



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Solicitation

NUMBER
DEP16309

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF:
FRANK WHITTAKER 304-558-2316

RFQ COPY

Third Rock Consultants, LLC.
 2521-2514 Regency Road
 Suite 104 180
 Lexington, KY 40503

ENVIRONMENTAL PROTECTION
 DEPARTMENT OF
 DIV OF WATER AND WASTE MGT
 601 57TH STREET SE
 CHARLESTON, WV
 25304 304-926-0499

DATE PRINTED
11/07/2013

BID OPENING DATE: 12/12/2013

BID OPENING TIME 1:30PM

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
REQUEST FOR SOLICITATION (RFQ)						
THE WEST VIRGINIA PURCHASING DIVISION, ON BEHALF OF THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, IS SOLICITING BIDS FROM QUALIFIED VENDORS FOR AN "OPEN-END CONTRACT" TO PROVIDE PROCESSING AND IDENTIFICATION OF BENTHIC MACROINVERTEBRATE SAMPLES COLLECTED FROM WEST VIRGINIA WATERS PER THE ATTACHED SPECIFICATIONS AND BID SCHEDULE.						
0001	1	LS		961-48		
				SAMPLE IDENTIFIED TO GENUS LEVEL		
0002	1	LS		961-48		
				SAMPLE PICK UP/DELIVERY		
0003	1	LS		961-48		
				PROFESSIONAL STAFF REPRESENTATION OF DATA IN LEGAL/		

12/12/13 10:44:25AM
 West Virginia Purchasing Division

SIGNATURE <i>Marcia P. Wootton</i>	TELEPHONE 859-977-2000	DATE December 10, 2013
TITLE Environmental Planner	FEIN 61-1379371	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO SOLICITATION, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
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Solicitation

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ADDRESS CORRESPONDENCE TO ATTENTION OF
FRANK WHITTAKER
304-558-2316

RFQ COPY

TYPE NAME/ADDRESS HERE

VENDOR

SHIP TO

ENVIRONMENTAL PROTECTION
 DEPARTMENT OF
 DIV OF WATER AND WASTE MGT
 601 57TH STREET SE
 CHARLESTON, WV
 25304 304-926-0499

DATE PRINTED
11/07/2013

BID OPENING DATE: 12/12/2013

BID OPENING TIME 1:30PM

LINE	QUANTITY	UOP	CAT NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
***** THIS IS THE END OF RFQ DEP16309 ***** TOTAL:						

SIGNATURE <i>Marcia S. Wooten</i>	TELEPHONE 859.977.2000	DATE December 10, 2013
TITLE Environmental Planner	FEIN 61-1379371	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO SOLICITATION, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

Benthic Macroinvertebrate Sample Processing and/or Identification

9. VENDOR DEFAULT:

9.1. The following shall be considered a vendor default under this Contract.

9.1.1. Failure to perform Contract Services in accordance with the requirements contained herein.

9.1.2. Failure to comply with other specifications and requirements contained herein.

9.1.3. Failure to comply with any laws, rules, and ordinances applicable to the Contract Services provided under this Contract.

9.1.4. Failure to remedy deficient performance upon request.

9.2. The following remedies shall be available to Agency upon default.

9.2.1. Cancellation of the Contract.

9.2.2. Cancellation of one or more release orders issued under this Contract.

9.2.3. Any other remedies available in law or equity.

10. MISCELLANEOUS:

10.1. **Contract Manager:** During its performance of this Contract, Vendor must designate and maintain a primary contract manager responsible for overseeing Vendor's responsibilities under this Contract. The Contract manager must be available during normal business hours to address any customer service or other issues related to this Contract. Vendor should list its Contract manager and his or her contact information below.

Contract Manager: Marcia L. Wootton

Telephone Number: 859-977-2000

Fax Number: 859-977-2001

Email Address: mwootton@thirdrockconsultants.com

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: DEP16309

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|---|--|
| <input type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

NA
mlw
12-10-13

Company

Authorized Signature

Date

NOTE: This addendum acknowledgment should be submitted with the bid to expedite document processing.



December 11, 2013

State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130
ATTN: Frank Whittaker

RE: RFQ # DEP16309
West Virginia Department of Environmental Protection
Division of Water and Waste Management
Benthic Macroinvertebrate Services

Dear Mr. Whittaker:

On behalf of Third Rock Consultants, LLC (Third Rock) I am pleased to submit a proposal to conduct the above-referenced scope-of-work for the West Virginia Department of Environmental Protection's Division of Water and Waste Management.

I have attached the Request for Quotation (RFQ) Forms for your review and consideration. Associated information, requested in the RFQ, can be found in the enclosed proposal.

I am confident that Third Rock can continue to provide the highest quality taxonomic services available and complete required services in a professional and timely manner, as we have done for the past several years.

I trust that you will find this proposal satisfactory. If you have any questions, please feel free to contact me.

I look forward to hearing back from you, at your earliest convenience, regarding this contract award.

