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**Finance and Business Operations Division**  
 Procurement and Contract Services Section  
 Department of Executive Services

CNK-ES-0340  
 3rd Floor  
 401 5th Avenue  
 Seattle, WA 98104

206-263-9400  
 206-296-7676 Fax  
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[www.kingcounty.gov](http://www.kingcounty.gov)

**VENDOR:**

RHITHRON BIOLOGICAL ASSOCIATES  
 1845 S. 12TH W.  
 MISSOULA, MT 59801

**SHIP TO**

KC DEPARTMENT OF EXEC SERVICES  
 PROCUREMENT-GOODS & SERVICES  
 401 5TH AVE, CNK-ES0340  
 SEATTLE, WA 98104  
 United States

**BILL TO**

KC DEPT OF EXECUTIVE SERVICES  
 ACCOUNTS PAYABLE, 3RD FLOOR  
 401 5TH AVE, CNK-ES0320  
 SEATTLE, WA 98104  
 United States

**Purchase Order**

PURCHASE ORDER NO.	REVISION	PAGE
489600	0	1
THIS PURCHASE ORDER NUMBER MUST APPEAR ON ALL INVOICES, PACKING LISTS, CARTONS AND CORRESPONDENCES RELATED TO THIS ORDER.		
CREATION DATE	BUYER	
08-OCT-10	J Sebring	
DATE OF REVISION	BUYER	

CUSTOMER ACCT #	VENDOR NO.	PAYMENT TERMS	FREIGHT TERMS	FOB	SHIP VIA
	19402	Net30days	Paid	Destination	BEST WAY

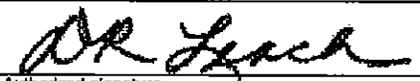
CONFIRM TO / TELEPHONE	REQUESTOR / DELIVER TO
(406) 721-1977	

LINE	PART NUMBER - DESCRIPTION	DELIVERY DATE	QUANTITY	UNIT	UNIT PRICE	EXTENSION	1
	FURNISH IN ACCORDANCE WITH KING COUNTY ITB # 1212-10 OLB AND CORRESPONDING BID OF RHITHRON ASSOCIATES, BOTH INCORPORATED BY REFERENCE AS IF FULLY SET FORTH HEREIN, FOR THE PERIOD OCT 11, 2010 TO OCT 10, 2015. BENTHIC MACROINVERTEBRATE TAXONOMIC ANALYSIS				\$195.00 EACH		
	Purchase Agreement Effective From: 11-OCT-10 To: 10-OCT-15	Amount Agreed:					

SEE REVERSE SIDE FOR ADDITIONAL TERMS AND CONDITIONS. THIS ORDER IS SUBJECT TO ALL THE TERMS AND CONDITIONS ON THE FRONT AND BACK HEREOF.

Required invoice information: Ship to Address, Mailstop, Requestor's Name, Purchase Order Number, Contract Number (if applicable), Line Item Number, description and Unit Price as stated on the purchase order. Missing information may result in payment delays.

**ACCEPTANCE:**  
 This purchase order expressly limits acceptance to the terms and conditions stated herein.

**TOTAL**  
  
 Authorized signature

**PURCHASE ORDER  
GENERAL TERMS AND CONDITIONS**

**Compliance:** By acceptance of this order, the vendor warrants full compliance with all applicable local, state or federal laws and regulations including specific statutory requirements of Federal Agencies. Upon request, the purchasing agent will provide applicable contract terms and conditions.

**Acceptance/Changes:** All goods or materials purchased hereunder are subject to approval by King County. No substitutions or changes of any nature under this purchase order will be accepted unless approved in writing by King County.

**Inspections:** By acceptance of this order, vendor grants the right to Buyer to make periodic visits to the vendor's plant or their subcontractor's for inspection of materials or to determine actual progress of manufacture.

**Change Orders:** Change orders modifying the terms and conditions herein will be without effect unless issued and authorized in writing by King County.

**Cancellation:** The County may cancel any purchase order or any part thereof by written notice at any time, without penalty, if the vendor fails to comply with the terms, specifications, delivery/completion date or to perform the work with diligence.

**Invoices:** Invoices must reference the purchase order number.

All vendors licensed to do business in Washington State must bill King County for applicable tax. Indicate discount terms to the County for prompt payment. Discount period to be extended if the invoice is returned for correction or clarification.

**Shipping Instructions:** All shipments must contain a packing slip. Unless otherwise specified, all goods are to be shipped prepaid, FOB Destination. Where shipping addresses indicate room numbers, the Vendor shall make delivery to that location at no additional charge, including, but not limited to delivery, packing and or crating.

**Warranty:** The Vendor warrants that all products delivered under this purchase order shall be free from defects in material and workmanship, and shall be fit for the intended purpose. This warrantee is in addition to any standard warranty or guarantee given by vendor to the County. All products determined by King County to be defective shall be replaced within 15 days of notice by King County.

All costs of replacement, including shipping charges shall be borne by the Vendor. Vendor warrants that the merchandise is free and clear of all liens and encumbrances and that vendor has a good and marketable title to same. Vendor warrants that the equipment, materials or service on this order do not infringe any patent, registered trademark or copyright and agrees to hold King County harmless in the event of any infringement or claim thereof.

**Certification Regarding Debarment, Suspension and Other Responsibility Matters:** By providing goods or services under this purchase order, the Contractor agrees to comply with the requirements of 49 CFR 29, Subpart C while this offer is valid and throughout the period of any Contract that may arise from this Contract. The Contractor further agrees to include a provision requiring such compliance in its lower tier covered transactions.

**Order of Precedence:** When this purchase order is issued subsequent to the results of a request for bid or proposal, the terms and conditions contained in the solicitation or resulting contract shall control.

# Rhithron Associates, Inc.

29 Fort Missoula Road  
Missoula, Montana 59804

Phone: 406 721 1977  
contact@rhithron.com

**Statement of Qualifications, Technical and Cost Proposal  
in response ITB Number 1212-10-OLB:  
Freshwater Benthic Invertebrate Analysis Service**

Prepared for  
King County Procurement Services Section  
Response Due Date – August 3, 2010



Tax Identification Number 84-1612904  
DUNS # 105550037  
GSA Contract # GS-10F-0138V

 Contract Holder

Prepared by:  
Wease Bollman, President and Chief Biologist  
Rhithron Associates, Inc.  
Missoula, Montana

## INTRODUCTION

Rhithron Associates, Inc. is pleased to provide a statement of qualifications, and a technical and cost proposal in response to the Invitation to Bid (ITB) Number 1212-10-OLB for Freshwater Benthic Invertebrate Analysis Service. Rhithron has provided such services to clients nationwide since 1991. The principal officers of Rhithron are the President/Chief Biologist, Wease Bollman and the Vice President/Operations Officer, Jennifer Bowman. The primary contact address for both officers is 29 Fort Missoula Road, Missoula, Montana 59804, and the primary contact phone number is 406-721-1977. All of the work outlined in this proposal would be performed at the primary contact address.

In this statement of qualifications, we provide responses to each criterion (a through f) listed in the ITB Section 6.4, and we include the complete text of the solicitation document. We demonstrate the resources, abilities and reputation of our firm to provide the requested services, guaranteeing the highest quality outcomes and data. Rhithron employs skilled, experienced, NABS-certified taxonomists; we possess research-grade optical equipment and other laboratory resources, and we maintain an extensive, up-to-date library of taxonomic literature. Our professional staff is supported by an efficient management and ancillary team. Our company is financially stable, having operated without interruption since 1991. Rhithron Associates, Inc. is an S corporation and was established as such in 2002. Our Federal Employer Tax Identification Number (EIN) is 84-1612904. Our Unified Business Identification (UBI) Number issued by the state of Washington Department of Revenue is 602 608 794. We provide services to the Federal Government via GSA contract number GS-10F-0138V.

In Part A/B, we provide our internal document: *Technical approach, standard operating procedures and quality assurance project plan*, which gives a detailed description of the identification methods and QA/QC systems for sub-sampling, identification and enumeration of invertebrate samples. This statement gives specifics about the technical considerations inherent in the work, and provides a detailed work plan and quality assurance plan that describes the operating procedures and QA/QC protocols we will apply to the King County projects. Methods and QA/QC results are fully reported to clients in a technical summary document provided along with project deliverables. The *Technical approach* document also describes our Chain-of-Custody procedures. We provide information that demonstrates the care and integrity with which Rhithron will perform the services requested by King County.

For 19 years, Rhithron has provided taxonomic services and data interpretation to a wide variety of clients, including county, state and federal agencies. Our work history includes extensive experience with the aquatic flora and fauna of the Pacific Northwest region and the Puget Sound Lowlands. In Part D of this proposal we describe our experience in freshwater invertebrate taxonomy, with emphasis on our extensive experience with the Pacific Northwest and Puget Sound Lowlands aquatic invertebrate taxonomy in a list of projects and references. We list some of the many clients in the region that employ Rhithron for taxonomic work. The respective project managers for our Pacific Northwest and Puget Sound Lowlands projects can provide references for the quality of performance Rhithron brought to their work. In addition to work in this region,

Rhithron's experience spans North America. We offer quality-assured taxonomic services for freshwater invertebrates, freshwater and marine diatoms, phytoplankton and zooplankton.

In Part E, we provide a list of taxa we have commonly encountered in streams of Western North America, indicating the taxonomic resolution that we consider to be the "lowest practical". Rhithron routinely provides genus/species level identifications for aquatic mites, chironomids, and oligochaetes; we acknowledge that the King County projects may not require high resolution for these groups.

Part F includes information about our qualifications: our taxonomists and their NABS Level II (genus) certifications are listed, and we provide a summary of our facilities and technical resources.

Rhithron's approach to the Scope of Work for the King County projects includes pick-up of samples and delivery to the Rhithron laboratory. When samples contain less than 500 organisms, we will sort the entire sample. For other samples, we will carefully sort at least 500 organisms from substrate, using stereomicroscopes and Caton subsamplers, and we will apply strict QA/QC systems to assure sorting efficiency. A large/rare taxa search for a maximum of 15 minutes will be conducted on unsorted remnants, and these will be included in the data as directed by King County project managers. We will identify aquatic macroinvertebrates (except for Chironomidae, Oligochaeta, and Acari) to the lowest practical taxonomic resolution, consistent with the historic data and also consistent with levels necessary for the calculation of the Benthic Index of Biological Integrity (B-IBI). All of Rhithron's identifications will be based on the most current taxonomic literature resources. Taxonomy and enumeration will be quality-assured; we will apply strict QA/QC systems, as described in our *Technical approach* document. These QA/QC systems address all aspects of quality data assurance, and provide assurance for accuracy, precision and completeness, and assurance against bias. Difficult or controversial taxa will be sent to specialists for verification. We will tabulate the data and QA results into the Puget Sound Stream Benthos website and provide all of the other elements listed as reporting requirements in the RFQ. We will notify the Puget Sound Stream Benthos technical support with all required information if we encounter taxa that are not currently in the master taxa list, and we will notify King County project managers when data is uploaded. We will accomplish all required tasks within 150 days of receipt of samples at the Rhithron laboratory, or within turnaround times specified by King County project managers, for projects requiring more rapid turnaround. With our estimated capability of 330 aquatic invertebrate samples per month, we are confident that we can easily provide all deliverables within the required time frames. We will return sample bottles and coolers by June 30<sup>th</sup> each year to the King County DNRP offices in Seattle. We will retain vouchered samples for a minimum of 5 years, and will return or dispose of samples in the manner directed by the King County project managers. The unit price quoted in this proposal includes all requirements stated in Section 5 Technical Specification (Scope of Work). There is no cost acceleration for rapid turnaround projects.

Rhithron will accept sole responsibility of the integrity of samples from the time we pick them up through the required archival period (5 years) or until King County project

managers approve sample return or disposal. Rhithron operates under an active safety program which meets all governmental regulations for handling and analysis of environmental samples and for safe laboratory practices for handling ethanol-preserved samples.

A cornerstone of Rhithron's success and growth has been our commitment to outstanding relationships with our clients. We guarantee prompt communication to address client's questions, concerns and directives. We believe that our clients, including those listed as references, will validate the integrity and responsiveness of our company. Rhithron has worked with numerous agencies at the Federal, State, County, and municipal level as well as with private consulting groups and Native American tribes, many of which require laboratory methods or calculations unique to themselves. Our intra-laboratory communication system and extensive procedure manuals insure that we are flexible and able to provide data consistent with a client's needs. *Our organization is large enough to adapt to varying client requirements for taxonomy, turnaround times, and data formats, and small enough to regard the details of each project as critical to its success.* We offer pick-up services throughout the Pacific Northwest in order to simplify sample delivery to our laboratory.

We hope to work with King County on these important projects. Please contact either Wease Bollman or Jennifer Bowman if more information is needed.

# RESPONSES TO CRITERIA ITEMS A through F: (listed in ITB Part 6.4.1)

## **PART A/B: TECHNICAL APPROACH, STANDARD OPERATING PROCEDURES AND QUALITY ASSURANCE PROJECT PLAN**

### **A. Project Management and Quality System Specifications**

#### **Background**

Scheduling, tracking of project progress, compliance with project specifications, and QA/QC procedure performance, evaluation, and recording are assigned to the management team. Specific management roles are described in each section of this chapter; this section describes initial project management, and delineates the organization structure and quality systems.

#### **Goal**

The goal of project managers is to guide each project through various stages from sample receipt to data delivery in such a way as to:

1. Meet Rhithron's internal quality targets for sample processing (sorting efficiency), taxonomic and enumeration precision (Bray-Curtis similarity tests), and data entry and validation,
2. Meet or exceed all of the client's project requirements and specifications, and
3. Deliver quality-assured, completed projects by the client's specified due date.

The goal of this Technical Approach/Quality Assurance Plan is to outline the steps taken by the technical, biological, and support staffs at Rhithron to insure that these performance criteria are met at every level of the organization.

#### **Organization and Quality Systems Specifications**

Figure 1 shows the organizational chart of Rhithron Associates, Inc.

At Rhithron, Operations Officer is responsible for sample intake, project inventory, correlation of labels and information provided by clients, and rectification of discrepancies in labeling and chain of custody. Technicians are responsible for invertebrate sample processing and sorting and QA/QC procedures related to sample processing. They are supervised by the Operations Officer, who maintains quality assurance data for each project and for each technician, and who schedules and manages projects so that there is ample time for completion of all aspects of processing, taxonomy, reporting, and quality assurance procedures.

Taxonomists are NABS-certified scientists who identify and enumerate invertebrates and perform QA/QC procedures related to taxonomy. Taxonomists maintain, catalogue, update, and obtain expert verifications for the in-house reference collection. They also maintain, update, and catalogue the in-house library of taxonomic literature. Taxonomists report to the Lead Taxonomist, who maintains quality assurance data for each project and for each taxonomist, and who oversees application of quality assurance procedures related to taxonomy, corrective actions relevant to taxonomy, taxonomist training and continuing education, and taxonomy oversight. The Lead Taxonomist reports to the Chief Biologist.

The Operations Officer performs quality assurance procedures for sample intake, inventory, and data entry. The Operations Officer also supervises the progress of each project in the laboratory, assigns tasks to pertinent individuals, communicates with clients on issues concerning discrepancies between inventories or chain-of-custody documents and sample labeling or sample counts, and charts tasks and progress on a project board displayed for all staff. A project log book is also maintained by the Operations Officer and assigned tasks are monitored by the Operations Officer throughout each work day. The Chief Biologist provides oversight for QA/QC procedures required in the Technical division.

The Data Technician is responsible for data and metadata entry, generation of QA/QC statistics, data review, data editing, data formatting, and assembling data deliverables. The Data Technician maintains, repairs, and updates the custom database applications in use at Rhithron, and communicates with clients on issues relative to data quality and concerns. The Data Technician reports to the Operations Officer.

The progress of projects and review of all QA/QC procedures for each project is tracked at a daily morning meeting of the oversight team, which consists of the Chief Biologist, Operations Officer, and Lead Taxonomist.

