be retrieved approximately 6-8 weeks after deployment. Recovery techniques are critical for insuring collection of all organisms retained on the sampler. To minimize loss of organisms during retrieval, the samplers will be approached from downstream of the site and the entire intact samplers should be placed in to individual tubs of screened water and then dismantled on site. Each individual piece of substrate will be rinsed, gently but thoroughly cleaned underwater with a soft brush, examined visually and placed in a labeled storage bag. The water in the bucket will then be poured through a standard No. 30 sieve to remove fine particles. After the particles are washed from the sample, the organisms are left scattered over the surface of the screen. The organisms will be picked from the screen with forceps and placed in a labeled sample container for preservation with 70-80% ethanol. After sampling has been completed at a given site, all sieves, pans, etc. that have come in contact with the sample will be thoroughly rinsed, examined and picked free of any remaining organisms or debris. Any additional organisms found will be placed into sample containers. The equipment will be examined again prior to use at the next site.

All samples will be labeled in the field, immediately upon collection as needed. The label will contain the identification number which corresponds to the number entered in the field notebook for that sample, the sampling date, waterbody name and location, and name of collector. In a additions to the label information, the field notebook should include notes on weather, substrate characteristics, depth and any other physical or environmental conditions observed in the field. Water quality data including water depth, temperature, dissolved oxygen, pH, conductivity, turbidity and relative flow should be documented in the field (e.g. notebook) at the time of collection (recovery). Photographs will be taken at each sampling site.

### 3. Laboratory Analysis

Analysis of sampled should be performed within a reasonable time after collection. The sample should be sorted and sub-sorted (if necessary). All organisms in each sample will be identified using a dissecting microscope. Laboratory logs should be kept for all samples. Taxon will be identified to the lowest practical taxon, generally genus or species. Each taxon found in a sample will be recorded and enumerated in a laboratory notebook. Any difficulties encountered during identification (e.g. missing body parts) will be noted. After identification, all sampled will be placed into fresh preservative for permanent storage.

### 4. Data Analysis

All data will be entered into a DEM specified electronic data format for analysis and interpretation. Macroinvertebrates (mostly aquatic insect larvae) collected on the artificial substrates will be classified according to their tolerance of pollutants. The organisms will be counted and placed in on the categories described below:

*Tolerant*- organisms frequently associated with gross organic contamination and generally capable of thriving under periods of anaerobic conditions, some even in the presence of toxic wastes.

*Facultative or Intermediate* – organisms having a wide range of tolerance and frequently associated with moderate levels of organic contamination.

*Intolerant or Sensitive* – organisms that are not found associated with even moderate levels of organic contamination and generally intolerant of even moderate reductions in dissolved oxygen.

Data will further be assessed using the beck's Biotic Index. This Biotic Index affords the celan water taxa twice the weight as the tolerant organisms in the formula:  $2(n \text{ Class I}) + (n \text{ Class II}) = \text{BI}$ , where n is the number of taxa in the class. Comparisons will be made to the Wood River reference station.

**COST PROPOSAL SUMMARY**

(Add rows to tables as necessary)

**TASK 1-a: Development of an Update to the Existing Monitoring Plan & Quality Assurance Project Plan (QAPP) for Wadeable Streams**

Include all costs associated with development or updating of the monitoring plan and QAPP.

<b>Personnel (1)</b>				Total Cost Year 1	Total Cost Year 2	Total Cost Year 3
Name	Title	Hourly Rate	No. of Hours			
<b>Other Expenses (2)</b>		Unit price	No. of units			
<b>Total Cost for Task 1-a:</b>						

**TASK 1-b: Development of an Monitoring Plan and Quality Assurance Project Plan (QAPP) for Non-Wadeable Streams**

<b>Personnel (1)</b>				Total Cost Year 1	Total Cost Year 2	Total Cost Year 3
Name	Title	Hourly Rate	No. of Hours			
<b>Other Expenses (2)</b>		Unit price	No. of units			
<b>Total Cost for Task 1-b:</b>						

(1) Fully-absorbed hourly rates for all staff proposed to work on the project, and the concentration of hours for each.

(2) Include any anticipated costs other than personnel.

**TASK 2 – Pre-Sampling Field Reconnaissance:**

Provide an estimate of amount of personnel required to complete 50 sites and identify the rates and estimates for all other expenses that may be incurred including mileage, equipment rental per day. Assume the 50 sites are located within a single watershed.

<b>Personnel (1)</b>				Total Cost Year 1	Total Cost Year 2	Total Cost Year 3
Name	Title	Hourly Rate	No. of Hours			
<b>Equipment (2)</b>						
<b>Other Expenses (3)</b>		Unit price	No. of units			
<b>Total Cost for Task 2:</b>						

- (1) Fully-absorbed hourly rates for all staff proposed to work on the project, and the concentration of hours for each.
- (2) Provide a listing of all equipment, materials, and instrumentation that may be used.
- (3) Include any anticipated costs that do not fall under the other two categories.

**TASK 3 –a: Collection of Samples – Wadeable Streams**

Provide an estimate of amount of personnel required to collect samples from 50 sites and identify the rates for all other expenses that may be incurred including mileage, equipment rental per day. Also provide a supplemental sample collection cost.