Sincerely,

Marcia L. Wooton
Environmental Planner
mwooton@thirdrockconsultants.com

Marcia Wooton
mwooton@thirdrockconsultants.com



Attachments (7)
Enclosure (1)

2526 Regency Road, Suite 180
Lexington, KY 40503

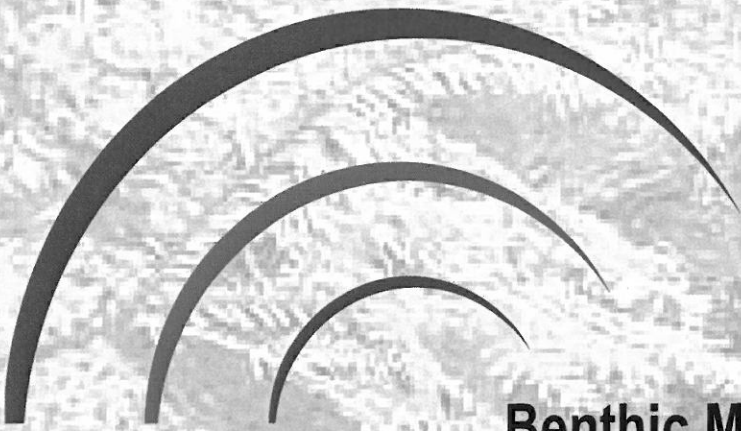
Cell: 859-333-9954
Work: 859-977-2000

2526 Regency Rd, # 180
Lexington, KY 40503

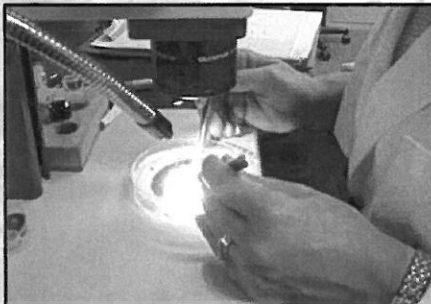
101 North 7th St
Louisville, KY 40202

214 Second Ave N, # 401
Nashville, TN 37201

244 N. Peters Rd, # 216
Knoxville, TN 37923



Benthic Macroinvertebrate Services



West Virginia
Department of Environmental Protection
Division of Water and Waste Management
601 57th Street SE
Charleston, WV 25304

RFQ Response Date: December 11, 2013



THIRDROCK
CONSULTANTS
2526 Regency Road, Suite 180
Lexington, Kentucky 40503
Ph: (859) 977-2000
Fax: (859) 977-2001
www.thirdrockconsultants.com

Company Profile

Third Rock Consultants, LLC (Third Rock) is a small, woman-owned environmental consulting firm with specialties in the areas of aquatic and terrestrial biology, environmental engineering and assessment, statistical analysis, community impact assessment, and economic analyses. We maintain a state-of-the-art aquatic biology lab where our biologists process and identify thousands of macroinvertebrate and fish samples each year.

Third Rock was formed in January 2001 by Molly Foree Davis, an environmental attorney with a strong background in environmental analysis. The original staff has grown to 25 and is comprised of aquatic and terrestrial biologists, environmental analysts and engineers, professional geologists, an economist, and several environmental technicians.

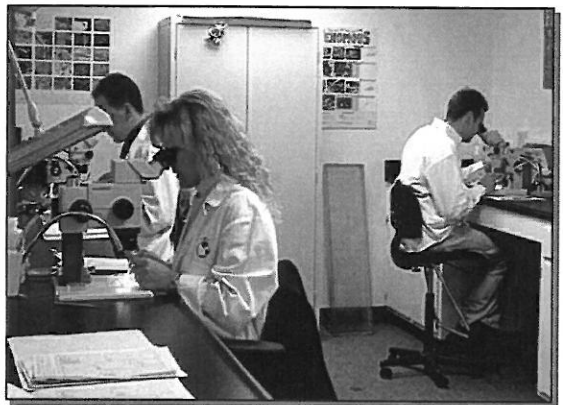
Our biologists are some of the most respected in their fields. Our unique, and frankly uncommon blend of technical expertise *and* business savvy has proven invaluable to our clients – clients who include multiple *federal, state, and local agencies; engineering consulting firms; industry; and environmental groups.*

For federal contracts, Third Rock is considered a Woman-Owned Small Business. As such, Third Rock is also eligible to participate in disadvantaged business enterprise (DBE) programs, which provide for equal opportunity for women- and minority-owned businesses seeking contracts for state government-funded projects (49 CFR 29).

Relevant Experience

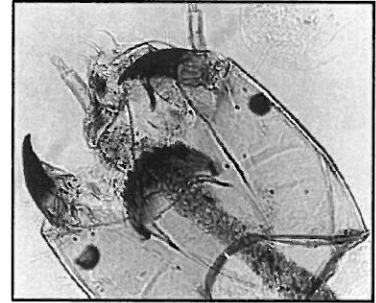
We have more than 50 years of collective experience in the collection, processing, and identification of benthic macroinvertebrates. Third Rock has three masters' level biologists who routinely conduct biological assessment projects including the collection, processing, and identification of macroinvertebrate samples and fish: *Bert Remley, Chelsey Olson, and Ed Hartowicz.*

In addition to our taxonomists, Third Rock has five full-time laboratory technicians with environmental science degrees who perform sample processing and data entry. Since Third Rock's inception, our biological laboratory has sorted and identified over 9,500 macroinvertebrate samples. Resumes of Bert Remley and Chelsey Olson – key personnel who will be assigned to this project – are included in **Appendix A**. Both Bert and Chelsey hold Taxonomic Certifications from The Society for Freshwater Science (formerly known as the North American Benthological Society - NABS); proof of these certifications is included in **Appendix B**.