#### **I. Quality system specifications**

Quality assurance/quality control procedures are documented in Rhithron Standard Operating Procedures for each department (Technical, Taxonomy, Data) which are available to all staff. Variations for individual projects are annotated in the SOPs and communicated to the technical staff by the Operations Officer at weekly meetings, where projects scheduled for the upcoming week or on-going projects are discussed and reviewed. QA/QC procedures are implemented

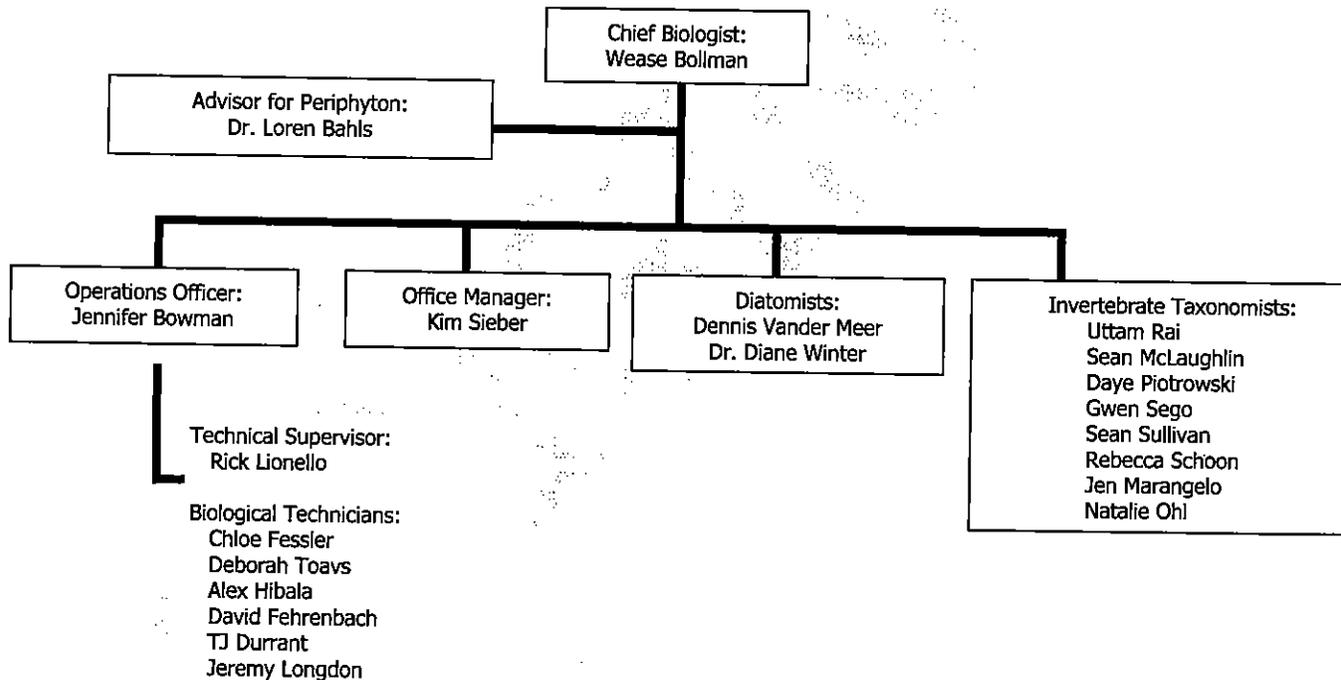
in the Technical Department by all technicians; 100% of samples processed by technicians at Rhithron are subjected to QA/QC procedures that evaluate sorting efficiency. Technicians record sorting efficiency for each sample on sample benchsheets. QA/QC failures are addressed immediately by technicians. Periodic comparisons of subsample similarity are performed on randomly selected samples at least once per week. Random selection of samples for this QA/QC check is provided by the Operations Officer. Oversight of these functions is provided by the Operations Officer. The Data Technician enters sorting efficiency statistics for every sample with laboratory metadata for the project.

Specific QA/QC procedures for individual projects are communicated to the taxonomy staff by the Lead Taxonomist at weekly meetings, where projects scheduled for the upcoming week or on-going projects are discussed and reviewed. The Operations Officer randomly selects a minimum of 10% of completed samples, and re-identification of these samples is assigned to taxonomists by the Lead Taxonomist. The Data Technician runs sample similarity statistics and provides these to the Lead Taxonomist and Chief Biologist, who institute corrective action where needed. Corrective action may involve review of taxonomic determinations, additional QA/QC for the project, or sending specimens to systematic authorities for verification.

## II. Organizational chart

See Figure 1 and role descriptions under *Organization and Quality Systems Specifications* above.

**Figure 1. Rhithron Associates, Inc. organizational chart**



## III. Delineation of the authority and responsibilities of the QA function

All technicians share responsibility for the implementation of sample processing QA/QC procedures involving sorting efficiency. Standard operating procedure requires 100% of samples to be evaluated for sorting efficiency; these checks are performed immediately after a sample is processed. The QA technician is selected by random rotation; thus the QA/QC process is shared by all technicians. Sorting efficiency results are communicated to the Data Technician via benchsheets submitted for sample processing data entry. The Data Technician submits sorting efficiency data to the Operations Officer, who institutes additional training for technicians with poor sorting efficiency statistics. Failure of the subsample similarity procedure results in review of sample handling procedures by all technical staff.

QA/QC procedures for taxonomy fall under the authority of the Lead Taxonomist and Chief Biologist, who review all sample similarity statistics and identify areas in taxonomic determinations or enumeration that require corrective action. The Data Technician generates similarity statistics for comparison of identifications and enumerations, and submits statistics to the Lead Taxonomist and Chief Biologist, who implement corrective actions when needed. The Lead Taxonomist assures that corrective action is taken by taxonomy staff members. Corrective action may include additional

QA/QC for a project, or submittal of specimens to systematists for verification of identification. The Chief Biologist indicates to the Operations Officer and the Lead Taxonomist when additional QA/QC is needed for a project.

Data entry QA/QC procedures are the responsibility of the Operations Officer. Line-by-line checks of data entry may be performed by the Operations Officer, comparing benchsheets with entered data. A data entry technician re-enters sample data for a minimum of 10% of randomly selected samples from a given project. Random selection of these samples is performed by the Operations Officer. The Operations Officer is responsible for implementing corrective action when indicated. Corrective action may include additional QA/QC procedures (i.e. re-entering data for additional samples), until no data entry errors are found.

#### **IV. Background and experience of QA personnel**

QA/QC functions of the Operations Officer require at least a bachelor's degree and 3 years' experience in a taxonomic laboratory setting. QA/QC functions of the Lead Taxonomist require an advanced degree in a biological science, certifications in taxonomic determinations, and at least 5 years' experience in macroinvertebrate taxonomy. QA/QC functions of the Data Technician require at least 2 years' experience in a taxonomic laboratory setting. QA/QC functions of the Chief Biologist require advanced degrees in aquatic biological science and at least 10 years' experience in aquatic invertebrate taxonomy.

Rhithron QA personnel meet all of the requirements for effective QA/QC procedure implementation and evaluation.

#### **V. General approach and operating procedures for accomplishing the technical and QA specifications for general projects**

Rhithron's proposed general approach to the QA specifications for general projects is described in the subsections of this chapter.

##### **Project set-up, sample intake, inventory, chain of custody, sample storage, sample transfer to the technical division**

Project management begins well before samples arrive at the laboratory. For each project, the contract or purchase order (if provided) is completely reviewed by the Operations Officer. If no contract or purchase order is provided, the scope of work communicated by the client to the Chief Biologist is reviewed. A compliance document is produced, which contains information about legal and fiduciary aspects, technical and scientific particulars required by the project, and project timeline and deliverables. A project file is begun at this time; the compliance document becomes a part of this file. When work on the project commences, and for the time period in which the project is in progress, the compliance document is posted on the project board which is accessible by all laboratory personnel.

When samples arrive at the laboratory, all project packages are immediately opened and inspected for the condition of samples. The level and integrity of preservative and seals are checked, the number of sample jars is determined, and any damage that may have occurred to the samples is assessed. Jars with decanted samples or low preservative are refilled or topped-off and re-sealed. Damaged samples are salvaged to the extent possible, and these activities are noted. The client is immediately notified of sample arrival and condition. If an electronic copy of the client's sample inventory or chain-of-custody document has not been provided, the Operations Officer requests it. If a chain-of-custody document is not provided by the client, the Operations Officer creates one from the verified information gathered from communication with the client. An example of a chain-of-custody document can be found in Figure 2. This document is signed and a copy is sent to the client; another copy is filed with project documents at Rhithron. An internal project code is assigned to the project, and the sample packages are marked with this code as well as with the arrival date. This information is also recorded on the Rhithron project inventory.



Each sample jar label is compared to the client-provided chain-of-custody document; site name, client sample identifiers, replicate numbers, sample collection dates, number of jars in each sample, and any other distinguishing notations are compared and discrepancies are noted. Samples contained in multiple jars are identified and all jars are taped together. Discrepancies between the chain-of-custody document and the samples and jar labels or damaged samples are reported to the client for verification and correction as needed. Attempts are made to salvage damaged samples when it is clearly apparent that no intra-sample contamination has occurred. Changes per the client's direction are noted on the original client-provided chain of custody document, on the electronic version of the client's chain-of-custody document, and an additional label with the correction is added to the sample jar. Copies of the original chain-of-custody document and any client-corrected discrepancies are retained in the client file. If an electronic copy of the client's chain-of-custody document has been provided, corrections based on the client's input are entered. If such data has not been provided electronically, it is hand entered into an Excel spreadsheet by the Data Technician. This corrected electronic chain-of-custody document is sent to the client for final verification. Once the client's chain-of-custody information has been verified and all sample discrepancies corrected, each sample is assigned a Rhithron identifier (the RAI number) and the Excel spreadsheet is uploaded into the Rhithron database. A Rhithron inventory is generated by the database; this document includes the full inventory, including both client and Rhithron identifiers for each sample and the number of jars for each sample. The use of 2 sample identification tools reduces the chance for mismatches as samples are processed and data is generated.

Samples are carried to the secure sample storage area until sample processing for that project begins. Each project is assigned to an individual storage shelf or area designated only for that project. Samples are held for a maximum of 2 months prior to sample processing. Stored samples are checked weekly for integrity, and preservative is added as needed.

In addition to the project status report, the Rhithron database generates benchsheets for each sample and all labels that will be used for sample vials and microscope slides with the appropriate identifiers for each sample. In addition, internal chain-of-custody documents are generated, which allow tracking of each individual jar or each individual sample from transfer from storage to the technical laboratory, transfer from the technical laboratory to the taxonomy laboratory, and transfer to the secure archiving area. These documents are lists of internal sample identifiers, client identifiers, and the number of jars comprising each sample. When a technician assumes custody of a sample for sorting, he/she signs the sample tracking form, which is retained by the department manager. Similar documents are held in the taxonomy laboratory, where similar sign-out procedures are effected.

All sorting and taxonomic information is entered on the bench sheet as a sample proceeds through processing steps. The database also generates a project status report; this includes client information, contract information, the number of samples in the project, the number of jars in each sample, the project protocols (sorting methods, taxonomic resolution codes, QA/QC procedures (Rhithron standard procedures or client-specified procedures), specifications for data and other deliverables, and entry procedures, sample storage location, sample remnant handling procedures, and a checklist for each step of handling the entire project from receipt of samples to delivery of data and remnant return. This report is maintained by the Operations Officer, and is updated daily.

## **B. DATA ACQUISITION**

### **Sample processing: aquatic invertebrates**

#### ***Goal***

The goal of sample processing is to sort invertebrates from substrate in such a manner that results in an unbiased, representative subsample containing the appropriate number of organisms. The number of organisms is typically determined by the project specifications.

#### ***Processing Procedures***

At the beginning of a project, samples are transported from storage to the technical department. There, the samples are organized by RAI number and benchsheets and labels for each individual sample are also organized.

The technician selects a sample and checks all jar labels, comparing them with the database-generated inventory, and selects the appropriate prepared benchsheet for that sample. Each benchsheet is generated by the Rhithron database application, and includes the project identifier, the RAI number, and all sample identifiers assigned by the client, as well as the number of jars composing that sample. All jars associated with that sample are located. A second technician verifies the sample selection and associated paperwork, and both technicians sign the benchsheet. The sorting technician proceeds to process the sample according to the protocol listed on the project inventory.

Rhithron's standard operating procedure for sorting of invertebrate samples is described in the following paragraphs. *It is important to note that client specifications usually require alteration of some or all of these procedures. For each project, client specifications are reviewed with the technical staff before sample processing begins.* The Operations Officer oversees this review; in addition, sorting protocol instructions are found on project inventories, which are posted in the technical laboratory throughout the progress of the project. *These precautions assure that the appropriate, client-specified protocols are followed for each project.*

Caton sub-sampling devices (Caton 1991), divided into 30 grids, each approximately 5 cm by 6 cm, are used. Contents of each individual sample jar are thoroughly mixed, poured out into the Caton tray, and distributed evenly over the screen. Individual grids are randomly selected. Grid contents are examined under stereoscopic microscopes using 10x-30x magnification. All aquatic invertebrates from each selected grid are sorted from the substrate, and placed in alcohol for subsequent identification. Grid selection, examination, and sorting continues until the target number of animals is sorted, and the required number of grids or volume of substrate is processed. During sorting, midges (Chironomidae) and oligochaetes are separated from other taxa and placed in separate labeled vials. Other taxa may be further separated into labeled vials, depending on the project specifics. Some organisms may be excluded from the sort, depending on the project specifics; these organisms may include terrestrials, planktonic microcrustaceans, non-benthic organisms, and others. If a selected grid is dominated by a single taxon, additional grids will be selected and sorted, and notes describing this made on the benchsheet. All sample remnants, including unsorted remainders, are preserved in ethanol and stored for the period specified by the client, or, if not specified, for two years. Prior to disposal of unsorted sample fractions, the Operations Officer will contact the client for direction. Sorted invertebrates are placed in labeled vials containing 95% ethanol and are stored in a refrigerator pending identification. A "Large/Rare" search may be done, depending on the specifications for the project. This procedure requires that the unsorted substrate material be examined for taxa that did not appear in the sub-sampled fraction. Large/Rare organisms are placed in a separate labeled vial.

Sample elutriation is an alternative sorting procedure. When required by the specifications of the project, or when sample substrate is appropriate, macroinvertebrates may be removed from the substrate before organisms are randomly selected and counted. The procedure requires that sample material be poured out into a white plastic basin, and large debris is rinsed and examined so that all macroinvertebrates are removed. Large debris material is returned to the sample jar. The remaining material is covered with enough water so that macroinvertebrates and organic material is floated off of non-organic substrates. The non-organic substrates are examined carefully, and all remaining macroinvertebrates are removed. Organisms are placed in a jar with water, thoroughly mixed and poured out into a Caton sub-sampling device. Sub-sampling and quality assurance procedures then proceed as described in the preceding paragraph.

While sorting, the technician records sample composition information including substrate descriptors, the portion of the sample processed, the sample condition, and the time spent on processing the sample. Unusual circumstances are fully described. All of this information is included on the sample benchsheet.

#### **Performance objectives**

Aspects of sample processing by Rhithron's technical staff that are important to subsequent data quality include the following:

1. The target count of organisms is achieved within the specified tolerance limits.
2. The client-specified protocol is faithfully followed.
3. Sorting efficiency is maintained at an average level no lower than 95% for each project, thus assuring sorting accuracy and precision.
4. The appropriate paperwork is associated with the correct sample.
5. All data pertinent to the sub-sampling procedure, including fraction of sample used to obtain the target number of organisms, condition of the sample, dominant substrate components, any problems associated with sorting, and quality assurance procedure outcomes and statistics, etc. are recorded on sample benchsheets.

Accomplishment of these performance objectives is evaluated by the following QA/QC plan.

#### **QA/QC plan**

##### **1. Target count**

Under-processed samples are detected at the time of taxonomic identifications by the taxonomists or at the time of data entry by the Data Technician. If the sample was not fully picked in the processing stage, underprocessed samples are revisited by the sorting technician, who distributes the unpicked sample portion into the appropriate number of Caton tray grids, and sorts the sample until the target count is reached.

##### **2. Adherence to specified procedure**

Daily oversight by the Operations Officer and Data Technician assure that client-specific protocols are followed in the technical department. Documentation for each project in progress is reviewed periodically.

##### **3. Sorting efficiency**

Quality control procedures for initial sample processing and subsampling involves checking sorting efficiency. These checks are conducted on 100% of the samples by independent observers who microscopically re-examine 20% of sorted substrate from each sample. All organisms that were missed are counted. Sorting efficiency is evaluated by applying the following calculation:

$$SE = \frac{n_1}{n_2} \times 100$$

where SE is the sorting efficiency, expressed as a percentage,  $n_1$  is the total number of specimens in the first sort, and  $n_2$  is the total number of specimens in the first and second sorts combined. Sorting efficiency is recorded on each

benchsheet, and this data is entered into the Rhithron database. If 95% sorting efficiency is not achieved for a given sample, a failure is recorded on the benchsheet and in the database. The sorted portion of that sample is then completely resorted before the sorting efficiency test is repeated for that sample. Sorting efficiency statistics for each technician and for the entire laboratory are reviewed monthly. Sorting efficiency for each sample in a project is reported to the client in the technical summary document. Technicians who do not maintain the target sorting efficiency are given remedial training, and larger portions of the samples they process are examined for the sorting efficiency test until they are able to maintain the target sorting efficiency.

A second evaluation of the sub-sampling process is applied to a small proportion of samples processed in each month; typically one sample per week is subjected to the following test of precision of the sub-sampling process. The procedure is only applied to samples where the target number of organisms was achieved in less than half of the Caton grids. A sample is randomly selected, and a second sub-sample is re-sorted from the unprocessed sample remnant. A second technician performs this sort. The resulting sub-sample is identified, and Bray-Curtis similarity index is calculated for the results of both sub-samples. Results that are less than 90% similar would indicate the need for more thorough distribution of sample materials in the sub-sampling tray or more special attention given to easily missed taxa when sorting (i.e. increased magnification).

#### 4. Correspondence of sample and paperwork

Two technicians check the correspondence of sample and paperwork before each sample is processed. Technicians check the RAI number, the client's sample identifiers, and the number of jars associated with that sample. Both technicians sign the benchsheet, which is generated by Rhithron's database for each specific sample, when this step is completed. Using a "buddy" system insures that there are no mismatches between labels, spreadsheets, other data materials and the corresponding sample. Correct labeling of the sample fractions resulting from the processing procedures is assured by the provision of database-generated labels, which are attached to the benchsheet for each sample.

#### 5. Complete recording of appropriate sub-sampling data

Benchsheets for samples that have been processed are collected daily by the Data Technician, who checks for completeness of sub-sampling data, and enters this data into the Rhithron database. The technical co-ordinator is alerted to any missing data. Since these checks are performed daily, obtaining the data for each sample is assured.

### **Invertebrate identification and enumeration**

#### ***Goal***

The goal of the taxonomic portion of sample processing is to identify and enumerate organisms accurately and precisely, to the taxonomic resolution required by the project. For this project, consistency of identifications with organisms in the provided reference collection will be assured by comparison of new identifications with historic identifications. Bias is minimized and data is reported completely. Materials related to the project, including labeled microscope slides, labeled vials with identified organisms, and laboratory benchsheets are handled carefully and are archived on the completion of identification and enumeration, and after all QA/QC procedures and data reviews have been completed. Deliverables such as voucher collections are assembled accurately and completely. Higher levels of taxonomy applied to organisms that cannot be identified to taxonomic targets are explained and qualified in all cases. Life stages are accurately recorded in the data.