<b>Personnel (1)</b>				Total Cost Year 1	Total Cost Year 2	Total Cost Year 3
Name	Title	Hourly Rate	No. of Hours			
<b>Equipment (2)</b>						
<b>Other Expenses (3)</b>						
		Unit price	No. of units			
<b>Total Cost for Task 3-a: Wadeable Streams</b>						
<b>Supplemental Sample Collection Cost –3-a (cost/sample) (4)</b>						

1. Fully-absorbed hourly rates for all staff proposed to work on the project, and the concentration of hours for each.
2. Provide a listing of all equipment, materials, and instrumentation that may be used.
3. Include any anticipated costs that do not fall under the other two categories.
4. Cost to be charged per site for task 3a for all sites in excess of 50 sites.

**TASK 3 –b: Collection of Samples – Non-wadeable Streams**

Provide an estimate of amount of personnel required to collect samples from 7 sites and identify the rates for all other expenses that may be incurred including mileage, equipment rental per day. Also provide a supplemental sample collection cost.

<b>Personnel (1)</b>				Total Cost Year 1	Total Cost Year 2	Total Cost Year 3
Name	Title	Hourly Rate	No.of Hours			
<b>Equipment (2)</b>						
<b>Other Expenses (3)</b>		Unit price	No. of units			
<b>Total Cost for Task 3-b: non-wadeable streams</b>						
<b>Supplemental Sample Collection Cost – 3-b (cost/sample) (4)</b>						

- (1) Fully-absorbed hourly rates for all staff proposed to work on the project, and the concentration of hours for each.
- (2) Provide a listing of all equipment, materials, and instrumentation that may be used.
- (3) Include any anticipated costs that do not fall under the other two categories.
- (4) Cost to be charged per site for task 3b for all sites in excess of 7 sites.

**TASK 4-a: Laboratory Processing & Taxonomic Identification – Wadeable Streams**

Provide an estimate of amount of personnel required to collect samples from 50 sites and identify the rates for all other expenses that may be incurred including mileage, equipment rental per day. All proposed subcontractors should be specified. Also provide a supplemental sample identification cost.

<b>Personnel (1)</b>				Total Cost Year 1	Total Cost Year 2	Total Cost Year 3
Name	Title	Hourly Rate	No.of Hours			
<b>Equipment (2)</b>						
<b>Other Expenses (3)</b>		Unit price	No. of units			
<b>Total Cost for Task 4-a: Wadeable streams</b>						
<b>Supplemental Sample Identification Collection Cost – 4a (cost/sample) (4)</b>						

Supplemental Sample Processing & Taxonomic Identification Cost (Cost/sample)<sup>(4)</sup>: \$\_\_\_\_\_

- (1) Fully-absorbed hourly rates for all staff proposed to work on the project, and the concentration of hours for each.
- (2) Provide a listing of all equipment, materials, and instrumentation that may be used.
- (3) Include any anticipated costs that do not fall under the other two categories.
- (4) Total cost per sample to complete Task 4-a for all supplemental samples (those in excess of 50 sites).

**TASK 4-b: Laboratory Processing & Taxonomic Identification – Non-Wadeable Streams**

Provide an estimate of amount of personnel required to collect samples from 7sites and identify the rates for all other expenses that may be incurred including mileage, equipment rental per day. All proposed subcontractors should be specified. Also provide a supplemental sample identification cost.

<b>Personnel (1)</b>				Total Cost Year 1	Total Cost Year 2	Total Cost Year 3
Name	Title	Hourly Rate	No.of Hours			
<b>Equipment (2)</b>						
<b>Other Expenses (3)</b>		Unit price	No. of units			
<b>Total Cost for Task 4-b: Non-Wadeable streams</b>						
<b>Supplemental Sample Identification Collection Cost – 4-b (cost/sample) (4)</b>						

- (1) Fully-absorbed hourly rates for all staff proposed to work on the project, and the concentration of hours for each.
- (2) Provide a listing of all equipment, materials, and instrumentation that may be used.
- (3) Include any anticipated costs that do not fall under the other two categories.
- (4) Total cost per sample to complete Task 4-a for all supplemental samples (those in excess of 7 sites).

**TASK 5- Data Analyses and Interpretation**

Include costs associated with data compilation, analysis, and interpretation of 50 samples from wadeable streams and 7 samples from non-wadeable streams.

<b>Personnel (1)</b>				Total Cost Year 1	Total Cost Year 2	Total Cost Year 3
Name	Title	Hourly Rate	No. of Hours			
<b>Other Expenses (2)</b>		Unit price	No. of units			
<b>Total Cost for Task 5</b>						

- (1) Fully-absorbed hourly rates for all staff proposed to work on the project, and the concentration of hours for each.
- (2) Include any other anticipated costs related to completing this task.

**TASK 6 - FINAL REPORT**

Final Report preparation costs. Data for 50 wadeable stream samples and 7 non-wadeable stream samples.

<b>Personnel (1)</b>				Total Cost Year 1	Total Cost Year 2	Total Cost Year 3
Name	Title	Hourly Rate	No. of Hours			
<b>Other Expenses (2)</b>		Unit price	No. of units			
<b>Total Cost for Task 6</b>						

Multi-Year Budget Summary

Task Number	Task	YEAR 1 Total	YEAR 2 Total	YEAR 3 Total
Task 1-a	QAPP – Wadeable Streams			
Task 1-b	QAPP – Non-wadeable Streams			
Task 2	Field reconnaissance			
Task 3-a	Sample Collection – wadeable streams			
Task 3-b	Sample Collection – non-wadeable streams			
Task 4-a	Laboratory processing – wadeable streams			
Task 4-b	Laboratory processing – non-wadeable streams			
Task 5	Data Analyses			
Task 6	Final Report			
Annual Total Costs				