Equipment

Third Rock's aquatic laboratory is equipped with six dissecting microscopes and five compound microscopes. Our dissecting scopes include two Olympus SZH (11X - 96X magnification), one Olympus SZ60 (15X - 94.5X), one Meiji EMZ-TR (14X - 90X), and two Nikon SMZ 2B (8X - 75X). Our compound scopes include two Nikon Labophot-POL (100X - 1000X, including oil immersion) equipped with measuring reticles and bright field, dark field, and phase contrast optics and three Nikon Labophot 2 (100X - 1000X, including oil immersion).



We also have photo tube attachments/adapters that can be fitted on our Olympus and Nikon microscopes for digital photography, and we recently purchased a Sentech high resolution color video camera and Optem video relay lens that allow us to send images to a monitor or LCD projector.

Contract Management



Third Rock will designate a single point of contact for this project. Marcia Wooton, a Senior Project Manager with over 35 years of experience will be Third Rock's Contract Administrator. Ms. Wooton will be responsible for ensuring staff assignments are made, deadlines are met, scope items are completed, and invoicing is accurate. To accomplish these tasks, she will maintain a high level of communication with the Laboratory Manager and provide Third Rock staff with the information needed to complete tasks in a professional and timely manner.

Quality Assurance/Quality Control Procedures



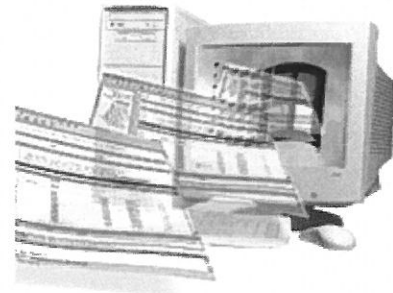
Quality assurance and quality control (QA/QC) of macroinvertebrate processing and identification will be supervised by Third Rock aquatic biologist and QA/QC manager Bert Remley. Bert will work with Ms. Wooton to ensure that Third Rock's work product is completed in accordance with all client specified methods. Bert received his Master's Degree in biology from Morehead State University in 1997 and has worked for Third Rock since its formation in 2001. His resume is included in **Appendix A**. Bert successfully completed the North American Benthological Society's (currently The Society for Freshwater Science) Taxonomic Certification tests for Eastern EPT and Chironomidae taxa to genus level and has completed the Ohio EPA Voluntary Action Program to perform Macroinvertebrate Assessments-Invertebrate Community Index. Proof of these certifications is included in **Appendix B**.

Detailed QA/QC Protocol is included in **Appendix C**.

Macroinvertebrate Taxonomic References are included in **Appendix D**.

Laboratory Information Management System

Each group of samples received at Third Rock will be assigned a Project Number. Each sample received will be logged into Third Rock's Macroinvertebrate Laboratory Information Management System (MacLIMS). The project Chain-of-Custody form will be scanned into MacLIMS; sample information, identification (station ID, stream name, etc.), collection date and time, receipt date and time, and required analyses, will be entered in MacLIMS for reference and tracking purposes. During successive stages of sample processing and identification, additional information will be entered in MacLIMS for each sample such as date sorted, number of grids sorted, number of organisms found, name of sorter, number and taxa of organisms, identification completion date, and name of taxonomist. All sample and data information will be maintained in MacLIMS and used to prepare client reports and associated documents. Station metric calculations can be generated through MacLIMS upon request. Upon completion of the project, all related sample and data information will be archived in MacLIMS.



Client References

CLIENT	LOCATION	CONTACT PERSON	TELEPHONE NUMBER	DATE
United States Environmental Protection Agency	Ohio	Donald Klemm	513-569-7090	2006-2007
United States Army Corps of Engineers, Louisville District	Kentucky Indiana Ohio	Dr. Lisa Underwood	502-315-6318	1999-present
West Virginia Department of Environmental Protection, Office of Water Resources	West Virginia	Janice Smithson	304-926-0499	1999-2003, 2005-Present
Lexington-Fayette Urban County Government (LFUCG)	Kentucky	Susan Bush	859-425-2800	1992-Present
ORSANCO	Ohio	Ryan Argo	513-231-7719	2004-present
TN Department of Environment & Conservation	Tennessee	David Stucki	615-262-6327	2005
Mississippi Department of Environmental Quality	Mississippi	Mike Beiser	601-664-3959	2004

Direct Experience

Third Rock's staff has provided macroinvertebrate sorting and identification services to the West Virginia Division of Environmental Protection (WVDEP) in Charleston, West Virginia since 1999. The experience and efficiency of our taxonomists has led to the creation of a strong working relationship with the WVDEP, which has resulted in seven successive contracts through 2013. Third Rock has processed over 3,200 samples for the WVDEP.

Third Rock provides sample pick-up services for the WVDEP, a convenience not typically provided by most laboratories. The WVDEP personnel collect samples from watersheds throughout West Virginia using kicknet sampling procedures. The WVDEP collects four to eight kicknet samples at each site and combines these in the field to form one composite sample. Samples are sieved in the field to remove all large debris.

Due to the volume of sample collected in the field, a total count of macroinvertebrates would not be efficient or practical. Therefore, once the samples arrive at the laboratory and are logged into MacLIMS, they are sorted and a random 200-specimen subsample is taken from each sample. Since the subsampling procedures are performed randomly, any sorting bias is prevented. Our biologists identify the macroinvertebrates to genus level, per client specifications, and record their findings directly into MacLIMS. The data is compiled, QA reviewed, and reports are generated. A Dataset (summary of results per delivery group), Laboratory Benchsheets (results per sample with associated collection and processing information) and applicable QA Documentation are forwarded to WVDEP electronically. All associated information and data is archived in MacLIMS. Examples of these reports are included in **Appendix E**.