#### ***Invertebrate identification and enumeration procedures***

Rhithron's standard operating procedure for identification and enumeration of invertebrate samples is described in the following paragraphs. *It is important to note that client specifications usually require alteration of some or all of these procedures. For each project, client specifications are reviewed with the taxonomy staff before identification of samples begins.* The review includes the taxa lists from previous projects from the same area or client when available, the protocols specified for the project, and the quality assurance results from previous projects from the same area or client when available. The Lead Taxonomist oversees this review; in addition, taxonomic protocols for each project are documented in a project log, which is available in the taxonomy laboratory throughout the progress of the project. *These precautions assure that the appropriate, client-specified protocols are followed for each project.*

#### 1. General (non-midge) identifications

The taxonomic resolution for non-midge organisms may vary from project to project, and is typically specified by the client. Before identifications are begun, client-specified taxonomic requirements are reviewed; documentation describing the requirements for each project is kept in a protocol log book and is available to taxonomists at all times.

General taxonomists select a sample and the accompanying paperwork. Using Leica S8E stereoscopic microscopes with 10x-80x magnification, taxonomists sort the organisms, and identify individual organisms using the appropriate current published keys. Data is entered onto benchsheets; data includes the taxonomic name of the organism (usually genus or species), the count, life stage, indications about whether the taxon is unique to the sample and qualifiers that explain cases where the target taxonomic resolution was not achievable.

Identified organisms are replaced in the original labeled vial, and all other labeled vials associated with that sample are banded together and stored in the laboratory until further (e.g. midge, oligochaete) taxonomy or QA/QC procedures are completed for that project.

## 2. Chironomid identifications

The taxonomic resolution for midges may vary from project to project, and is typically specified by the client. Before identifications are begun, client-specified taxonomic requirements are reviewed; documentation describing the requirements for each project is kept in a protocol log book and is available to taxonomists at all times.

Clients may specify whether all chironomids are to be slide mounted before identification. We note that information gathered by USEPA from laboratory data from the Wadeable Streams Assessment indicated that the accuracy of chironomid identification diminishes significantly if slide mounting of all midges is not performed. We encourage EPA to require mounting of all midges, to assure identification accuracy.

If total midge specimen mounting is not specified, a careful morphotyping protocol is used. Rhithron's standard procedure for the identification of midges specifies that midges may be identified without slide mounting when possible in order to keep client costs low. Rigorous QA/QC procedures ensure that accuracy and precision are maximized at the same time that costs are controlled.

Midge taxonomists select a sample and the appropriate paperwork. Using Leica S8E stereoscopic microscopes with 10x-80x magnification, taxonomists sort the organisms into sub-families, tribes, and genera as appropriate. Pupae may be included, depending on project specifications. When complete slide-mounting is not required, taxonomists identify organisms using stereomicroscopy up to 80x magnification, relying on obvious key characteristics, using current, appropriate, published keys. All organisms that are too small, immature, or damaged, and all taxa that are not readily identifiable under stereomicroscopy are slide mounted, and identified under compound microscopy, using 100x-1000x magnification and contrast methods as appropriate. When complete slide mounting is required, all midges are slide mounted. In either case, taxonomists make "slide maps" on the benchsheet, indicating the organisms identified under each coverslip on each slide. Data entered on the benchsheet includes the taxonomic name of the organism (usually genus or species), the count, life stage, indications about whether the taxon is unique to the sample, and qualifiers that explain cases where the target taxonomic resolution was not achievable. Recording the location of each slide mounted midge this way allows taxonomists to easily locate problematic organisms for discussions and rectifications. The in-house reference collection is consulted as needed. All slide mounting is accomplished using CMC-10 medium; slides are permitted to dry overnight before they are read. This allows for mild digestion of soft tissues that would interfere with identification. As they are made, slides are labeled with project and sample identifiers. After they are read, all slides from a project are organized, boxed, and archived at the Rhithron laboratory along with the identified non-midge invertebrates. If permanent slide mounts are required by a project, cover slips are ringed with enamel which is allowed to dry before slides are boxed. Midges that have not been slide mounted are returned to their original labeled vial, separate from the vial containing non-midge organisms from that sample. All vials associated with that sample are banded together and stored in the laboratory until quality checks are completed.

All organisms, including non-mounted midges and oligochaetes, from samples selected for quality checks, are re-identified by a second taxonomist. When a project does not require complete slide mounting, the organisms mounted on slides as well as whole specimens in the sample vials are re-identified. The quality check usually involves additional slide mounting by the QA taxonomist. Quality checks for midge identifications are performed on all samples selected for general QA/QC checks. Additional samples may be selected for midge-only quality checks in cases where midge taxonomy caused a quality check failure; in general, however, entire samples are added for quality checks if any portion of the taxonomy fails.

Internal (Rhithron: RAI) taxon identifiers are used for chironomid taxa that have not been previously encountered by the taxonomists, and which do not occur in the published literature. As soon as such a taxon is encountered, specimens are archived in a special collection, and representatives are sent out to taxonomic experts for identification. If the specimens are chironomids or oligochaetes, slide mounts are made. Digital photographs are taken and archived in an accessible electronic format which is made available to all other taxonomists. These steps assure consistency of identifications of distinct, unidentifiable taxa, and provide a systematic tracking method for the application of taxonomic determinations when they become available.

Updates to nomenclature are applied to data after the International Committee for Zoological Nomenclature (ICZN) disseminates notifications of the official acceptance of new taxonomic names. When historic data is provided to clients, new nomenclature is applied as appropriate, by searching TSN's and updating taxa names in specific files. A database of nomenclature updates is maintained by the data coordinator, and names in the taxonomic database are matched to updated names. Changes to nomenclature in clients' data are made at the time of data delivery. Re-delivery of updated data with nomenclature changes is provided at the time of client request.

To assure consistency between data generated at Rhithron and a client's historic data, Rhithron may request that a client provide a reference collection of organisms from previous work. If such a collection is available and can be loaned to Rhithron, taxonomists will make careful comparisons of specimens with organisms in the reference collection. Discrepancies between Rhithron's identifications and the identifications in the reference collection may be rectified by any of the following which are appropriate: 1) changing Rhithron's identifications if taxonomists are convinced of an error, 2) sending specimens from current samples to a taxonomic expert for verification, 3) advising the client that there may be an error in the reference collection.

### **Performance objectives**

Aspects of invertebrate identification and enumeration by Rhithron's taxonomy staff that are important to subsequent data quality include the following:

1. The accuracy and precision of identifications and enumerations is maintained such that Bray-Curtis similarity (Bray and Curtis 1957) between quality checked samples is 95% or greater.
2. Bias is minimized, and data completeness is assured.
3. The client-specified protocol, including specified target number of organisms and the required taxonomic resolution, is faithfully followed.
4. All client-requested deliverables are provided, including reference collections.
5. A summary of QA/QC procedures and results, and sample processing procedures is documented and delivered along with client-requested deliverables.

Accomplishment of these performance objectives is evaluated by the following QA/QC plan.

### **QA/QC plan**

The QA/QC systems for taxonomy and enumeration in use at Rhithron address all four performance characteristics identified by Stribling et al. (2003) as data quality elements: accuracy, precision, bias, and completeness.

To address the issue of accuracy, identifications are made by reference to current, published taxonomic keys. A database of taxonomic resources is maintained, allowing for the easy location of documents. The required taxonomic resolution for each invertebrate taxon for each project is printed in a spreadsheet and is reviewed before the project begins and periodically as needed while identification and enumeration proceed. The laboratory reference collection, verified by systematists, is used as needed to compare specimens.

Both accuracy and precision are assured by a blind, quantitative QC approach. A minimum of 10% of identified samples are fully re-identified and re-enumerated by a second taxonomist. The individual samples to be checked are randomly chosen before a project begins, and taxonomists do not know which samples have been selected for quality checking. The second taxonomist performs a blind quality check; that is, the taxonomic and count data generated by the first taxonomist are not made available to the QA taxonomist. Results from the 2 identifications are compared by means of the Bray-Curtis similarity calculation, which combines taxonomy and enumeration into a single conservative statistic, maximizing potential error. The Lead Taxonomist, assisted by the Chief Biologist, oversees the application of QA/QC protocols, tracks statistics for individual taxonomists and for projects, and institutes corrective actions.

Corrective actions commence with the examination of the Bray-Curtis comparisons. Bray-Curtis comparisons include all taxa, including midges. Samples achieving less than 95% similarity are regarded as QA/QC failures; each failure triggers another sample quality check. Regardless of whether a sample passes or fails the quality check, the taxonomic differences for each sample are discussed by the taxonomists, and differences are reconciled when possible. If differences cannot be reconciled, the Lead Taxonomist or Chief Biologist is consulted. If an agreement among the taxonomists cannot be achieved, a taxonomic expert, usually a systematist, is consulted. Data for the entire project is reviewed for consistent misidentifications of the taxon involved in the discrepancy. When discrepancies are due to coarser taxonomic resolution applied to early instars or damaged specimens, these discrepancies are explained on the benchsheet. Discrepancies in enumeration may be due to specimen loss during repeated handling of the sample; such discrepancies are expected to have minimal impact on the similarity calculation. Quality checks are performed concurrently as a project progresses, therefore, taxonomists give and get instantaneous feedback on determinations. Rhithron will prepare and ship samples to other laboratories for external QA/QC checks when required by a client.

When voucher or reference collections are required, it is assembled during the taxonomic procedures. All taxonomists individually identify each specimen before it is included in the voucher collection. This verification check assures consistency of identifications throughout the progress of a project, and is applied to general taxonomy as well as to midge taxonomy. A final check of voucher collections by the Lead Taxonomist assures accurate labeling, appropriate preservation, and precise identification.

Bias was defined by Stribling et al. as "...error caused by systematically favoring some outcomes over others..." Errors due to bias are addressed by rigorous quality checks of samples, the continually updated reference collection and taxonomic library, consultation with systematists, high quality equipment, and rigorous data management.

Data completeness is addressed by indicating on bench sheets, as well as in our database, reasons why taxonomic targets are occasionally not met. Reasons include: damage to specimens, poor preservation, early instar or immaturity, and life stage. When metric calculation is required by a project scope, these specimens are included in the calculation of compositional metrics or tolerance indices, but are not included in calculations of richness metrics unless their uniqueness from other specimens is confidently ascertained.

Stribling et al. correctly contend that the ability of a laboratory to provide high-quality taxonomic results is limited or enhanced by certain operational factors or conditions. These include staff training and experience, access to pertinent literature, and possession of "appropriate and adequate" optical equipment and laboratory facilities. Rhithron taxonomists

are required to hold NABS Level 2 certification in their field of practice. Taxonomists attend annual taxonomic workshops presented by EPA Region 10's Northwest Bioassessment Workgroup.

Client-specified protocols are posted with project materials throughout the progress of a project. Protocols are reviewed at the beginning of project processing; the compliance document checklist for each project is reviewed at daily meetings of the Lead Taxonomist, Operations Officer, Data Technician and Chief Biologist. Corrective actions, if needed, are taken before the project integrity is compromised. Before sending the project deliverables, the compliance document checklist is reviewed to make sure that all deliverables are completed to the specifications of the client's scope of work. For each project, deliverables include a technical summary that reports the QA/QC results for sorting efficiency and taxonomy and enumeration, and describes sample handling and identification procedures specific to that project.

The Lead Taxonomist, assisted by the Chief Biologist, oversees the application of QA/QC protocols, tracks statistics for individual taxonomists and for projects, and institutes corrective actions. Corrective actions may include review of procedures with taxonomy staff, consultation with taxonomic experts, and additional QA/QC procedures.

## **DATA MANAGEMENT**

### ***Goal***

The goal of data management is to consistently, reliably, and accurately generate valid data products in conformance with client-specified requirements. Data management includes tracking the status of data as they are collected, transmitted, and processed.

### ***Data management procedures***

Sample and project metadata transmitted electronically by clients is formatted and directly uploaded into the appropriate Rhithron database application by the Data Technician. Sample and project metadata that are transmitted in hard copy format are entered directly into the appropriate database application. Rhithron's database applications reside on a server, with remote backup. Rhithron uses 2 customized data management applications based on a Microsoft Access platform. There is an application specifically designed for aquatic invertebrate data, and an application specifically designed for periphyton data. Both applications have fully developed taxa lists with associated autecological data from many published sources. These lists are updated as needed.

Both database applications have metric calculation functions that produce metric values for a wide variety of bioassessment indices and measures. Metric calculation functions were extensively tested for accuracy and precision at the time of database development. Calculations based on autecological data can be adjusted for differences in taxon attributes for each taxon when clients have alternative sources for these data.

These databases allow us to produce a wide variety of data outputs to meet a wide variety of purposes. The database and all internal data files are managed by the Data Technician. The Operations Officer is responsible for the transfer of data and deliverables from and to clients.

Taxonomic data is recorded on the benchsheet by taxonomists. Taxonomic data review begins immediately after a taxonomist has completed the identification and enumeration of a sample. A second taxonomist reviews the benchsheet for completeness. Taxonomic data for both regular sample identifications as well as for quality check identifications is entered into the database application daily. Daily entry of taxonomic data ensures that target counts are reached, and facilitates the timely application of taxonomic QA/QC procedures.

### ***Performance objectives***

Aspects of data management that are important to subsequent data quality include the following:

1. Data files are accurate and data entry is error free.
2. Data is delivered to the client in the format specified by the scope of work.
3. QA/QC protocols and results, and any corrective actions taken, are reported to the client, along with a detailed description of sample processing procedures.
4. Client approval is obtained for any changes to the project protocols.
5. Clients are informed of any problems that could affect the quality of the data.
6. Data storage is appropriately protected.

Accomplishment of these performance objectives is evaluated by the following QA/QC plan.

### ***QA/QC plan***

Accuracy of data is insured by several QA/QC steps, beginning with the benchsheet review that takes place immediately after a taxonomist completes the identification and enumeration of a sample. A second taxonomist reviews the benchsheet for completeness and confers with the initial taxonomist when deficiencies are noted. A secondary QA/QC check of all data is performed by the Lead Taxonomist and the Data Technician, who review the completed data for an entire project. Deficiencies in completeness are noted, and taxonomists make changes as needed. Deficiencies may include duplicate entries or inconsistent taxonomic resolution. Changes are entered into the database application by the Data Technician.

Accuracy of data entry is checked by rekeying data from 10% of samples by a second person, an experienced data entry technician. The two resulting data files are checked by running a Bray-Curtis similarity calculation. When the similarity is less than 100%, the data entry quality check is regarded as a failure, and another 10% of samples are rekeyed into the database application.

Data formatting to client specifications is accomplished by the Data Technician. Final data versions are reviewed by the Operations Officer before data deliverables are sent to clients. Corrections to formatting, if needed, are made by the Data Technician or Operations Officer.

Before sending the project, the compliance document checklist is reviewed to make sure that all deliverables are completed to the specifications of the client's scope of work. A technical summary of QA/QC statistics for each sample and the protocols employed in sample processing and identification is prepared by the Data Technician and reviewed by the Operations Officer, Chief Biologist and Lead Taxonomist, and is sent to the client along with data deliverables.

Final decisions about alterations to sample processing or identification protocols are made by the client. Any circumstances or problems that may compromise the validity or usefulness of the data are reported to the client by the Chief Biologist.

Data is stored on a Dell PowerEdge 6000SC Server supported by Windows 2003 Small Business Server Operating System. The server is configured with RAID 5 hard drive and a remote server backup. A hard drive configuration setup with RAID 5 allows for fault tolerance in case of server failure and uses at least three hard drives with striping of data across two drives and parity on the third drive, thus ensuring data recovery. Rhithron employs automated off-site data backups.

## **ASSESSMENT/OVERSIGHT**

### ***Goal***

The goal of project assessment and oversight is to ensure that all elements of the QAPP are correctly implemented as prescribed, that the quality of the data generated by implementation of the QAPP is adequate, and that corrective actions, when needed, are implemented in a timely manner and their effectiveness is confirmed.

### ***Assessment and oversight provisions***

Oversight of each project, at every stage of its progress, is provided by the project management group, which consists of the Lead Taxonomist, Operations Officer, and Chief Biologist. A daily meeting of this team is held at which progress is reviewed and deficiencies, protocols, QA/QC statistics, and other pertinent topics are reported and reviewed. A project progress log, in which daily issues pertinent to each project are recorded, is kept by the Operations Officer and updated daily. Corrective actions are determined, and surveillance for these actions provided for by this team. To facilitate the progress of projects, the next action to be taken for specific projects is logged daily onto an activities board in a central laboratory location and the person assigned to the task is designated.

When a project is completed, the oversight group performs a complete project audit, in which the compliance document checklist and the project progress log are reviewed. Decisions made regarding the project as it progressed through the laboratory are reviewed, uncorrected mistakes, if any, are identified, and data deficiencies, subsequently reported to the client by means of the technical summary, are discussed.

## **C. DATA MANAGEMENT**

### ***Goal***

The goal of data management is to consistently, reliably, and accurately generate valid data products in conformance with client-specified requirements. Data management includes tracking the status of data as they are collected, transmitted, and processed.

### ***Data management procedures***

Sample and project metadata transmitted electronically by clients is formatted and directly uploaded into the appropriate Rhithron database application by the Data Technician. Sample and project metadata that are transmitted in hard copy format are entered directly into the appropriate database application. Rhithron's database applications reside on a server, with tape backup. Rhithron uses 2 customized data management applications based on a Microsoft Access platform. There is an application specifically designed for aquatic invertebrate data containing fully developed taxa lists with associated autecological data from many published sources. ITIS serial numbers are associated with all taxa. These lists are updated as needed.