Third Rock biologists also establish and maintain a reference collection for the WVDEP. The reference collection includes an example of one or more specimens of each taxon encountered.

All empty containers, any requested sorted/unsorted residue, and identified specimens (vials and slides) are returned to WVDEP per Delivery Group w/ applicable COC reference. The Reference Collection, which is compiled throughout the project year, is delivered to WVDEP at year-end.

Bert Remley

Environmental Scientist



Years Experience: 22

Education

M.S. Biology, Morehead State University, 1997
B.A. Anthropology, University of Kentucky, 1991

Professional Memberships and Associations

Society for Freshwater Science (formerly known as the North American Benthological Society)
American Fisheries Society - Kentucky Chapter
Carolina Area Benthologists
Freshwater Mollusk Conservation Society

Specialized Training

- Macroinvertebrate Assessment Certification for Invertebrate Community Index (ICI), Ohio Environmental Protection Agency, 2003-2010
- Taxonomic Certification for Eastern EPT (Group 2), North American Benthological Society, 2011-2016
- Taxonomic Certification for Eastern Chironomidae, North American Benthological Society, 2011-2016
- Floodplains, Riparian Zones, and Buffer Strips: Key Components to Aquatic Life Use Attainment and Self-Sustaining Stream Systems, Soil and Water Conservation Society, 2006
- Canaan Valley Institute, Association of Mid-Atlantic Aquatic Biologists Workshops, 2005
- Laboratory QA/QC for Benthic Macroinvertebrate Sample Processing and Taxonomic Identifications, Mid-Atlantic Water Pollution Biology Workshop, Mid-Atlantic Environmental Protection Agency, 2003
- Water Beetle Taxonomy & Identification, John H. Epler, Ph.D., Instructor, Duke Power Environmental Center, 2002
- Aquatic Insect Collection Protocols Workshop for Stream Mitigation & Restoration, Dave Penrose, Instructor, North Carolina Department of Environment & Natural Resources, 2001
- Oligochaetes Identification, Carolina Benthological Workshop, 2001
- Crayfish Workshop, Carolina Benthological Workshop, 2001
- Aquatic Entomology, Eastern Kentucky University, 2000
- Biology and Identification of Southeastern Mayflies, Stoneflies, and Caddisflies, Clemson University, 2000

Professional Experience/Areas of Expertise

Bert Remley is Third Rock's senior aquatic macroinvertebrate taxonomist and is the Quality Control/Quality Assurance Officer for Third Rock's aquatic biology laboratory. In addition to macroinvertebrate taxonomy, Bert also conducts stream sampling for aquatic macroinvertebrates, fish, plankton, and freshwater mussels. He is experienced in the identification and ecology of aquatic macroinvertebrates and fish of the region, conducting surveys in Kentucky, Ohio, Indiana, Illinois, Tennessee, West Virginia, Virginia, South Carolina, and North Carolina. Bert has also conducted hundreds of biological assessment for threatened and endangered species in Kentucky and Tennessee including numerous bat and mussel species. As a PADI certified open water diver and part of Third Rock's dive team, he has led numerous mussel surveys.

Bert Remley **Environmental Scientist**



Macroinvertebrates

Bert has collected hundreds of samples from the southeast and midwest employing several different sampling protocols. He is certified by the North American Benthological Society (currently know as The Society for Freshwater Science) to identify eastern midges (Chironomidae), mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddisflies (Trichoptera) to genus level. He is also certified by the Ohio EPA to collect, identify, and calculate macroinvertebrate community metrics in Ohio. Similarly, he is certified to collect benthic macroinvertebrates for 401 certification projects in North Carolina. Bert has collected macroinvertebrate samples for the United States Army Corps of Engineers (USACE) Louisville District, Louisville Metropolitan Sewer District, and Lexington Fayette Urban County Government.

Bert is the QA/QC officer for Third Rock's macroinvertebrate lab. He is responsible for calculating macroinvertebrate bioassessment indices, training and assisting taxonomist with their identifications, managing samples within the laboratory, reviewing and reporting data. Bert has personally identified over 2,000 samples from 10 different states within the southeast, midwest, and pacific northwest. He has performed macroinvertebrate identifications for numerous clients including the West Virginia Department for Environmental Protection (WVDEP), USACE Louisville District, Mississippi Department of Environmental Quality (MSDEQ), ORSANCO (Ohio), Louisville Metropolitan Sewer District (MSD), Tennessee Department of Environment and Conservation (TDTC), United States Environmental Protection Agency (USEAP), and several private clients.