Autecological attributes are included for invertebrates and periphyton in their respective databases. Since multiple sources of autecological parameters exist, and since there are conflicting opinions about attributes, several attribute lists are incorporated in these databases. Both database applications have metric calculation functions that produce metric values for a wide variety of bioassessment indices and measures. Metric calculation functions were extensively tested for

accuracy and precision at the time of database development. Calculations based on autecological data can be adjusted for differences in taxon attributes for each taxon when clients have alternative sources for these data.

These databases allow us to produce a wide variety of data outputs to meet a wide variety of purposes. The database and all internal data files are managed by the Data Technician. The Data Technician is also responsible for the transfer of data and deliverables from and to clients.

Data relative to each sample is generated by the technical department; technicians record the proportion of sample used to derive the subsample (number of Caton grids), the time it took to process the sample, characteristics of the substrate from which organisms were sorted, and the results (sorting efficiency) of the QA/QC procedure. All data is recorded on the sample benchsheet. The sorting technician and the QA/QC technician sign the benchsheet. This data is entered into the database application by the Data Technician daily. Daily entry of technical department data ensures that appropriate and client-specified procedures are being followed by the technicians; when necessary, the Operations Officer institutes corrective measures in the technical department. Communication between the Data Technician and the Operations Officer is facilitated by the daily project progress tracking meeting.

Taxonomic data is recorded on the benchsheet by taxonomists. Taxonomic data review begins immediately after a taxonomist has completed the identification and enumeration of a sample. A second taxonomist reviews the benchsheet for completeness; counts, qualifiers, life stages, and uniqueness entries are checked. Taxonomic data for both regular sample identifications as well as for quality check identifications is entered into the database application daily. Daily entry of taxonomic data ensures that target subsample counts are reached, and facilitates the timely application of taxonomic QA/QC procedures.

#### ***Performance objectives***

Aspects of data management that are important to subsequent data quality include the following:

1. Data files are accurate and data entry is error free.
2. Data is delivered to the client in the format specified by the scope of work.
3. QA/QC protocols and results, and any corrective actions taken, are reported to the client, along with a detailed description of sample processing procedures.
4. Client approval is obtained for any changes to the project protocols.
5. Clients are informed of any problems that could affect the quality of the data.
6. Data storage is appropriately protected.

Accomplishment of these performance objectives is evaluated by the following QA/QC plan.

#### ***QA/QC plan***

Accuracy of data is ensured by several QA/QC steps, beginning with the benchsheet review that takes place immediately after a taxonomist completes the identification and enumeration of a sample. A second taxonomist reviews the benchsheet for completeness and confers with the initial taxonomist when deficiencies are noted. A secondary QA/QC check of all data is performed by the Lead Taxonomist and the Data Technician, who review the completed data for an entire project. Deficiencies in completeness are noted, and taxonomists make changes as needed. Deficiencies may include duplicate entries, missing qualifiers, or inconsistent taxonomic resolution. Changes are entered into the database application by the Data Technician.

Accuracy of data entry is checked by rekeying data from 10% of samples by a second person, an experienced data entry technician. The two resulting data files are checked by running a Bray-Curtis similarity calculation. When the similarity is less than 100%, the data entry quality check is regarded as a failure, and another 10% of samples are rekeyed into the database application.

Data formatting to client specifications is accomplished by the Data Technician. Final data versions are reviewed by the Chief Biologist before data deliverables are sent to clients. Corrections to formatting, if needed, are made by the Data Technician or Chief Biologist.

Before sending the project, the compliance document checklist is reviewed to make sure that all deliverables are completed to the specifications of the client's scope of work. A technical summary of QA/QC statistics for each sample and the protocols employed in sample processing and identification is prepared by the Data Technician and reviewed by the Chief Biologist, Lead Taxonomist and Operations Officer, and is sent to the client along with data deliverables.

Final decisions about alterations to sample processing or identification protocols are made by the client. Any circumstances or problems that may compromise the validity or usefulness of the data are reported to the client by the Chief Biologist.

Data is stored on a Dell PowerEdge 6000SC Server supported by Windows 2003 Small Business Server Operating System. The server is configured with RAID 5 hard drive and a remote server backup. A hard drive configuration setup with RAID 5 allows for fault tolerance in case of server failure and uses at least three hard drives with striping of data across two drives and parity on the third drive, thus ensuring data recovery. Daily, there is a data backup to an online provider that

is configured to run automatically. Each month, the entire server contents are backed up.

#### **D. ASSESSMENT/OVERSIGHT**

##### ***Goal***

The goal of project assessment and oversight is to ensure that all elements of the QAPP are correctly implemented as prescribed, that the quality of the data generated by implementation of the QAPP is adequate, and that corrective actions, when needed, are implemented in a timely manner and their effectiveness is confirmed.

##### ***Assessment and oversight provisions***

Oversight of each project, at every stage of its progress, is provided by the project management group, which consists of the Operations Officer, Lead Taxonomist, and Chief Biologist. A daily meeting of this team is held at which progress elements, deficiencies, protocols, QA/QC statistics, and other pertinent topics are reported and reviewed. A project progress log, in which daily issues pertinent to each project are recorded, is kept by the Operations Officer and updated daily. Corrective actions are determined, and surveillance for these actions provided for by this team. To facilitate the progress of projects, the next action to be taken for specific projects is logged daily onto an activities board in a central laboratory location and the person assigned to the task is designated.

When a project is completed, the oversight group performs a complete project audit, in which the compliance document checklist and the project progress log are reviewed. Decisions made regarding the project as it progressed through the laboratory are reviewed, uncorrected mistakes, if any, are identified, and data deficiencies, subsequently reported to the client by means of the technical summary, are discussed.

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**PART C: COST ESTIMATE FOR TRANSPORTING SAMPLES FROM KING COUNTY TO THE RHITHRON LABORATORY**

Rhithron will transport samples from King County to the Rhithron laboratory at no additional charge. We offer pick-up services throughout the Pacific Northwest in order to simplify sample delivery to our laboratory.

**PART D: PREVIOUS TAXONOMIC PROJECT EXPERIENCE: THE PUGET SOUND LOWLANDS**

Rhithron's specific experience with projects involving Puget Sound Lowlands invertebrate taxonomy spans more than 12 years and includes work for Washington Department of Ecology (WDOE), NOAA, the King County Department of Natural Resources, Pierce County, Snohomish Surface Water Management, Snohomish County Conservation District, the City of Bellevue, the City of Redmond, the City of Kirkland, the City of Seattle, the City of Issaquah, the City of Federal Way, the Port of Seattle, the City of Bainbridge Island, the City of Surrey BC, and a number of private consultants and tribes in the region. In Table 1, we offer references and contact information for people who are familiar with Rhithron's work in the Puget Sound Lowlands. Three more references are listed in Section 6.3 of the Solicitation Document (Appendix A of this proposal). We have provided lowest practical or lowest possible macroinvertebrate (and, for some, periphyton) identifications and enumerations, and metric and index calculation for these clients. For some of these projects, we have additionally provided interpretational reports on the macroinvertebrate data.

**Table 1. Additional references pertinent to Rhithron's work in macroinvertebrate taxonomy projects in the Puget Sound Lowlands.**

Sarah Morley National Oceanic and Atmospheric Administration Western Fisheries Research Center Seattle, WA sarah.morley@noaa.gov 206 860 6780	Nick Page Raincoast Applied Ecology Vancouver, BC nick@raincoastappliedecology.ca 604 742 9890
Karen Adams Washington Department of Ecology Olympia, WA kaad461@ECY.WA.GOV 360 407 6530	Dan Smith City of Federal Way, WA Daniel.Smith@cityoffederalway.com 253 835 2756
Julie Gaertner City of Kirkland, WA Jgaertner@ci.kirkland.wa.us 425 587 3850	Micah Bronkowski City of Issaquah, WA micahb@ci.issaquah.wa.us 425 837 3420

**PART E: LIST OF LOWEST PRACTICAL TAXONOMIC RESOLUTION FOR  
VARIOUS COMMONLY ENCOUNTERED STREAM TAXA: WESTERN NORTH  
AMERICA**

Nemertea		genus
Ondania		not identified
Turbellaria		phylum, with exception:
	Polycells	genus
Nematoda		phylum
Nematomorpha		phylum
Gastropoda		genus, with exceptions:
Valvatidae		species for matures, Immatures genus
Hydrobiidae		genus, with exceptions:
	Potamopyrgus antipodarum	species
	Physa	genus
	Radix auricularia	species (monotypic)
Bivalvia		genus for mature specimens, Immatures to family
Branchiobdella		order (= Branchiobdella)
Polychaeta	Manayunkia speciosa	species
Hirudinea		genus, with exceptions:
Erpobdellidae		family
Glossiphoniidae		genus, with exceptions:
	Glossiphonia complanata	species
	Helobdella stagnalis	species
Pisicollidae	Pisicola	species for mature specimens
Crustacea		genus, with exceptions:
Astacidae		species
Cambaridae		species for mature males, otherwise genus
Ostracoda		class
Branchiopoda		order
Copepoda		class
Acanina		genus for adults, otherwise Acan, with exception:
	Oribatel	suborder (=Oribatel)
Odonata		species for mature specimens, otherwise genus, with exception:
Coenagrionidae		genus
Ephemeroptera		genus, with exceptions:
Ameletidae	Ameletus	Genus
Ametropodidae		Genus
	Ametropus	
	Baetidae	genus, with exceptions:
	Acentrella	species
	Acerpenna	species
	Baetis	species
	Baetodes	species
	Cloeodes	species
	Diphetero hageni	species (monotypic)
	Falcoen quilleri	species (monotypic in the West) other species in southwest
	Paracloeodes minutus	species (monotypic in the West)
	Pseudocloeon	species
	Baetiscidae	genus
	Caenidae	genus, with exceptions:
	Amercaenis ridens	species (monotypic in the west)
	Caenis	species
	Ephemerellidae	genus, with exceptions:
	Attenella	species
	Caudatella	species (C. cascadia = C. hystrix)
	Caurinella idahoensis	species (monotypic)
	Drunella	species
	Ephemerella	species
		inermis/infrequens
	Eurylophella	species
	Serratella	species
	Timpanoga hecuba	species (monotypic)
	Heptageniidae	genus, with exceptions:
	Epeorus	species
	Stenacron	species
	Stenonema	femoratum (monospecific)
	Maccaffertium	species
	Leptophlebiidae	genus, with exceptions:
	Neochoroterpes	species
	Thraulodes	species

	Traverella	species
	Paraleptophlebia	genus, except <i>P. bicornuta</i> to species
Leptohyphidae		genus, with exceptions:
	Leptohyphes	species
	Vacupernius	species
<del>Plecoptera</del>		<del>genus, with exceptions: <i>P. bicornuta</i> to species</del>
Capniidae		genus for late instars, otherwise family
	Capnia	genus for late instars, otherwise family
	Isocapnia	genus for late instars, otherwise family
	Paracapnia	genus for late instars, otherwise family
Leuctridae		genus for late instars, with exceptions. Otherwise family
	Calileuctra	genus for late instars, otherwise family
	Despaxia augusta	species (monotypic)
	Moselia infusata	species (monotypic)
	Pomoleuctra	genus for late instars, otherwise family
Nemouridae		genus, with exceptions:
	Lednia	genus
	Nanonemoura wahkeena	species (monotypic)
	Nemoura spiniloba	monotypic in W. North America
	Visoka cataractae	species (monotypic)
	Zapada	species, with exception:
	Zapada Oregonensis Group	species group
	Prostola besametsa	species (monotypic)
Taeniopterygidae		genus for late instars, otherwise family
Chloroperlidae		genus, with exceptions:
	Kathroperla	
	Sasquaerperla hoopa	species (monotypic); known from CA
Perlidae		genus, with exceptions:
	Frisonia pictipes	species (monotypic)
	Osobenus yakimae	species (monotypic)
	Perlinodes aurea	species (monotypic)
	Pictetiella expansa	species (monotypic)
	Rickera sorpta	species (monotypic)
Perlidae		genus, with exceptions:
	Acroneuria	species
	Calineuria californica	species (monotypic)
	Glaassenia sabulosa	species (monotypic in West)
	Hesperoperla	species
Pteronarcyidae		genus, with exception:
	Pteronarcys	species for mature specimens, otherwise genus
<del>Hemiptera</del>		<del>genus</del>
<del>Lepidoptera</del>		<del>order for larvae, with exceptions: pupae to order</del>
	Petrophila	genus
	Paraponyx	genus
<del>Trichoptera</del>		<del>genus for larvae, with exceptions: pupae to family</del>
Apataniidae		genus, except monotypics:
	Manophylax	genus (Idaho Mountains)
	Moseyana comosa	species (monotypic, known from OR, WA)
	Pedomoecus sierra	species (monotypic)
Brachycentridae		genus, with exceptions:
	Amlocentrus asplius	species (monotypic)
	Brachycentrus	species
	Eobrachycentrus gelidae	species (monotypic, known from Mt. Hood area)
	Micrasema	genus (resource listed)
Glossosomatidae		genus (resources listed)
	Anagapetus	genus
	Culoptilla	genus
Goeridae		species
	Goera archaon	species (monotypic in West, known from CA, OR)
	Goeracea	species
	Lepania cascada	monotypic (known from OR, WA)
Helicopsychidae		genus (resource listed)
	Helicopsyche	genus
Hydropsychidae		genus, with exceptions:
	Arctopsyche	species
	Parapsyche	species
	Ceratopsyche/Hydropsyche morosa gr.	genus (resource listed)
	Potamyia flava	species (monotypic)
Hydroptilidae		genus, except monotypics:
	Allotrichia arizonica	monotypic, known from AZ, UT, TX
	Nothotrichia shasta	monotypic
Lepidostomatidae		genus (resource listed)
	Lepidostoma	genus
Leptoceridae		genus, with exceptions:
	Ceraclea	genus (resources listed)
	Mystacides	species
	Oecetis	species
	Trienodes/Ylodes	genus (resources listed)
Limnephilidae		genus, with exceptions:
	Alfocosmoecus partitus	species (monotypic)
	Amphicosmoecus canax	species (monotypic)

	<i>Chyandra centralis</i>	species (monotypic)
	<i>Clostoea disjuncta</i>	species (monotypic)
	<i>Crenophylax sperryi</i>	species (monotypic, known from AZ, NM)
	<i>Cryptochla</i>	genus (resource listed)
	<i>Desmona</i>	genus (resource listed)
	<i>Dicosmoecus</i>	species
	<i>Ecdisoscosmoecus scylla</i>	species (monotypic)
	<i>Eocosmoecus</i>	species
	<i>Glyphopsyche lrorrata</i>	species (monotypic in West)
	<i>Grensia praeterita</i>	species (monotypic, tundra)
	<i>Halesochilla taylori</i>	species (monotypic)
	<i>Hesperophylax</i>	genus (resource listed)
	<i>Hydatophylax hesperus</i>	species (monotypic in West except for AK)
	<i>Hydatophylax variabilis</i>	species (monotypic, only known from AK)
	<i>Nemotaulus hostilis</i>	species (monotypic)
	<i>Phanocelia canadensis</i>	species (monotypic, northern)
	<i>Philartcus quaeris, bergrothi or przewalskii?</i>	species (monotypic)
	<i>Pseudostenophylax edwardsi</i>	species (monotypic in West)
	<i>Sphagnophylax melops</i>	species (monotypic, known from Arctic)
Molannidae		genus, except monotypic:
	<i>Molannodes tinctus</i>	species (monotypic, known from AK)
Odontoceridae		genus, except monotypics:
	<i>Namamyla plutonis</i>	species (monotypic, known from CA, OR)
	<i>Nerophilus californicus</i>	species (monotypic, known from CA, OR)
Polycentropodidae		genus, except monotypic:
	<i>Cymnellus fraternus</i>	species (monotypic)
	<i>Polycentropus/Cernotina</i>	genus
	<i>Nyctiophylax (=Paranyctiophylax)</i>	genus
Phryganeidae		genus, except monotypics:
	<i>Banksiola crotchii</i>	species (monotypic in West)
	<i>Oligotricha lapponica</i>	species (monotypic, only known from AK)
	<i>Yphria californica</i>	species (monotypic, CA, OR)
Rhyacophilidae		species group, with exceptions:
	<i>Himalopsyche phryganea</i>	monotypic in Nearctic
	<i>R. alberta</i> group	species group
	<i>R. angella</i> group	species group
	<i>R. brunnea</i> group	species group
	<i>R. coloradensis</i> group	species group
	<i>R. malkini</i>	species
	<i>R. arnaudi</i>	species (sole member of <i>R. lieftincki</i> group)
	<i>R. narvae</i>	species
	<i>R. blarina</i>	species
	<i>R. pellisa</i>	species, based on distribution
	<i>R. rayneri</i>	species
	<i>R. vagrita</i>	species
	<i>R. valuma</i>	species, based on distribution
Rossianidae		species
	<i>Goereilla baumanni</i>	species (monotypic known from MT, ID)
	<i>Rossiana montana</i>	species (monotypic)
Uenoidae		genus, with exceptions:
	<i>Neophylax</i>	species
	<i>Sericostriata surdickae</i>	species (monotypic known from ID, MT)
Xiphocentronidae		genus, except monotypic:
	<i>Cnodocentron yavapai</i>	species (monotypic, only found in AZ, non-native)
<del>Coleoptera</del>		<del>genus, with exceptions:</del>
Elmidae		genus, with exceptions:
	<i>Ampumixis dispar</i>	species (monotypic)
	<i>Atractelmis wawona</i>	species (monotypic)
	<i>Cleptelmis addenda</i>	species (monotypic)
	<i>Macronychus glabratus</i>	species (monotypic)
	<i>Ordobrevia nubifera</i>	species (monotypic)
	<i>Rhizelmis nigra</i>	species (monotypic)
Psephenidae		genus, with exception:
	<i>Eubrianax edwardsi</i>	species (monotypic)
<del>Megaloptera</del>		<del>genus, with exception:</del>
	<i>Orohermes crepusculus</i>	species (monotypic)
<del>Diptera</del>		<del>genus for larvae, with exceptions: Pupae to family, with exception of Antocha (genus)</del>
	Dolichopodidae	family
	Syrphidae	family
	Tabanidae	family
	Ephydriidae	family
	Muscidae	family
	Sciomyzidae	family
Tipulidae		genus, with exception:
	<i>Rhabdomastix</i>	species group
	pupae	family, with exception:
	<i>Antocha</i> (pupae)	family
Ceratopogonidae		genus, with exception:
	<i>Bezzia/Palpomylia</i>	slashed genera
	pupae	family
Chaoboridae		genus, with exception:

	Eucoethra underwoodi	species (monotypic)
	pupae	family
Psychodidae		genus, with exception:
	Pericoma/Telmatoscopus	slashed genera
	pupae	family
Stratiomyidae		genus, with exception:
	Hedriodiscus/Odontomyia	slashed genera
	pupae	family
Chironomidae		genus for larvae and pupae, with exceptions:
	Cricotopus	subgenus, with exceptions:
	C.bidinctus	species
	C.trifascia	species
	Cricotopus/Orthocladus	slashed genera with not distinguishable
	Eukiefferiella	species group, with exception:
	E.devonica	species
	Heterotrissocladus	genus, with exception:
	H.marcius	species
	Symposiocladus lignicola	species (monotypic)
	Potthastia	species group
	Thienemannimyia Group	species group, with exceptions:
	Thienemannimyia Group pupae	genus
	Tvetenia	species group, with exception:
	T.vitracies	species
	Xenochronomus xenolabis	monotypic
	Xylotopus par	monotypic
	Paralauterborniella nigrohalteris	monotypic

## **PART F: RHITHRON'S PROFESSIONAL TAXONOMY TEAM AND THEIR CURRENT NABS LEVEL II (GENUS) CERTIFICATIONS**

Rhithron's aquatic invertebrate taxonomy team consists of 9 professional taxonomists. Each taxonomist holds NABS certifications, and each has years of taxonomy experience. In all, our taxonomists hold a total of 29 NABS Level II certifications. The roster of Rhithron's professional taxonomy team and their current NABS certifications can be found in Table 2.