Years Experience - 13

Education

M.S. Biology, Eastern Kentucky University, 2005
B.S. Biology, Transylvania University, 2000

Professional Memberships and Associations

Society for Freshwater Science (formerly known as the North American Benthological Society)
Kentucky Academy of Science
Kentucky Wildlife Society
Kentucky Ornithological Society
Freshwater Mollusk Conservation Society

Specialized Training

- Taxonomic Certification for Eastern EPT (Group 2), North American Benthological Society, 2008-2013
- Taxonomic Certification for Eastern Chironomidae, North American Benthological Society, 2011-2016
- Floodplains, Riparian Zones, and Buffer Strips: Key Components to Aquatic Life use Attainment and Self-Sustaining Stream Systems, Soil and Water Conservation Society, 2006
- Canaan Valley Institute, Association of Mid-Atlantic Aquatic Biologists Workshops, 2005
- Mid-Atlantic Water Pollution Biology Workshop, Mid-Atlantic Environmental Protection Agency, 2003

Professional Experience/Areas of Expertise

Chelsey has a Masters Degree in Biology from Eastern Kentucky University with specialized experience and training in zoology, aquatic macroinvertebrates and mussels, and water quality.

Macroinvertebrates

Chelsey is integrally involved in Third Rock's identification, sorting, and collection of macroinvertebrates. He is certified by the North American Benthological Society (currently known as the Society for Freshwater Science) to identify eastern midges (Chironomidae), mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddisflies (Trichoptera) to genus level. He routinely identifies aquatic members of the phyla Arthropoda, Mollusca, and Annelida to genus/species. He has performed macroinvertebrate identification for numerous clients including the West Virginia Department of Environmental Protection (WVDEP), Tennessee Department of Environment and Conservation (TDTC), the US Environmental Protection Agency (USEPA), ORSANCO (Ohio), Lexington-Fayette County Urban Government, the Kentucky Division of Water, and several private clients. Chelsey is also responsible for statistical analyses of these macroinvertebrates, including the Macroinvertebrate Bioassessment Index.

TAXONOMIC CERTIFICATION

This five year certification is awarded to

BERY REAMLEY

In recognition of excellence for specimen identification to Genus for

Eastern Chironomidae

NORTH AMERICAN BENTHOLOGICAL SOCIETY



M. H. Colbo

Dr. Murray Colbo

January 2016
Date of Expiry

TAXONOMIC CERTIFICATION

This five year certification is awarded to

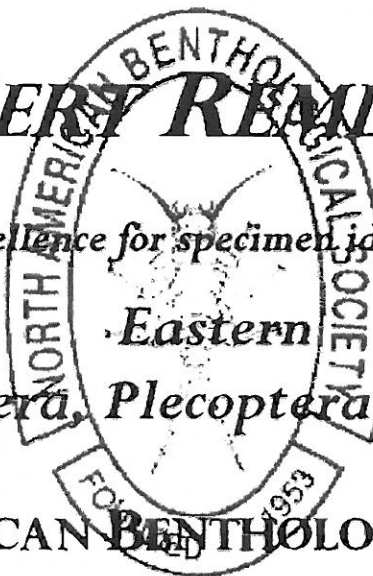
BERT REMLEY

In recognition of excellence for specimen identification to Genus for

Eastern

Ephemeroptera, Plecoptera & Trichoptera

NORTH AMERICAN BENTHOLOGICAL SOCIETY



Murray Colbo
Dr. Murray Colbo

January, 2016
Date of Expiry

TAXONOMIC CERTIFICATION


This five year certification is awarded to

CHELSEY OLSON

In recognition of excellence for specimen identification to Genus for

Eastern Chironomidae

NORTH AMERICAN BENTHOLOGICAL SOCIETY



Dr. Murray Colbo

January, 2016
Date of Expiry

TAXONOMIC CERTIFICATION

This certificate is awarded to

CHELSEY OLSON

in recognition of the successful completion for

LEVEL 2 GROUP 2 EASTERN EPHEMEROPTERA, PLECOPTERA and TRICHOPTERA

NORTH AMERICAN BENTHOLOGICAL SOCIETY


Dr. Trefor Reynoldson

May, 2008
Date

Quality Assurance / Quality Control

Quality Assurance (QA) and Quality Control (QC) for sample processing is maintained by following the guidelines provided below.

Sample Sieving / Sorting

1. Before laboratory sieving of raw samples is considered complete, all sieving equipment is thoroughly examined for attached organisms. Any observed organisms are returned to the sample prior to sorting.
2. Each piece of sieving equipment is thoroughly cleaned between samples.
3. Five percent of the sorted samples for each project should be examined by a second laboratory analyst (QC analyst) or qualified co-worker. The QC analyst will examine the chosen grids, sample residue, or entire sample and will look for organisms missed by the sorter. Organisms found will be added to the sample vials.
4. If the QC analyst recovers organisms constituting greater than 10% of total sample abundance, the sample fails. If the first 10% of the sample lot fails, a second 10% of the sample lot will be checked by the QC analyst. Sorters that have a sample lot fail will be retrained by the QC analyst. Sorters in-training will have their samples 100% checked until the trainer decides that training is complete.
5. Results of the sorting QA/QC check are recorded on the Macroinvertebrate Sample Sorting Efficiency Form. An electronic copy of this form is kept in the project file.
6. Other sorting QA/QC checks (e.g., Caton *et al.* [1991]) will be performed if requested by the client or the state or federal agency reviewing results for the project.