**Table 2. Rhithron's credentialed taxonomy team.**

Uttam Rai	Eastern Chironomidae, Western Chironomidae, Eastern EPT, Western EPT, Eastern General Arthropoda, Western General Arthropoda, Oligochaeta
Dennis Vander Meer	Western General Arthropoda, Eastern General Arthropoda, Western EPT
Sean McLaughlin	Western EPT, Eastern EPT, Western General Arthropoda, Eastern General Arthropoda
Daye Piotrowski	Oligochaeta, Western Chironomidae, Eastern Chironomidae
Sean Sullivan	Western EPT, Eastern EPT, Western General Arthropoda, Eastern General Arthropoda
Gwen Sego	Eastern Chironomidae, Western Chironomidae
Rebecca Schoon	Western EPT, Eastern EPT, Western Chironomidae, Eastern Chironomidae
Jennifer Marangelo	Western EPT
Natalie Ohl	Western Chironomidae

Rhithron's history includes analysis of tens of thousands of invertebrate samples collected throughout the United States and Canada. We propose to assign 7 taxonomists to work on King County projects. The collective experience of our staff includes nearly 900 projects. All of Rhithron's taxonomists have between 2 and 8 years of specific experience with Puget Sound Lowlands invertebrate taxonomy. Statistical analyses of taxonomic comparisons for external quality assurance procedures continually demonstrate the accuracy and skill of Rhithron's NABS-certified taxonomists. Our taxonomists are among the most competent in the United States.

Rhithron's customized database application produces species lists and counts in upload files for the King County Macroinvertebrate Data Management System. Rhithron has worked with System technical support to create templates for data upload formats, and we have provided advice and guidance for issues related to taxonomic conventions, hierarchical resolution, and current controversies in macroinvertebrate taxonomy. Appropriate upload formats are now incorporated into our database application. We have now successfully aided in data upload for multiple projects.

The work of Rhithron's taxonomists and research scientists is supported by a team of administrators, managers and a staff of 6 technicians. The following table lists the management personnel and their job functions:

**Table 3. Rhithron's administration and management team.**

Wease Bollman	President
Jennifer Bowman	Vice President and Operations Officer
Kim Sieber	Human Resources Manager
Dr. Diane Winter	Research Scientist and Diatomist
Richard Lionello	Technical Staff Supervisor

Rhithron's management and administrative team have extensive experience in organizing and directing macroinvertebrate and periphyton identification and analysis projects. Wease Bollman founded the company in 1991, and she has provided oversight for technical functions, taxonomy, quality assurance and data management for more than 18 years. She has also provided data interpretation and analysis in more than 200 narrative reports. Jennifer Bowman has managed all internal operations and client communications for the past 4 years. Her experience at Rhithron also includes the supervision of all functions related to sample intake, inventory and custody documentation, quality assurance for internal sample coding and project planning. Kim Sieber has provided general and human resource management at Rhithron for 2 years. Diane Winter arrived at Rhithron 1 year ago, after obtaining her PhD at the University of Nebraska. Diane is our primary diatom scientist, but she also provides support for analytical functions. Richard Lionello supervises the technical department. His experience includes the production of procedure and protocol manuals for all technical aspects of sample processing.

Rhithron's laboratory is fully equipped with research-grade optical equipment and digital cameras. Table 4 summarizes our optical and photographic equipment which is available for sample processing and taxonomy. Our electronic data entry and data management

systems are specifically designed to deliver data in flexible formats, and our system is backed up by off-site data storage. All internal functions are supported by protocol and procedure manuals available to the staff at all times. We also are fully equipped with all essential laboratory equipment.

**Table 4. Rhithron's optical and photographic equipment for sample processing and taxonomy**

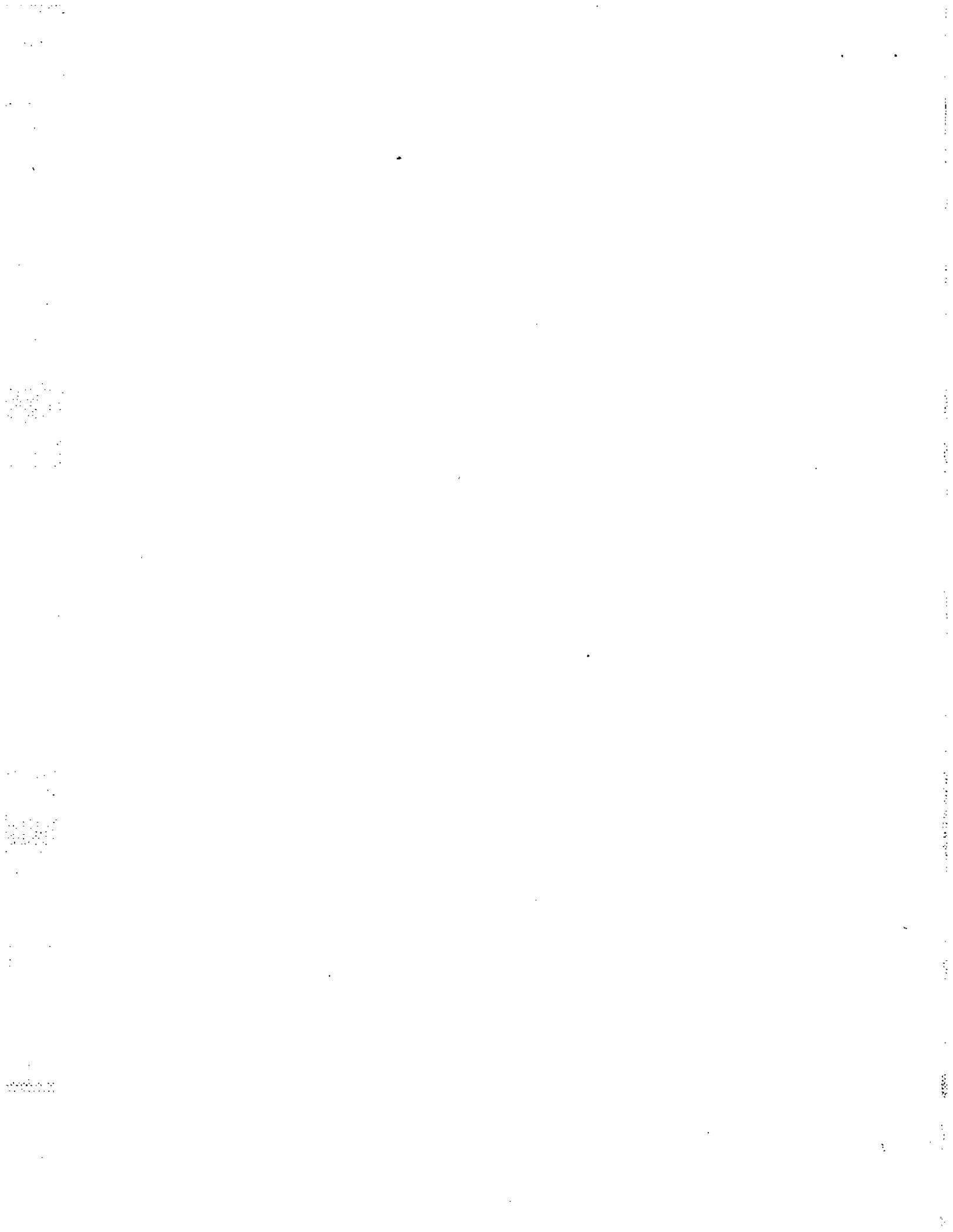
Optics

- 2 Leica DM2500 light microscopes with Nomarski contrast and darkfield capabilities: used for diatom identification, and for oligochaetes and chironomids.
- Olympus BX51 Apochromatic Compound Microscope with Hoffman Modulation Contrast. Used for identification of oligochaetes and chironomids.
- 1 Leica DM1000 light microscope: used for identification of oligochaetes and chironomids and for examination of other slide-mounted material.
- 8 Leica S8A Apochromatic Stereomicroscopes: used for identification of invertebrates.
- 3 Leica S6E Apochromatic Stereomicroscopes: used for identification of invertebrates.
- 3 Leica 2x objective, WD 35mm (doublers): used to increase magnification of apochromatic stereomicroscopes.
- 1 Meiji Stereomicroscope: used for sorting of benthic samples.
- 2 National Stereomicroscopes: used for sorting of benthic samples.
- 4 Leica EZ4 Stereomicroscopes: used for sorting of benthic samples.
- 2 Leica DFC420 R2 Digital Cameras
- 1 Insight 4 Color Digital Camera with Spot Imaging Software.
- Olympus DP 11 Digital Camera: used to provide digital images of specimens for transmission to taxonomic specialists.
- Optical and Stage Micrometers for macroinvertebrate measurements

Illuminators

- 8 Dolan-Jenner dual fiberoptic illuminators.
- 7 Dolan-Jenner single fiberoptic illuminators.

**APPENDIX A. King County Solicitation Document**



# Invitation to Bid



Department of Executive Services  
Finance and Business Operations Division  
**Procurement and Contract Services Section**  
206-263-9400 TTY Relay: 711

ADVERTISED DATE: JULY 15, 2010

Invitation to Bid (ITB) Title: **Freshwater Benthic Invertebrate Analysis Service**

ITB Number: **1212-10-OLB**

Due Date: **August 3, 2010 - 2:00 P.M.**

Buyer: **Ovita Bonadie, ovita.bonadie@kingcounty.gov, 206-263-9308**

### Term Supply Requirement

Furnish Freshwater Benthic Invertebrate Analysis Service as requested by King County personnel in accordance with the attached instructions, requirements and specifications.

TOTAL BID PRICE: \$ 58,500.00

**NO PRE-BID CONFERENCE REQUIRED**

Sealed Bids are hereby solicited and will **only** be received by:  
King County Procurement Services Section  
Chinook Building, 3rd Floor  
401 Fifth Avenue  
Seattle, WA 98104  
Office Hours: 8:00 a.m. – 5:00 p.m.  
Monday - Friday

### BIDDERS SHALL COMPLETE AND SIGN THE FORM BELOW.

We acknowledge that Addenda numbered \_\_\_\_\_ to \_\_\_\_\_ have been examined as part of the Contract documents. The submittal is signed by an authorized representative of the Bidder accepting all terms and conditions contained in the bid and any addenda. We acknowledge that attaching our terms and conditions or modifying the ITB terms and conditions may result in our bid being rejected.

Company Name

Rhithron Associates, Inc.

Address

29 Fort Missoula Road

City/State /Postal Code

Missoula, Montana 59804

Signature

Print name and title

Wease Bollman, President

Email

wbollman@rhithron.com

Phone

406 721 1977

Fax

406 721 2028

SCS/DBE Certification Number

Upon request, this Invitation to Bid will be provided in alternative formats such as Braille, large print, audiocassette or computer disk for individuals with disabilities.

## **SECTION 1 Instruction To Bidders**

### **1.1 Introduction**

The purpose of this Invitation to Bid is to establish a contract to provide goods or services on an as-needed basis. Any quantities listed herein are for bidding purposes only and represent King County's estimated annual requirements. The County will be neither obligated nor restricted to the quantities or locations indicated.

### **1.2 Bid Submittal Procedure**

The **original and two (2) copies** of this solicitation document shall be completed, signed and submitted. Failure to return the solicitation document may result in disqualification of the Bidder. The original shall be noted or stamped "original". Bids and modifications thereof shall be enclosed in a sealed envelope, with the "Bid Opening Label" completed and affixed.

Bidders are encouraged to use recycled paper in the preparation of additional documents submitted with this solicitation, and shall use both sides of paper sheets where practicable.

Sealed bids shall contain all required attachments and information and be submitted to King County (hereinafter "County") no later than the date, time and place stated on the front of this ITB or as amended. The bidder shall show the title and number, the due date specified, and the name and address of the bidder on the face of the envelope. Bidders are cautioned that failure to comply may result in non-acceptance of the bid. The Bidder accepts all risks of late delivery of mailed bids or of mis-delivery regardless of fault. Bids properly and timely submitted will be publicly opened.

Bids will only be accepted from Contractors able to complete the delivery of goods or services described in the specifications. Joint ventures shall submit one bid for the team, with accompanying proof of the joint venture agreement.

If a company chooses not to submit a bid, the County requests the company advise the Buyer by email if they desire to remain listed for the subject of this ITB and state reason they did not submit a bid.

### **1.3 Electronic Commerce and Correspondence**

King County is committed to reducing costs and facilitating quicker communication to the community by using electronic means to convey information. As such, most Invitations to Bid, Requests for Proposal, and Requests for Qualifications as well as related exhibits, appendices, and issued addenda can be found on the King County Internet Web Site, located at <http://www.kingcounty.gov/procurement>. Current bidding opportunities and information are available by accessing the "Solicitations" tab in the left hand column.

King County Procurement Services features an **Online Vendor Registration (OVR)** program that permits vendors, consultants and contractors to register their business with the County. This OVR system allows interested parties to either directly register their firm by creating a unique User ID, or to visit the website as a guest. Information regarding bid documents will be available to all users; however, site visitors accessing the site as a guest will not be able to document their interest in a project or add their name to the document holder's list. They will receive no automatic notification of issued addenda. As such, the County encourages full registration in order to directly communicate with document holders regarding any issued addenda or other important information concerning the solicitation.

After submittals have been opened in public, the County will post a listing of the businesses submitting proposals, and later, any final award determination.

Full information on vendor registration is available at the website.

#### **1.4 Alterations to Document**

Any addition, limitation or provision made or attached to the bid may render it non-responsive and/or irregular and be cause for its rejection.

Bidders may be required to submit additional documents as part of the bid package. Any alteration of such documents by erasure or interlineations shall be explained or noted and initialed by the Bidder.

#### **1.5 Late Bids**

Bids, modifications of bids, and withdrawal of bids received at the office designated in the solicitation after the exact hour and date specified for receipt will not be considered.

#### **1.6 Cancellation of ITB or Postponement of Bid Opening**

The County reserves the right to cancel the ITB at any time.

The County may change the date and time for submitting bids prior to the date and time established for submittal.

#### **1.7 Addenda**

Bidder shall acknowledge receipt of all "Addenda" issued during the bid process. Failure to acknowledge receipt of all addenda may result in a bid being determined non-responsive.

If at any time, the County changes, revises, deletes, clarifies, increases, or otherwise modifies the ITB, the County will issue a written Addendum to the ITB.

#### **1.8 Questions and Interpretation of the ITB**

No oral interpretations of the ITB will be made to any Bidder. All questions and any explanations must be requested in writing and directed to the Buyer no later than seven (7) days prior to the due date specified in the solicitation. Oral explanations or instructions are not binding. Any information modifying a solicitation will be furnished to all bidders by an addendum.

**Days**, as referenced in this document, are calendar days unless otherwise specified.

Communications concerning this bid, with other than the listed Buyer may cause the Bidder to be disqualified.

#### **1.9 Examination of Bid Documents**

The submission of a bid shall constitute an acknowledgement upon which the County may rely that the Bidder has thoroughly examined and is familiar with the ITB, including any work site identified in the ITB, and has reviewed and inspected all applicable statutes, regulations, ordinances and resolutions addressing or relating to the goods or services to be provided hereunder.