Identification

1. Only the most current taxonomic references are used in making identifications. The list of taxonomic references provided in Appendix D is continually updated as new references are published.
2. To maintain consistency in taxonomic resolution, the level of taxonomy document is followed when making identifications. Taxonomic references are kept in the office of Mr. Bert Remley and in Third Rock's Macroinvertebrate Library.
3. Questionable identifications are verified by other Third Rock taxonomists or outside experts.
4. A voucher or reference macroinvertebrate collection is maintained for all taxa encountered during sample processing. The reference collection is arranged in phylogenetic order and stored in a labeled, metal cabinet in Third Rock's Biology Laboratory.
5. Repeat identifications are made for a minimum of five percent of samples in each project. Taxonomic accuracy between taxonomists should be at least 90% during this quality control audit. If taxonomic

accuracy falls below 90%, all samples in each sample group will be reidentified. A third taxonomist will reconcile differences in identification, and discussion will take place between taxonomists to ensure correct identifications. The results of this QA check and any corrective action are recorded on the Macroinvertebrate Sample Taxonomic and Enumeration Efficiency Form. An electronic copy of this form is kept in the project folder.

QA/QC forms follow for reference.

Third Rock Consultants, LLC
Macroinvertebrate Sample Taxonomic & Enumeration Efficiency Form

Client Name:
 Sample ID:
 Third Rock Project #:

Original Taxonomist:	Second Taxonomist:
Original Date Completed:	Review Date Completed:
# Organisms Enumerated (<i>Taxonomist 1</i>)	# Organisms Enumerated (<i>Taxonomist 2</i>):
<i>Percent Difference in Enumeration (PDE) =</i>	
$(n_1 - n_2) \div (n_1 + n_2) \times 100 = \% \text{ Difference in Enumeration (PDE)}$ <p style="text-align: right; margin-right: 50px;"> <i>n₁ = # organisms counted by Taxonomist 1</i> <i>n₂ = # organisms counted by Taxonomist 2</i> </p>	
<i>Percent Taxonomic Disagreement (PTD) =</i>	
$PTD = [1 - (\text{Comp}_{\text{pos}} \div N)] \times 100$ <p style="text-align: center; margin-top: 10px;"> <i>Comp_{pos} = number of taxonomic agreements (see Taxonomic Comparison Form)</i> <i>N = total number of organisms</i> </p>	
Comments:	

Macroinvertebrate Taxonomic References

GENERAL

- Brigham, A. R., W. U. Brigham, and A. Gnilka (eds.). 1982. Aquatic Insects and Oligochaetes of North and South Carolina. Midwest Aquatic Enterprises, Mahomet, Illinois.
- Merritt, R. W. and K. W. Cummins (eds.). 2008. 4th Edition. An Introduction to the Aquatic Insects of North America. Kendall/Hunt Publishing Company, Dubuque, Iowa. 862 pp.
- McCafferty, W. P. 1981. Aquatic Entomology. Science Books International, Boston, Maryland. 448 pp.
- Pennak, R. W. 1989. 3rd Edition. Fresh-water Invertebrates of the United States – Protozoa to Mollusca. John Wiley and Sons, Inc., New York, New York. 628 pp.
- Thorp, J. H. and A. P. Covich (eds.). 1991. Ecology and Classification of North American Freshwater Invertebrates. Academic Press, Inc., San Diego, California. 911 pp.
- Usinger, R. L. (ed.). 1956. Aquatic insects of California. University of California Press, Berkeley, California. 508 pp.

ANNELIDA

- Brinkhurst, R. O. 1986. Guide to the freshwater aquatic microdile oligochaetes of North America. Canadian Spec. Publ. Fish. Aquat. Sci. 84: 259 pp.
- Klemm, D. J. (ed.). 1985. A guide to the freshwater Annelida (Polychaeta, nauid and tubificid Oligochaeta, and Hirudinea) of North America. Kendall/Hunt Publishing Co., Dubuque, Iowa.

CRUSTACEA

- Hobbs, H. H., Jr. 1972. Biota of freshwater ecosystems, identification manual no. 9. Crayfishes (Astacidae) of North and Middle America. EPA-WPCRS No. 18050, ELD05/72. Supt. Doc. No. 5501-0399, U. S. Environ. Prot. Agency, Washington, D.C. 173 pp.
- Holsinger, J. R. 1972. Biota of freshwater ecosystems, identification manual. Freshwater amphipod crustaceans (Gammaridae) of North America. WPCRS No. 18050, ELD04/72. Supt. Doc. No. 5501-0369, U. S. Environ. Prot. Agency, Washington, D.C. 89 pp.
- Taylor, C. A., and G. A. Schuster. 2004. The Crayfishes of Kentucky. Illinois Natural History Survey Special Publication No. 28. viii + 219pp.
- Williams, W. D. 1972. Biota of freshwater ecosystems, identification manual no. 7. Freshwater isopods (Asellidae) of North America. WPCRS No. 18050, ELD05/72. Supt. Doc. No. 5501-0390, U. S. Environ. Prot. Agency, Washington, D.C. 45 pp.