The failure of a Bidder to comply with above requirement shall in no way relieve the Bidder from any obligations with respect to its bid or to any Contract awarded pursuant to this ITB. No claim for additional compensation shall be allowed which is based upon a lack of knowledge or misunderstanding of this ITB.

#### **1.10 Modifications of Bid or Withdrawal of Bid Prior to Bid Due Date**

At any time before the time and date set for submittal of bids, a Bidder may submit a modification of a bid previously submitted to the County. All bid modifications shall be made in writing, executed and submitted in the same form and manner as the original bid.

Bids may be withdrawn by written notice received prior to the exact hour and date specified for receipt of bids. A bid also may be withdrawn in person by a Bidder or authorized representative provided their

identity is made known and they sign a receipt for the bid, but only if the withdrawal is made prior to the exact hour and date set for receipt of bids. All requests for modification or withdrawal of bids, whether in person or written, shall not reveal the amount of the original bid.

#### **1.11 Bid Withdrawal After Public Opening**

Except for claims of error granted by the County, no Bidder may withdraw a bid after the date and time established for submitting bids, or before the award and execution of a Contract pursuant to this ITB, unless the award is delayed for a period exceeding the period for bid effectiveness.

Requests to withdraw a bid due to error must be submitted in writing along with supporting evidence for such claim for review by the county. Evidence must be delivered to the county within two (2) business days after request to withdraw. The County reserves the right to require additional records or information to evaluate the request. Any review by the County of a bid and/or any review of such a claim of error, including supporting evidence, creates no duty or liability on the County to discover any other bid error or mistake, and the sole liability for any bid error or mistake rests with the Bidder.

#### **1.12 Cost of Bid and Samples**

The County is not liable for any costs incurred by Bidder in the preparation and evaluation of bids submitted. Samples of items required must be submitted to the location and by the time specified. Unless otherwise specified, samples shall be submitted with no expense to the County. If not destroyed by testing, samples may be returned at the bidder's request and expense.

#### **1.13 Collusion**

By signing this bid, the Bidder certifies that they have not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding. If the County determines that collusion has occurred among Bidders, none of the bids from the participants of such collusion will be considered. The County's determination will be final.

#### **1.14 Bid Effective Date**

All bids submitted shall be a firm bid for a minimum period of 90 days after the bid opening date, unless otherwise stated in writing in the bid. The County may request a Bidder grant an extension of the bid effective period.

#### **1.15 Bid Price and Tax**

The bid price shall include everything necessary for the prosecution and completion of the Contract, except as may be provided otherwise in this ITB.

Bid Prices shall include all freight charges, FOB to the designated delivery point(s).

Taxes: Sales/use taxes and Federal excise taxes shall not be included in the bid price. The County shall pay any Washington State sales/use taxes applicable to the Contract price or tender an appropriate amount to the Contractor for payment to Washington State. The Bidder is cautioned that taxes may be a factor in evaluating the total cost of bid.

The County is exempt from Federal excise and Transportation taxes. All other government taxes, duties, fees, licenses, permits, royalties, assessments and charges shall be included in the bid price. Said exemption is made pursuant to Chapter 32 of the Internal Revenue Code and Registry No. A-1 02374. When requested, an exemption certificate will be furnished.

#### **1.16 Protest Procedures**

King County has a process in place for receiving protests based upon invitation to bid or contract awards. The protest procedures are available at <http://www.kingcounty.gov/procurement/faq>, Suppliers web page.

## **SECTION 2 Bid Evaluation and Contract Award**

### **2.1 Evaluation of Bids**

Bids will be evaluated by the County to determine which bid, if any, may be deemed to be the low responsive bid from a responsible bidder, and should be accepted in the best interest of the County.

The King County Contracting Opportunities Program is incorporated in this ITB. The determination of lowest responsive, responsible bidder will include the application of the five (5) percent incentive factor for Small Contractors and Suppliers (SCS).

King County may use prompt payment discount terms in evaluation of this ITB; however, discounts terms of less than twenty (20) days will not be considered. Minimum acceptable payment terms by the County without benefit of twenty (20) day discount will be net 30 days.

In the event of a discrepancy between the unit price and the extended amount for a bid item, the unit price will govern.

### **2.2 Responsive and Responsible**

#### **Responsive**

The County will consider all the material submitted by the Bidder, and other evidence it may obtain otherwise, to determine whether the Bidder is in compliance with the terms and conditions set forth in this ITB.

#### **Responsible**

In determining the responsibility of the bidder, the County may consider:

- the ability, capacity and skill to perform the Contract or provide the service required (inspection of the bidder's facility may be required prior to award);
- the character, integrity, reputation, judgment and efficiency;
- financial resources to perform the Contract properly and within the times specified;
- the quality and timeliness of performance on previous contracts with the County and other agencies, including, but not limited to, the effort necessarily expended by the County and other agencies in securing satisfactory performance and resolving claims;
- compliance with federal, state and local laws and ordinances relating to public contracts;
- other information having a bearing on the decision to award the Contract.

Failure of a bidder to be deemed responsible or responsive may result in the rejection of a bid.

### **2.3 Financial Resources and Auditing**

If requested by the County, prior to the award of a contract, the bidder shall submit proof of adequate financial resources available to carry out the execution and completion of work required by this contract.

King County reserves the right to audit the Contractor throughout the term of this contract to assure the Contractor's financial fitness to perform and comply with all terms and conditions contained within this contract. King County will be the sole judge in determining the Contractor's financial fitness in carrying out the terms of this contract.

## **2.4 King County Contracting Opportunities Program**

The purpose of the King County Contracting Opportunities Program is to maximize the participation of Small Contractors and Suppliers (SCS) through the use of a five percent (5%) incentive factor in the award of King County contracts for the purchase of goods or services. The Program is open to all SCS firms certified by King County's Business Development and Contract Compliance Office. To learn more about this program, or becoming a Certified Firm, as well as a list of Certified Firms, may be obtained by visiting the King County Contracting Opportunities Program Web-site at <http://www.kingcounty.gov/BDCC> or contacting the Program office at 206-205- 3443.

## **2.5 Forms Required Before Contract Award**

The Bidder shall submit, within five (5) Days of notification from the County, the applicable documents, insurance, bonds, sworn statements, and other requirements prior to award. Failure by the Bidder to submit required documents may result in rejection of the bid.

- Equal Benefit Worksheet and Declaration Form
- Internal Revenue Service Form W-9 \*
- **Certificate of Insurance and Endorsement** \* – Have Insurance Agent e-mail or Fax to Buyer evidence of insurance from insurer(s) satisfactory to the county certifying to the coverage of insurance set forth in this ITB.

\*If not on file with the County

## **2.6 Rejection of Bids**

The County reserves the right to reject any bid for any reason or to waive informalities and irregularities in bids.

In consideration for the County's review and evaluation of its bid, the Bidder waives and releases any claims against the County arising from any rejection of any or all bids, including any claim for costs incurred by Bidders in the preparation and presentation of bids submitted in response to this ITB. In addition, Bidders waive the costs of providing additional information requested.

## **2.7 Single Bid Receipt**

If the County receives a single responsive, responsible bid, the County may request an extension of the bid acceptance period and/or conduct a price or cost analysis on such bid. The Bidder shall promptly provide all cost or pricing data, documentation and explanation requested by the County to assist in such analysis. By conducting such analysis, the County shall not be obligated to accept the single bid; the County reserves the right to reject such bid or any portion thereof.

## **2.8 Public Disclosure of Bids**

This Contract shall be considered a public document and will be available for inspection and copying by the public in accordance with the Public Records Act, Chapter 42.56 RCW (the "Act").

If the Contractor considers any portion of any record provided to King County under this Contract, whether in electronic or hard copy form, to be protected under law, the Contractor shall clearly identify each such portion with words such as "CONFIDENTIAL," "PROPRIETARY" or "BUSINESS SECRET." If a request is made for disclosure of such portion, the County will determine whether the material should be made available under the Act. If the County determines that the material is subject to disclosure, the County will notify the Contractor of the request and allow the Contractor ten (10) business days to take whatever action it deems necessary to protect its interests. If the Contractor fails or neglects to take such action within said period, the County will release the portions of record(s)

deemed by the County to be subject to disclosure. King County shall not be liable to the Contractor for inadvertently releasing records pursuant to a disclosure request not clearly identified by the Contractor as "CONFIDENTIAL," "PROPRIETARY" or "BUSINESS SECRET."

## **2.9 Contract Award**

Contract award, if any, will be made by the County to the low, responsive, responsible Bidder. The County will have no obligations until an award is made and an order placed with the Contractor. The County reserves the right to award one or more contracts as determined to be in the County's best interest. The County may accept any individual item, or group of items, or schedules of any bid, unless otherwise stated herein.

A written award mailed or otherwise furnished to a Contractor within the time for acceptance shall be a binding contract.

## **SECTION 3 Standard Contractual Terms and Conditions**

### **3.1 Administration**

This Contract is between the County and the Contractor who shall be responsible for providing the goods or services described herein. The County is not party to defining the division of work between the Contractor and its Subcontractors. The Contractor represents that it has or shall obtain all duly licensed or qualified personnel, materials and equipment required to perform work hereunder.

The Contractor's performance under this Contract may be monitored and reviewed by a Project Manager appointed by the County. Reports and data required to be provided by the Contractor shall be delivered to the Project Manager or Buyer. Questions by the Contractor regarding interpretation of the terms, provisions and requirements of this Contract shall be addressed to the Buyer or Project Manager for response.

### **3.2 Contract Amendments**

No oral order or conduct by the County shall constitute a Contract Amendment. Contract Amendments shall only be effective upon written notification by the County. The County reserves the right to amend the contract to add or delete goods or services within the intended scope of this contract. This may include, but is not limited to:

- Approval of replacements for discontinued items,
- Add items of like function, or similar in nature or purpose to the originally listed products
- The provision of ancillary services in response to minor changes in County needs
- Extend the contract to include optional terms

Cost or Price Analysis may be required by the County for the evaluation of contract modifications, terminations, revision to contract requirements or other circumstances as determined by the County.

### **3.3 Invoices and Payment**

The Contractor shall submit properly certified invoices to King County. The invoice(s) shall contain the following information: The purchase order/contract number, item numbers, description of supplies or services, quantities, unit prices, extended totals, and discounts, if applicable. For services, identify specific deliverables, and/or hourly rates, hours worked, total hours or related fees.

The Contractor shall bill to the address on the purchase order. The County will take advantage of any prompt payment discount terms bid. Discount periods shall be extended if the invoice is returned for credit or correction.

When a purchase order is issued against this Contract that has the potential for multiple or partial deliveries, a separate invoice shall be generated for each completed delivery accepted by the County.

Failure to comply with these requirements or to provide an invoice in conformance with the contract may delay payment.

Upon acceptance of payment, the Contractor waives any claims for the goods or services covered by the Invoice. No advance payment shall be made for the goods or services furnished by Contractor pursuant to this Contract.

King County will not be bound by prices contained in an invoice that are higher than those in the currently approved price list. If a price increase has not been accepted in writing by King County, the invoice may be rejected and returned to the Contractor for a correction.

### **3.4 Rejection of Goods Or Services**

After award, the Buyer or authorized County representative shall have the option of rejecting or refusing delivery of any and all goods or services which are not in strict conformity with the requirements of the specification and the bid. All rejected goods or services shall be promptly replaced or re-performed and be subject to approval by the County. All replacement goods and services shall be provided at the Contractor's own expense.

### **3.5 Re-procurement Costs**

When a Contractor fails to furnish goods or services in accordance with the terms of this Contract, and the County must purchase at a price greater than the contract price, the difference may be charged to the Contractor. The County may exercise this charge as a credit against invoices due the Contractor.

### **3.6 Termination For Convenience/Default/Non-appropriation**

#### **A. Termination for Convenience**

The County for its convenience may terminate this Contract, in whole or in part, at any time by written notice sent certified mail, return receipt requested, to the Contractor. After receipt of a Notice of Termination ("Notice"), and except as directed by the County, the Contractor shall immediately stop work as directed in the Notice, and comply with all other requirements in the Notice. The Contractor will be paid its costs, including necessary and reasonable Contract close-out costs and profit on that portion of the work satisfactorily performed up to the date of termination as specified in the notice. The Contractor shall promptly submit its request for the termination payment, together with detailed supporting documentation. If the Contractor has any property in its possession belonging to the County, the Contractor shall account for the same and dispose of it in the manner the County directs. All termination payment requests may be subject to Cost or Price Analysis to determine reasonableness and compliance with the Contract and applicable laws and regulations.

#### **B. Termination for Default**

If the Contractor does not deliver work in accordance with the Contract, or the Contractor fails to perform in the manner called for in the Contract, or the Contractor fails to comply with any material provisions of the Contract, the County may terminate this Contract, in whole or in part, for default as follows:

A Notice to Cure will be served on the Contractor by certified mail (return receipt requested) or a delivery service capable of providing a receipt. The Contractor shall have ten (10) Days from the date the Notice to Cure was served to cure the default or provide the County with a detailed written plan, which indicates the time and methods needed to bring the work into compliance and cure the default.

If the Contractor has not cured the default or the plan to cure the default is not acceptable to the County, the County may terminate the Contract. Termination shall occur by serving a Notice of Termination by certified mail (return receipt requested) or delivery service capable of providing a receipt on the Contractor setting forth the manner in which the Contractor is in default and the effective date of termination.

The Contractor will only be paid for work delivered and Accepted, or work performed in accordance with the manner of performance set forth in the Contract less any damages to the County caused by or arising from such default. All termination payment requests are subject to Cost or Price Analysis to verify compliance with the Contract and applicable laws and regulations.

The termination of this Contract shall in no way relieve the Contractor from any of its obligations under this Contract nor limit the rights and remedies of the County hereunder in any manner.

### C. Termination for Non-Appropriation

If expected or actual funding is withdrawn, reduced, or limited in any way prior to the termination date set forth in this Contract or in any amendment hereto, the County may, upon written notice to the Contractor, terminate this Contract in whole or in part.

In accordance with King County Code 4.04.040B.6, payment shall not exceed the appropriation for the year in which termination is effected. If this Contract is terminated for non-appropriation, the County shall be liable only for payment in accordance with the terms of this Contract for performance rendered prior to the effective date of termination; and, the Contractor shall be released from any obligation under this contract or a related Purchase Order to provide further work pursuant to the Contract as are affected by the termination.

Funding under this Contract beyond the current appropriation year is conditional upon the appropriation by the County Council of sufficient funds to support the activities described in this Contract. Should such an appropriation not be approved, the Contract shall terminate at the close of the current appropriation year. The appropriation year ends on December 31 of each year.

### 3.7 Force Majeure

The term force majeure shall include, without limitation by the following enumeration: acts of nature, acts of civil or military authorities, fire, accidents shutdowns for purpose of emergency repairs, industrial, civil or public disturbances, causing the inability to perform the requirements of this Contract. If any party is rendered unable, wholly or in part, by a force majeure event or any event cause not within such party's control, to perform or comply with any obligation or condition of this Contract, upon giving notice and reasonably full particulars to the other party, such obligation or condition shall be suspended only for the time and to the extent commercially practicable to restore normal operations. In the event the Contractor ceases to be excused pursuant to this provision, then the County shall be entitled to exercise any remedies otherwise provided for in this Contract, including Termination for Default.

Whenever a force majeure event causes the Contractor to allocate limited resources between or among the Contractor's customers, the County shall receive no less priority in respect to such allocation than any of the Contractor's other customers.

### 3.8 Taxes, Licenses, and Certificate Requirements

This Contract and any of the work provided hereunder is contingent and expressly conditioned upon the ability of the Contractor to provide the specified goods or services consistent with applicable federal, state or local laws and regulations. If, for any reason, the Contractor's required compliances are terminated, suspended, revoked or in any manner modified from their status at the time this Contract becomes effective, the Contractor shall notify the County immediately of such condition in writing.

The Contractor and subcontractor(s) shall maintain and be liable for all taxes (except sales/use taxes), fees, licenses, permits and costs as may be required by applicable federal, state or local laws and regulations as applicable to the work under this Contract.

### 3.9 Assignment

Neither party shall assign any interest, obligation or benefit under or in this Contract or transfer any interest in the same, whether by assignment or novation, without prior written consent of the other party. If assignment is approved, this Contract shall be binding upon and inure to the benefit of the successors of the assigning party. This provision shall not prevent the Contractor from pledging any proceeds from this Contract as security to a lender so long as King County Policy Fin10-1 (AP), paragraph 6.1.3 is followed. If assignment is approved, it shall be accepted by either party upon the

posting of all required bonds, securities and the like by the assignee, and the written agreement by assignee to assume and be responsible for the obligations and liabilities of the Contract, known and unknown, and applicable law.

### **3.10 Indemnification and Hold Harmless\***

- A. In providing services under this Contract, the Contractor is an independent contractor, and neither the Contractor nor its officers, agents or employees are employees of the County for any purpose. The Contractor shall be responsible for all federal and/or state tax, industrial insurance and Social Security liability that may result from the performance of and compensation for these services and shall make no claim of career service or civil service rights which may accrue to a County employee under state or local law.

The County assumes no responsibility for the payment of any compensation, wages, benefits, or taxes by or on behalf of the Contractor, its employees and/or others by reason of this Contract. The Contractor shall protect, indemnify, defend and save harmless the County and its officers, agents and employees from and against any and all claims, costs, and/or losses whatsoever occurring or resulting from (1) the Contractor's failure to pay any such compensation, wages, benefits or taxes; and/or (2) the supplying to the Contractor work, services, materials, and/or supplies by Contractor employees or other suppliers in connection with or in support of the performance of this Contract.