EPHEMEROPTERA

- Allen, R. K. and G. F. Edmunds, Jr. 1961. A revision of the genus *Ephemerella* (Ephemeroptera: Ephemerellidae) III. The subgenus *Attenella*. J. Kansas Entomol. Soc. 34:161-173.
- Allen, R. K. and G. F. Edmunds, Jr. 1962. A revision of the genus *Ephemerella* (Ephemeroptera: Ephemerellidae) IV. The subgenus *Dannella* in North America. Entomol. J. Kansas Entomol. Soc. 35:333-338.
- Allen, R. K. and G. F. Edmunds, Jr. 1962. A revision of the genus *Ephemerella* (Ephemeroptera: Ephemerellidae) V. The subgenus *Drunella* in North America. Misc. Publ. Entomol. Soc. Amer. 3:147-179.
- Allen, R. K. and G. F. Edmunds, Jr. 1963. A revision of the genus *Ephemerella* (Ephemeroptera: Ephemerellidae) VI. The subgenus *Serratella* in North America. Ann. Entomol. Soc. Amer. 56:583-600.
- Allen, R. K. and G. F. Edmunds, Jr. 1965. A revision of the genus *Ephemerella* (Ephemeroptera: Ephemerellidae) VIII. The subgenus *Ephemerella*. Entomol. Soc. Amer. Misc. Publ. 4:243-282.
- Bednarik, A. F. and W. P. McCafferty. 1979. Biosystematic revision of the genus *Stenonema* (Ephemeroptera: Heptageniidae). Can. Bull. Fish. Aquat. Sci. 21:1-73.
- Bergman, E. A. and W. L. Hilsenhoff. 1978. *Baetis* (Ephemeroptera: Baetidae) of Wisconsin. The Great Lakes Entomol. 11(3):125-135.
- Berner, L. 1956. The genus *Neophemera* in North America (Ephemeroptera: Neophemeridae). Ann. Entomol. Soc. Amer. 49:33-42.
- Berner, L. and R. K. Allen. 1961. Southeastern species of the mayfly sugenus *Serratella* (*Ephemerella*: Ephemerellidae). The Florida Entomol. 44:149-158.
- Berner, L. and M. L. Pescador. 1988. 2nd Ed. The mayflies of Florida. Univ. Florida Press, Gainesville, Florida. 352 pp.
- Burks, B. D. 1953. The mayflies, or Ephemeroptera, of Illinois. Illinois Nat. Hist. Surv. (Urbana). Bull. 26, Part1:1-211.
- Carle, F. L. and P. A. Lewis. 1978. A new species of *Stenonema* (Ephemeroptera: Heptageniidae) from eastern North America. Ann. of Entomol. Soc. Amer. 71(3):285-288.
- Edmunds, G. F., Jr., S. L. Jensen, and L. Berner. 1976. The mayflies of North and Central America. Univ. Minnesota Press, Minneapolis, Minnesota. 330 pp.
- Flowers, R. W. 1980. Two new genera of nearctic Heptageniidae (Ephemeroptera). The Florida Entomologist 63: 296-307.

- Flowers, R. W. 1982. Review of the genus *Macdunnoa* (Ephemeroptera: Heptageniidae) with description of a new species from Florida. *The Great Lakes Entomol.* 15(1):25-30.
- Funk, D. H. and B. W. Sweeney. 1994. The larvae of eastern North American *Eurylophella* Tiensuu (Ephemeroptera: Ephemerellidae). *Trans. American Entomol. Soc.* 120(3):209-286.
- Jacobus, L. M. 2011. The Mayfly Family Baetidae in the Southeastern USA (Insecta: Ephemeroptera). 2011 Carolina Area Benthological Workshop, Hot Springs, NC.
- Lewis, P. A. 1974. Three new *Stenonema* species from eastern North America (Heptageniidae: Ephemeroptera). *Proc. Entomol. Soc. Wash.* 76:347-355.
- Lewis, P. A. 1979. A new species of the mayfly genus *Stenonema* Traver from eastern United States (Ephemeroptera: Heptageniidae). *Proc. Entomol. Soc. Wash.* 81:321-325.
- Lugo-Ortiz, C. R. and W. P. McCafferty. 1998. A new North American genus of Baetidae (Ephemeroptera) and key to *Baetis* complex genera. *Entomol. News* 109:345-353.
- Lugo-Ortiz, C. R., W. P. McCafferty, and R. D. Waltz. 1999. Definition and reorganization of the genus *Pseudocloeon* (Ephemeroptera: Baetidae) with new species descriptions and combinations. *Trans. American Entomol. Soc.* 125:1-37.
- McCafferty, W. P. 1975. The burrowing mayflies (Ephemeroptera: Ephemeridae) of the United States. *Trans. Amer. Entomol. Soc.* 101:447-504.
- McCafferty, W. P. 1977. Newly associated larvae of three species of *Heptagenia* (Ephemeroptera: Heptageniidae). *J. Georgia Entomol. Soc.* 12(4): 350-358.
- McCafferty, W. P. 1981. A distinctive new species of *Stenonema* (Ephemeroptera: Heptageniidae) from Kentucky and Missouri. *Proc. Entomol. Soc. Wash.* 83(3):512-515.
- McCafferty, W. P. 1990. A new species of *Stenonema* (Ephemeroptera: Heptageniidae) from North Carolina. *Proc. Entomol. Soc. Wash.* 92(4):760-764.
- McCafferty, W. P. 1996. The Ephemeroptera species of North America and index to their complete nomenclature. *Trans. Amer. Entomol. Soc.* 122(1):1-54.
- McCafferty, W. P. and Y. J. Bae. 1990. *Anthopotamus*, a new genus for North American species previously known as *Potamanthus* (Ephemeroptera: Potamanthidae). *Entomol. News* 101(4):200-202.
- McCafferty, W. P. and R. D. Waltz. 1990. Revisionary synopsis of the Baetidae (Ephemeroptera) of North and Middle America. *Trans. Amer. Entomol. Soc.* 116(4):769-799.
- McCafferty, W. P. and R. D. Waltz. 1995. *Labiobaetis* (Ephemeroptera: Baetidae): new status, new North American species, and related new genus. *Entomol. News* 106(1):19-28.