- B. The Contractor further agrees that it is responsible for and shall repay the County all indicated amounts following an audit exception which occurs due to the negligence, intentional act and/or failure for any reason to comply with the terms of this Contract by the Contractor, its officers, employees, agents, and/or representatives. This duty to repay shall not be diminished or extinguished by the prior termination of the Contract pursuant to the Duration of Contract, or the Termination section.
- C. The Contractor shall protect, defend, indemnify, and save harmless the County, [and the State of Washington or US Government (when any funds for this Contract are provided by them)], their officers, employees, and agents from any and all costs, fees (including attorney fees), claims, actions, lawsuits, judgments, awards of damages or liability of any kind, arising out of or in any way resulting from the negligent acts or omissions of the Contractor, its officers, employees, subcontractors or any tier and/or agents. The Contractor agrees that its obligations under this paragraph extend to any claim, demand, and/or cause of action brought by or on behalf of any of its employees, subcontractors of any tier or agents.

In addition to injuries to persons and damage to property, the term "claims," for purposes of this paragraph C, shall include, but not be limited to, assertions that the use or transfer of any software, book, document, report, film, tape, or sound reproduction or material of any kind, delivered hereunder, constitutes an infringement of any copyright, patent, trademark, trade name, and/or otherwise results in unfair trade practice.

- D. For purposes of paragraphs A and C above, the Contractor, by mutual negotiation, hereby waives, as respects the County only, any immunity that would otherwise be available against such claims under the Industrial Insurance provisions of Title 51 RCW.
- E. In the event the County incurs attorney fees and/or costs in the defense of claims within the scope of paragraphs A and C above, such attorney fees and costs shall be recoverable from the Contractor. In addition King County shall be entitled to recover from the Contractor its attorney fees, and costs incurred to enforce the provisions of this section.

- F. The indemnification, protection, defense and save harmless obligations contained herein shall survive the expiration, abandonment or termination of this Contract.
- G. Nothing contained within this provision shall affect and/or alter the application of any other provision contained within this Contract.

### **3.11 Applicable Law and Forum**

Except as hereinafter specifically provided, this Contract shall be governed by and construed according to the laws of the State of Washington, including, but not limited to, the Uniform Commercial Code, Title 62A RCW. Any claim or suit concerning this Contract shall only be filed in either the King County Superior Court or U.S. District for the Western District of Washington, in Seattle.

### **3.12 Conflicts of Interest and Non-Competitive Practices**

By entering into this Contract to perform work, the Contractor represents that it has no direct or indirect pecuniary or proprietary interest, and that it shall not require any interest that conflicts in any manner or degree with the work required to be performed under this Contract. The Contractor shall not employ any Person or agent having any conflict of interest. In the event that the Contractor or its agents, employees or representatives hereafter acquires such a conflict of interest, it shall immediately disclose such conflict to the County. The County shall require that the Contractor take immediate action to eliminate the conflict up to and including termination for default.

By entering into this Contract to perform work, the Contractor represents that no Persons except as designated by Contractor shall be employed or retained to solicit or secure this Contract with an agreement or understanding that a commission, percentage, brokerage, or contingent fee would be paid; and no gratuities, in the form of entertainment, gifts or otherwise, were bided or given by the Contractor or any of its agents; employees or representatives, to any official, member or employee of the County or other governmental agency with a view toward securing this Contract or securing favorable treatment with respect to the awarding or amending, or the making of any determination with respect to the performance of this Contract.

### **3.13 Disputes, Claims and Appeals**

The Contractor shall address questions or claims regarding the Contract in writing to the Buyer and Project Manager, within ten (10) Days of the date on which the Contractor knows or should know of the question or claim. No claim by the Contractor shall be allowed if asserted after final payment under this Contract. No claim shall be allowed for any costs incurred more than ten (10) Days before the Contractor gives written notice, as required in this section. The Buyer and Project Manager shall ordinarily respond to the Contractor in writing with a decision, but absent such written response, the question or claim shall be deemed denied upon the tenth (10<sup>th</sup>) Day following receipt by the Buyer and Project Manager.

In the event the Contractor disagrees with the determination of the Buyer and Project Manager, the Contractor shall within five (5) Days of the date of such determination, appeal the determination in writing to the Procurement and Contract Services Section Manager. Such written notice of appeal shall include all information necessary to substantiate the appeal. The Procurement and Contract Services Section Manager shall review the appeal and make a determination in writing, which shall be final. Appeal to the Procurement and Contract Services Section Manager shall be a condition precedent to alternative dispute resolution or litigation.

Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the Contract and in accordance with the direction of the Buyer or Project Manger. Failure to comply precisely with the time deadlines under this subsection as to any claim shall operate as a waiver and release of that claim and an acknowledgement of prejudice to the County.

### **3.14 Maintenance of Records/Audits**

The Contractor shall maintain, and shall require any sub-contractor to maintain, accounts and records, including personnel, property, financial, and programmatic records and such other records as may be deemed necessary by the County to ensure proper accounting for all contract funds and compliance with this Contract. All such records shall sufficiently and properly reflect all direct and indirect costs of any nature expended and services provided in the performance of this Contract. The Contractor shall make such documents available to the County for inspection, copying, and auditing upon request.

All records referenced in subsection (A) shall be maintained for a period of six (6) years after completion of work or termination hereof unless permission to destroy them is granted by the Office of the Archivist in accordance with RCW Chapter 40.14, or unless a longer retention period is required by law.

The Contractor shall provide access to its facilities, including those of any sub-contractor, to the County, the State and/or federal agencies or officials at all reasonable times in order to monitor and evaluate the services provided under this Contract.

The Contractor agrees to cooperate with County or its designee in the evaluation of the services provided under this Contract and to make available all information reasonably required by any such evaluation process. The results and records of said evaluation shall be maintained and disclosed in accordance with RCW Chapter 42.56.

If the Contractor expended a total of \$500,000.00 or more in federal awards during its fiscal year, and is a non-profit organization, and is, under this Contract, carrying out or administering a program or portion of a program, it shall have an independent audit conducted in accordance with OMB Circular A-133, which shall comply with the requirements of GAAS (generally accepted auditing standards), GAO's Government Audit Standards and OMB Circular A-133, as amended and as applicable. Contractors expending federal awards from more than one source shall be responsible for determining if the combined financial awards are equal to or greater than \$500,000.00. The Contractor shall provide one copy of the audit report to each County division providing federal awards to the Contractor no later than nine (9) months subsequent to the end of the Contractor's fiscal year.

### **3.15 Other Public Agency Orders**

The Washington State Interlocal Cooperative Act RCW 39.34 provides that other governmental agencies may purchase goods or services on this solicitation or contract in accordance with the terms and prices indicated therein if all parties agree. The County does not accept any responsibility or involvement in the purchase orders or contracts issued by other public agencies.

### **3.16 Environmental Purchasing Policy**

Bidders able to supply products containing recycled and environmentally preferable materials that meet performance requirements are encouraged to offer them in bids and proposals.

The Bidder and Contractor shall use recycled paper for all printed and photocopied documents related to the submission of this solicitation and fulfillment of the contract and shall, whenever practicable, use both sides of the paper. (Reference: KCC 10.16 & King County Executive Policy CON 7-1-2).

### **3.17 Industrial and Hazardous Waste**

The Contractor shall comply with all applicable local ordinances, state and federal statutes, and supporting rules and regulations governing the discharge of industrial waste to public sewer, private sewer, or side sewer tributary to the metropolitan sewer system.

Contractor shall handle and dispose of all hazardous wastes in compliance with all applicable local, state and federal laws and regulations, including the Resource Conservation and Recovery Act, the Washington Hazardous Waste Management Act, and applicable rules and regulations of the Environmental Protection Agency and the Department of Ecology governing the generation, storage, treatment, transportation or disposal of hazardous wastes.

### **3.18 Patents and Royalties**

The Contractor is responsible for paying all license fees, royalties or the costs of defending claims for the infringement of any intellectual property that may be used in performing this Contract.

### **3.19 Supported Employment Program**

The County encourages the creation of supported employment programs for developmentally and/or severely disabled individuals. The County itself has such a program and is actively seeking to do business with those Contractors and Consultants that share this employment approach. If your firm has such a program, or intends to develop such a program during the life of this Contract, please submit Documentation supporting this claim with your bid. If you have questions, or need additional information, please contact the Community and Human Services Division, Developmental Disabilities Division, 206-263-9061.

### **3.20 Nondiscrimination and Equal Employment Opportunity**

- A. Nondiscrimination in Employment - During performance of this Contract, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of the employee or applicant's sex, race, color, marital status, national origin, religious affiliation, disability, sexual orientation, gender identity or expression or age except by minimum age and retirement provisions, unless based upon a bona fide occupational qualification.
- B. Equal Employment Opportunity Efforts - The Contractor will undertake equal employment opportunity efforts to ensure that applicants and employees are treated, without regard to their sex, race, color, marital status, national origin, religious affiliation, disability, sexual orientation, gender identity or expression or age. The Contractor's equal employment opportunity efforts shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeships. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices setting forth this nondiscrimination clause. In accordance with KCC 12.16.010.J, "equal employment opportunity efforts" shall mean active efforts to ensure equal opportunity in employment that is free from all forms of discrimination.
- C. Equal Benefits To Employees With Domestic Partners - Pursuant to Ordinance 14823, King County's "Equal Benefits" (EB) ordinance, and related administrative rules adopted by the County Executive, as a condition of award of a contract is valued at \$25,000 or more, the Contractor agrees that it shall not discriminate in the provision of employee benefits between employees with spouses, and employees with domestic partners during the performance of this Contract. Failure to comply with this provision shall be considered a material breach of this Contract, and may subject the Contractor to administrative sanctions and remedies for breach.

When the contract is valued at \$25,000 or more, the Contractor shall complete a Worksheet and Declaration form for County review and acceptance prior to Contract execution. The EB Compliance forms, Ordinance 14823 (which is codified at KCC Chapter 12.19) and related administrative rules are incorporated herein by reference. They are also available online at <http://www.kingcounty.gov/procurement/forms>, Equal Benefits web page.

- D. Nondiscrimination in Subcontracting Practices - During the term of this Contract, the Contractor shall not create barriers to open and fair opportunities to participate in County contracts or to obtain or compete for contracts and subcontracts as sources of supplies, equipment, construction and services. In considering offers from and doing business with subcontractor and suppliers, the Contractor shall not discriminate against any person because of their sex, race, color, marital status, national origin, religious affiliation, disability, sexual orientation, gender identity or expression or age except by minimum age and retirement provisions, unless based upon a bona fide occupational qualification.
- E. Compliance with Laws and Regulations - The Contractor shall comply fully with all applicable federal, state and local laws, ordinances, executive orders and regulations that prohibit discrimination. These laws include, but are not limited to, RCW Chapter 49.60, Titles VI and VII of the Civil Rights Act of 1964, the American with Disabilities Act, and the Restoration Act of 1987. In addition, King County Code chapters 12.16, 12.17 and 12.18 are incorporated herein by reference and the requirements in these code sections shall specifically apply to this contract. The Contractor shall further comply fully with any equal opportunity requirements set forth in any federal regulations, statutes or rules included or referenced in the contract documents.
- F. Small Contractors and Suppliers and Minority and Women Business Enterprises Opportunities. King County encourages the Contractor to utilize small businesses, including Small Contractors and Suppliers (SCS) and minority-owned and women-owned business enterprises certified by the Washington state Office of Minority and Women's Business Enterprises (OMWBE) in County contracts. The County encourages the Contractor to promote open competitive opportunities for small businesses, including SCS firms and minority-owned and women-owned business enterprises. Program information is available at <http://www.kingcounty.gov/bdcc>
- G. Sanctions for Violations - Any violation of the mandatory requirements of the provisions of this Section shall be a material breach of contract, for which the Consultant may be subject to damages, withholding payment and any other sanctions provided for by contract and by applicable law.

**3.21 Non-Waiver of Breach**

No action or failure to act by the County shall constitute a waiver of any right or duty afforded to the County under the Contract; nor shall any such action or failure to act by the County constitute an approval of, or acquiescence in, any breach hereunder, except as may be specifically stated by the County in writing.

**3.22 Severability**

Whenever possible, each provision of this Contract shall be interpreted to be effective and valid under applicable law. If any provision is found to be invalid, illegal, or unenforceable, then such provision or portion thereof shall be modified to the extent necessary to render it legal, valid, and enforceable and have the intent and economic effect as close as possible to the invalid, illegal, and unenforceable provision. If it is not possible to modify the provision to render it legal, valid and enforceable, then the provision shall be severed from the rest of this Contract. The invalidity, illegality or unenforceability of any provision shall not affect the validity, legality or enforceability of any other provision of this Contract, which shall remain valid and binding.

### **3.23 Certification Regarding Debarment, Suspension and Other Responsibility Matters**

This Contract is a covered transaction for purposes of 49 CFR Part 29. As such, the Contractor is required to verify that none of the Contractor, its principals, as defined at 49 CFR 29.995, or affiliates, as defined at 49 CFR 29.905, are excluded or disqualified as defined at 49 CFR 29.940 and 29.945.

The Contractor is required to comply with 49 CFR 29, Subpart C and must include the requirement to comply with 49 CFR 29, Subpart C in any lower tier covered transaction it enters into.

By signing and submitting this Contract, the Contractor certifies as follows:

The certification in this clause is a material representation of fact relied upon by King County. If it is later determined that the Contractor knowingly rendered an erroneous certification, in addition to remedies available to King County, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The Contractor agrees to comply with the requirements of 49 CFR 29, Subpart C while this offer is valid and throughout the period of any Contract that may arise from this Contract. The Contractor further agrees to include a provision requiring such compliance in its lower tier covered transactions.

### **3.24 Incorporation of Documents**

The contract between the awarded bidder and King County shall include all documents mutually entered into at the time of contract award, specifically including the contract document, the solicitation, and the response to the solicitation. The contract must include, and be consistent with, the specifications and provisions stated in this solicitation. King County shall not be bound nor obligated to enter into or sign additional agreements and or documents other than those required by law.

## **SECTION 4 Specific Contractual Terms & Conditions**

### **4.1 Contract Value**

The estimated annual value of this contract is approximately \$80,000.00. King County will not be limited, restricted or bound by this dollar value, nor shall the County be obligated to purchase any items contained in this ITB.

### **4.2 Contract Term**

The term of this Contract will be five (5) years, subject to the termination clauses contained herein. King County reserves the right to extend the term if determined to be in the best interest of the County.

Contracts or purchase orders will be issued by the County. Contract amendments or change orders issued by the County may reflect modification(s) of contract terms, funding or other matters.

King County reserves the right to purchase the goods or services described herein from other sources. The Contractor does not have the exclusive right to fill all of the County's requirements for the goods or services awarded nor will the County be obligated to purchase the estimated annual quantity, or any quantity contained in this Contract.

### **4.3 Contract Administrative Fee**

This contract is subject to an Administrative Fee (Fee), of 1% (.01), when used by political subdivisions outside of King County's Departments, Divisions, or Agencies. The Fee shall be based on total sales made to each governmental entity, less sales/use tax, freight and any credit(s), (if applicable), in accordance contract terms and conditions. The Fee shall be paid by the contractor, payable and remitted to King County Procurement and Contract Services Section on July 31<sup>st</sup> and January 31<sup>st</sup> of each year and cover sales for the first and second half of the calendar year respectively. Fees submitted shall reference its respective contract number and include a sales report for the payment period showing the total sales to each governmental entity, excluding King County. The contractor shall not invoice the Fee to any contract user as an item on a sales invoice or by any other means.

### **4.4 Price Revisions**

Prices shall remain firm for the duration of the Contract period. The Contractor may request price changes, and shall supply documentation satisfactory to King County such as changes to the Producers Price Index for the commodity, the Consumer Price Index for the Seattle-Tacoma-Bremerton area, or a manufacturer's published notification of price change(s). Reasonable price changes based on market conditions and price/cost analysis may be approved by King County.

King County will evaluate this information to determine if revising the pricing is considered fair and reasonable to the satisfaction of King County. Requests for any such change are to be made in writing to the Buyer in the Procurement Services Division office. A written change order issued by the County will institute the price adjustment, provide the new prices and establish the effective date for the new prices.

The Contractor shall endeavor to give the King County Procurement Services Section thirty (30) days but not less than fourteen (14) days written notice prior to the effective date of the price increase. The County may cancel the contract if the price increase request is not approved.

All price reductions at the manufacturer's or distributor's level shall be reflected in a reduction of the contract price(s) to King County retroactive to the effective date of the price reductions.

#### **4.5 Shipping Charges**

All prices shall include freight FOB to the designated delivery point. The County will reject requests for additional compensation for freight charges.

#### **4.6 Packing Slips**

Each delivery to the County shall have a packing slip enclosed that identifies the requester, purchase order number, part number, unit price and quantity of each part shipped. If the delivery is a partial shipment, indicate on the packing slip that it is not a complete shipment of that requisition and identify the items not shipped and provide a projected completion date of the order.

If the delivery combines items from more than one purchase order, separate packing slips shall be included in the shipment for each.

#### **4.7 Use Report**

The Contractor shall, if requested, submit to the Buyer a report of sales made to King County under this Contract. The report, in a format acceptable to King County, shall identify the detail required by the Buyer, which may include but is not limited to, delivery location, the item description, whether it's a Contract or non-Contract item, quantity, price and discount.

#### **4.8 Warranty**

The Contractor warrants that the work performed under this Contract shall be free from defects in material and workmanship, and shall conform to all requirements of this Contract, for a period of at least twelve (12) months from date of acceptance of such work by the County. Any work corrected shall be subject to this subsection to the same extent as the work initially provided.

The bidder shall provide, upon request by the County, their standard warranty. The warranty shall be specific for all components of the equipment regardless of whether these components were built by the original equipment manufacturer or outside suppliers. King County may avail itself of the bidder or manufacturer's standard warranty if more beneficial to the County.

Conducting of tests or inspections, acceptance, or the processing of payment(s) by the County shall not constitute a waiver of any rights under this Contract or in law. The termination of this Contract shall in no way relieve the Contractor from its warranty responsibility.

The Contractor shall ensure that the warranty requirements of this Contract are enforceable through and against the Contractor's suppliers, vendors, distributors and Subcontractors. The Contractor shall cooperate with the County in facilitating warranty related work by such suppliers, vendors, distributors and Subcontractors.

Contractor warrants that the Services shall in all material respects conform to the requirements of this Contract. Contractor warrants that qualified professional personnel with in-depth knowledge shall perform the Services in a timely and professional manner; and that the Services shall conform to the standards generally observed in the industry for similar Services. Contractor warrants that the Services shall be in compliance with all applicable laws, rules and regulations.

#### **4.9 Warranty Remedies**

Whenever possible, the contractor shall provide "on the spot" settlement of warranty claims or disputes, and authorize local representatives to act on the equipment manufacturer's behalf.

If at any time during the twelve (12) Month period immediately following acceptance of any work covered by this Contract, Contractor or the County discovers one or more material defects or errors in the work or any other aspect in which the work materially fails to meet the provisions of the warranty requirements herein Contractor shall, at its own expense and within thirty (30) Days of notification of the defect by the County, correct the defect, error or nonconformity.

The County shall give written notice of any defect to the Contractor. If the Contractor has not corrected defect within thirty (30) Days after receiving the written notice, the County, in its sole discretion, may correct the defect itself. In the case of an emergency where the County believes delay could cause serious injury, loss or damage, the County may waive the written notice and correct the defect. In either case the County shall charge-back the cost for such warranty repair to the Contractor.

The Contractor is responsible for all costs of repair or replacement in order to restore the work to the applicable Contract requirements, including shipping charges, for work found defective within the warranty period, regardless of who actually corrects the defect.

#### **4.10 Hazardous Chemical Communication**

In order to comply with WAC 296-62-054, Hazard Communication, the Contractor shall prepare, a Material Safety Data Sheet (MSDS) for all products containing any toxic products that may be harmful to the end user. The MSDS Sheet is to accompany the toxic product(s) to the specified delivery sites and include the Chemical Abstract Service (CAS) numbers for every chemical that is listed in the MSDS. If the product is actually used diluted, the rate shall be so stated in the MSDS and the hazards and corresponding Personal protection, etc. also be listed. SARA Title 3 chemicals shall be listed with the percentage by weight of the total product. The MSDS shall include a statement as to the intended use of the product.

#### **4.11 Compliance with Section 504 of the Rehabilitation Act of 1973, as amended (Section 504) and the American with Disabilities Act of 1990 as amended (ADA)**

Pursuant to Title II of the ADA, and Section 504, King County must not discriminate against people with disabilities in providing services, programs or activities even if those services, programs or activities are carried out by contractors. The Contractor agrees that it shall provide all programs, services, and activities to County employees or members of the public under this Contract in the same manner as King County is obligated to under Title II of the ADA, and Section 504 and shall not deny participation or the benefits of such services, programs, or activities to people with disabilities on the basis of such disability. Failure to comply with this section shall be a material breach of, and grounds for the immediate termination of, this Contract.

The Contractor agrees to provide to persons with disabilities access to programs, activities and services provided under the Contract or agreement, as required by the disability access laws as defined by KCC 12.16; and:

The Contractor shall not discriminate against persons with disabilities in providing the work under the Contract. In any subcontracts for the programs, activities and services under their Contract or agreement with the County, the Consultant shall include the requirement that the subcontract provide to persons with disabilities access to programs, activities and services provided under the Contract or agreement, as required by the disability access laws as defined by KCC 12.16, that the subcontractor shall not discriminate against persons with disabilities in providing the work under the Contract and that the subcontractor shall provide that the County is a third party beneficiary to that required provision.

#### **4.12 Independent Status of Contractor**

In the performance of this Contract, the parties shall be acting in their individual, corporate or governmental capacities and not as agents, employees, partners, joint ventures, or associates of one another. The parties intend that an independent contractor relationship shall be created by this Contract. The employees or agents of one party shall not be deemed or construed to be the employees or agents of the other party for any purpose whatsoever. Contractor shall not make any claim of right, privilege or benefit, which would accrue, to an employee under chapter 41.06 RCW or Title 51 RCW.

#### 4.13 Non-Disclosure Obligation

Data provided by the County either before or after Contract award shall only be used for its intended purpose. Contractors and Subcontractors shall not utilize nor distribute the County data in any form without the express written approval of the County.

While performing the work under this Contract, the Contractor may encounter personal information, licensed technology, Software, Documentation, drawings, schematics, manuals, data and other materials described as "Confidential", "Proprietary" or "Business Secret". The Contractor shall not disclose or publish the information and material received or used in performance of this Contract. This obligation is perpetual. The Contract imposes no obligation upon the Contractor with respect to confidential information which the Contractor can establish that: a) was in the possession of, or was rightfully known by the Contractor without an obligation to maintain its confidentiality prior to receipt from the County or a third (3rd) party; b) is or becomes generally known to the public without violation of this Contract; c) is obtained by the Contractor in good faith from a third (3rd) party having the right to disclose it without an obligation of confidentiality; or, d) is independently developed by the Contractor without the participation of individuals who have had access to the County's or the third (3rd) party's confidential information. If the Contractor is required by law to disclose confidential information the Contractor shall notify the County of such requirement prior to disclosure.

#### 4.14 Insurance Requirements

Prior to the award of a contract, the Contractor shall obtain and maintain the minimum insurance set forth herein for the duration of this contract for itself and any subcontractor performing work. By requiring such minimum insurance, the County shall not be deemed or construed to have assessed the risks that may be applicable to the Contractor under this Contract. The Contractor shall assess its own risks and, if it deems appropriate and/or prudent, maintain greater limits and/or broader coverage. The Contractor shall maintain limits and scope of insurance no less than:

General Liability \$1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage, and for those policies with aggregate limits, a \$2,000,000 aggregate limit;

Automobile Liability: \$1,000,000 combined single limit per accident for bodily injury and property damage;

Professional Liability, errors and Omissions: \$1,000,000 per Claim and in Aggregate. (professional services only);

Workers' Compensation: Statutory requirements of the state of residency;

Employers Liability Stop Gap: \$1,000,000.

Except for Workers Compensation, the county, its officers, officials, employees and agents are to be covered as additional insureds as respects liability arising out of activities performed by or on behalf of the Contractor in connection with this Contract. Use the above exact language on the Endorsement Form. **The County requires this Endorsement to complete the Contract.**

## **SECTION 5 Technical Specifications**

### **5.1 Introduction of Specifications**

The King County Department of Natural Resources and Parks is in need of a Contract to provide freshwater benthic taxonomy of macroinvertebrate samples collected in streams in and around King County, Washington. The project history, goals, objectives, and bid information are described below.

### **5.2 Project History**

King County Water and Land Resource Division (WLRD) and Road Services Division annually collect benthic macroinvertebrate samples from streams to monitor the biological health of stream basins within King County. Biological integrity or health is evaluated and quantified using the Benthic Index of Biotic Integrity (BIBI) and other metrics..

### **5.3 Sampling Schedule**

Approximately 200 – 300 samples of freshwater benthic macroinvertebrates will be collected each calendar year, beginning with 2010, from various streams within and around King County. These samples require identification to varying levels of taxonomic resolution (e.g., family-level for chironimids, lowest practical taxonomic level for all other taxa; or alternatively, lowest practical taxonomic level for all taxa), depending upon the project. The bidder should provide a list of potential taxa encountered and their lowest practical taxonomic level.

### **5.4 Scope of Work**

#### **Sample Information**

King County personnel will collect approximately 200 to 300 samples each year. For most projects, three (3) samples will be collected from three (3) separate riffles using a Surber Sampler with 500-µm mesh. The three (3) samples will be combined into a single composite sample. As a measure of quality assurance, up to five (5%) to ten (10%) percent of the samples will represent field duplicates. The bidder will submit a list of the lowest practical taxonomic level for all expected taxa.

One project collects 3 separate samples from the same riffle (three unique samples per sample location). Approximately 6-21 of these samples are collected on an annual basis. For another small project 3 samples are collected from different riffles and each riffle is processed separately. This project has nine sample locations per year for a total of 27 samples. Future samples may consist of a single composite of 8 Surber or D-net samples (500-µm mesh). All samples will be preserved in 70 – 80% alcohol solution. Some samples may consist of two (2) or more 1-L bottles for the same sample.

#### **Initial Sample Preparation**

Bidders are asked to provide a method for economically sampling and identifying the samples. This portion of the bid must ultimately provide adequate benthic information at the most reasonable cost. If sub-sampling is a proposed method, a minimum of 500 individual organisms per sample shall be identified. In some cases less than 500 organisms will be present in the samples.

#### **Large and Rare Specimen Identification**

After a minimum of 500 organisms have been counted and identified, the remainder of the sample material in the tray will be scanned for a maximum of 15 minutes to find any large or rare taxa that may have been missed in the sample. These specimens will be identified and placed together in a vial labeled "large and rare taxa". These data will be included the database as described below. .

#### **Quality Assurance/Quality Control**

The bidder should provide a detailed description of their internal QA/QC procedures (for both taxonomic analysis and sorting) and how they intend to meet them. Samples are either sorted whole, or in the case of large sample volumes, sub-sampled so that only a fraction of the original sample is analyzed.

Precision of sub-sampling is evaluated by re-sorting a new subsample of the original samples; ten percent of the samples are re-sorted by a second technician.

Re-identification of the samples will be conducted on 10% of the total number of samples submitted for analysis each year. Errors in identification should be less than 5% of the total taxa in the sample.

### **Sample Transportation**

Samples will be stored at the King County offices located at 201 South Jackson Street in Seattle, Washington or the King County Environmental Lab, 322 E Ewing, Seattle, WA. Bids should include a cost estimate for pickup and delivery of the samples to the taxonomic identification laboratory. The bidder should provide a description of their Chain-of-Custody procedures. Voucher specimens will be retained by the contractor for a minimum of 5 years.

## **5.5 Reporting Requirements**

At a minimum, the contractor shall complete all benthic analyses and submit all final data and QC results in the electronic format specified below within 180 days after receiving the samples (some samples may require a shorter turn around time). The data shall be submitted via the Puget Sound Stream Benthos website, an online macroinvertebrate data management system used by numerous Washington State jurisdictions and organizations. King County Department of Natural Resources and Parks will provide the contractor with a secure login to access the website, which can be accessed at [www.pugetsoundstreambenthos.org](http://www.pugetsoundstreambenthos.org). The data management system has an extensive approved master taxa list, as well as built in data validation. Therefore, the contractor will be required to use the tools provided by the data management system (either online or desktop) when tabulating the samples and taxonomic data. The advantages of submitting data via this system include: the data are automatically available to the public, they are comparable with the significant historical data repository that is already online, and the reporting and analysis options are pre-built and customizable. Therefore, by using this method, the contractor is not obligated to conduct further analyses of the taxonomic data (e.g., no BIBI calculations are required).

If the contractor identifies taxa in the samples that are not already included in the approved master taxa list, the contractor will notify the Puget Sound Stream Benthos technical support of the new taxa in order to update the list. Because the master taxa list includes approximately 180,000 valid ITIS taxa as well as numerous non-ITIS taxa, this is anticipated to be a rare occurrence. However, if it does occur, technical support will respond within 24-72 hours. The contractor is required to report the following:

- Sample ID
- Taxon Name
- Taxon Count
- Lifestage
- Damage indication
- Notation about whether or not each taxa is unique within the given sample
- Large and rare taxa tracking
- Additional taxon characteristics (optional)
- Subsampling information
- QC results

## **5.6 Experience Requirements**

Demonstrated taxonomy experience to lowest practical resolution with projects in the Pacific Northwest is desired. All bidders must clearly demonstrate prior freshwater benthic taxonomy experience by submitting with their bid a list of references for at least three (3) previous projects in which they performed analysis of organisms typically found within freshwater (streams, lakes) sampling areas.

**SECTION 6 Bid Response**

**6.1 Rules of Price Evaluation**

Bids meeting all requirements of this ITB will be evaluated on price. Bids stating price in effect at the time of shipment will not be accepted.

**6.2 Prompt Pay Discount**

Prompt payment discounts offered by Contractors shall be used to calculate the low bid provided the discount offered allows a minimum of 20 days for payment. The number of days is calculated from the date of acceptance of goods or services or from the date a complete invoice is date stamped as received by King County, whichever event occurs last, and the check/warrant date. The County will take advantage of any prompt payment discount terms bid. Discount periods shall be extended if:

- A. The date printed on the invoice is more than three days earlier than the invoice receipt date;
- B. The delay is caused awaiting a credit memo, invoice correction, adjustment or reissue;
- C. An invoice is received prior to receiving goods ordered.

Prompt pay discount offered 0 % -        Days, Net       

**6.3 References**

List the names and addresses of three (3) customers for whom the bidder has provided similar services in which they performed identification of organisms typically found within stream sampling areas, preferably to lowest practical taxonomic resolution. Include dates, contact persons, email addresses, and telephone numbers. Should any reference submitted by a bidder be found unsatisfactory, King County, at its sole option, may reject that bidder's offer. King County shall be the sole judge in determining a satisfactory/unsatisfactory reference response. **References shall be submitted with the bid response.**

Company Name: City of Bellevue, Washington  
 Company Address: PO BOX 90012  
BELLEVUE, WA 98009-9012  
 Company Phone: 425-452-4861  
 Contact Person: Kit Paulsen  
 Dates: 2001 - present

Company Name: Snohomish County  
 Company Address: SURFACE WATER MANAGEMENT  
3000 ROCKEFELLER AVE MS 607  
EVERETT, WA 98201-4046  
 Company Phone: 425-388-3464 ext. 4668  
 Contact Person: Steve Britsch/Kathy Thornburg  
 Dates: 2001 - present

Company Name: City of Redmond, Washington  
 Company Address: MAIL STOP 2NPW  
PO Box 97010  
REDMOND, WA 98073-9710  
 Company Phone: 425-556-2763  
 Contact Person: Keith MacDonald  
 Dates: 2003 - present

## **5.7 Qualifications**

To be eligible for award, bidders must have experience in the analysis of Pacific Northwest stream macroinvertebrates. Please report whether technicians are certified by NABS, for what taxonomic groups, and at what taxonomic resolution.

## **5.8 Contractor Liability**

The Contractor shall be solely responsible for the custody and integrity of all benthic taxonomy samples while under the Contractor's care. The Contractor shall operate under an active safety program, which meets all applicable federal, state, and local regulations for the safe handling and analyses of environmental samples, and for safe laboratory practices. The potential health and safety hazards associated with King County-furnished samples may be of an unknown nature and appropriate safety and health procedures must be exercised.

## **5.9 Data Delivery**

Delivery of final data and QA/QC results is required as soon as possible, and not later than one hundred and eighty (180) days after receipt of all samples for any particular year. Bidders shall state the number of days in which they will guarantee delivery after receipt of order. In some cases, the data and QC results may be required within 60 days of sample submittal. Please provide a bid price for both the 60 and 180 day turnaround times. When data are uploaded to the Puget Sound Stream Benthos database, please notify Deb Lester (see contact info below) or Doug Henderson [douglas.henderson@kingcounty.gov]. Bid prices shall include return of sample bottles and coolers by June 30<sup>th</sup> each year to the following location:

King County DNRP  
Water & Land Resources Division  
Attn: Deb Lester  
201 S. Jackson Street, Suite 600  
Seattle, WA 98104-3855  
Deborah.Lester@kingcounty.gov

**6.4 Pricing**

In the event of a discrepancy between the unit price and the extended price, the unit price will prevail.

1. **Along with – Bid Pricing, please submit the following:**
  - a. A description of a QA/QC plan for identification/analysis of the samples.
  - b. A description of identification methods (including sub-sampling if necessary).
  - c. A cost estimate for transporting the samples to the taxonomic laboratory.
  - d. Previous taxonomic project experience.
  - e. A list of lowest practical taxonomic resolution for various commonly encountered stream taxa.
  - f. Applicable certifications (e.g., NABS certifications).
2. The unit price shall include all requirements stated in Section 5 Technical Specification (Scope of Work).
3. The quantities identified are estimated annual quantities for bidding purposes only.
4. Bidders are cautioned that attaching terms or modifying the ITB terms may result in their bid being rejected.
5. Delivery of final data and QC results is required as soon as possible, and not later than one hundred and eighty (180) days after receipt of all samples for any particular year. Bidders shall state the number of days in which they will guarantee delivery after receipt of order. Bid prices shall include delivery to the following location:

King County Department of Natural Resources and Parks  
 Water & Land Resources Division  
 Attn: Deb Lester  
 King Street Center  
 201 South Jackson Street  
 MS KSC NR 0600  
 Seattle, WA 98104

Number of days guaranteed delivery after receipt of order: 180 days

Annual Estimated Quantity	Description (all include sub-sampling, QA/QC procedures, chironimids to family other taxa to lowest practical level)	Unit Price each sample	Extended Price
Approx. 300 per year	Benthic Invertebrate Taxonomic Analysis (180 day data delivery turnaround time)*	\$ 195	\$ 58500
	Please provide the additional cost-per-sample to decrease data delivery turnaround time to 90 days for a subset of samples..	\$ 195	\$ 58500
<b>Total Bid Price</b>			<b>\$ 58500</b>

\* For the majority of samples 180 day delivery will be sufficient, there may be a subset of samples that will require a faster delivery time. Please provide the added cost to expedite data delivery.