- McCafferty, W. P., M. L. Wigglesworth, and R. D. Waltz. 1994. Systematics and biology of *Acentrella turbida* (McDunnough) (Ephemeroptera: Baetidae). *Pan-Pacific Entomol.* 70(4):301-308.
- Moriyama, D. K. and W. P. McCafferty. 1979. The *Baetis* larvae of North America (Ephemeroptera: Baetidae). *Trans. Amer. Entomol. Soc.* 105(2):139-221.
- Morse, J. C. 2000. Biology and identification of Southeastern mayfly, stonefly, and caddisfly larvae. Highlands Biological Station. Clemson University.
- Pescador, M. L. and L. Berner. 1981. The mayfly Baetiscidae (Ephemeroptera). Part 2. Biosystematics of the genus *Baetisca*. *Trans. Amer. Entomol. Soc.* 107:163-228.
- Provonsha, A. V. 1990. A revision of the genus *Caenis* in North America (Ephemeroptera: Caenidae). *Trans. Amer. Entomol. Soc.* 116(4):801-884.
- Tarter, D. C. and R. F. Kirchner. 1978. A new species of *Baetisca* from West Virginia (Ephemeroptera: Baetiscidae). *Entomol. News* 89(9-10):209-213.
- Waltz, R.D. and S.K. Burian. 2009. Mayfly Taxonomic Workshop. North American Benthological Workshop, Grand Rapids, Michigan.
- Waltz, R. D. 1995. *Baetis ochris*, a new synonym of *Baetis flavistriga* (Ephemeroptera: Baetidae). *Entomol. News* 106(2):75-76.
- Waltz, R. D., D. E. Baumgardner, and J. H. Kennedy. 1996. An atypical larval color form of *Baetis intercalaris* (Ephemeroptera: Baetidae) from Pennsylvania and the Kiamichi River Basin of southeastern Oklahoma. *Entomol. News* 107(2):83-87.
- Waltz, R. R. and W. P. McCafferty. 1987. Systematics of *Pseudocloeon*, *Acentrella*, *Baetiella*, and *Liebbiella*, new genus (Ephemeroptera: Baetidae). *J. New York Entomol. Soc.* 95(4):553-568.
- Waltz, R. D., W. P. McCafferty, and J. H. Kennedy. 1985. *Barbaetis*: a new genus of eastern nearctic mayflies (Ephemeroptera: Baetidae). *The Great Lakes Entomol.* 18:161-165.

ODONATA

- Crowley, P. H. and A. D. Wilson. 1979. New species records of damselflies (Odonata: Zygoptera) in Kentucky. *Trans. Kentucky Acad. Sci.* 40:52.
- Daigle, J. J. 1991. Florida Damselflies (Zygoptera): a species key to the aquatic larval stages. Florida Dept. Environ. Reg., Tech. Series Vol. 11, No. 1, 12 pp.
- Needham, J. G. and M. J. Westfall, Jr., and M.L. May. 2000. Dragonflies of North America. Scientific publishers, Gainesville, Florida. xvi and 940 pp.

- Payne, R. G. and G. A. Schuster. 1993. The dragonflies and damselflies (Odonata) of Buck Creek, Pulaski County, Kentucky. *Entomol. News* 104(4):165-170.
- Resner, P. L. 1970. An annotated check list of the dragonflies and damselflies (Odonata) of Kentucky. *Trans. Kentucky Acad. Sci.* 31:32-44.
- Westfall, M. J. and M. L. May. 1996. *Damselflies of North America*. Scientific Publishers, Inc., Gainesville, Florida. 650 pp.

PLECOPTERA

- Frison, T. H. 1935. The stoneflies, or Plecoptera, of Illinois. *Illinois Nat. Surv. Bull.* 20: 280-471.
- Hitchcock, S. W. 1974. Guide to the insects of Connecticut. Part VII. The Plecoptera or stoneflies of Connecticut. *State Geol. and Nat. Hist. Surv. of Connecticut, Bull.* 107, 202 pp.
- Kondratieff, B. C. and R. F. Kirchner. 1988. A new species of *Acroneuria* from Kentucky (Plecoptera: Perlidae) and new records of stoneflies from eastern North America. *J. Kansas Entomol. Soc.* 61(2):201-207.
- Kondratieff, B. C., R. F. Kirchner, and K. W. Stewart. 1988. A review of *Perlinella* Banks (Plecoptera: Perlidae). *Ann. Entomol. Soc. America* 81:19-27.
- Morse, J. C. 2000. *Biology and identification of Southeastern mayfly, stonefly, and caddisfly larvae*. Highlands Biological Station. Clemson University.
- Stark, B. P. 1989. *Perlesta placida* (Hagen), an eastern Nearctic species complex (Plecoptera: Perlidae). *Entomol. Scand.* 20:263-286.
- Stark, B. P. and A. R. Gaufin. 1976. The Nearctic species of *Acroneuria* (Plecoptera: Perlidae) *J. Kansas Entomol. Soc.* 49(2):221-253.
- Stark, B.P. and K. W. Stewart. 1981. The Nearctic genera of Peltoperlidae (Plecoptera). *J. Kansas Entomol. Soc.* 54(2):285-311.
- Stark, B. P., S. W. Szczytko, and R. W. Baumann. 1986. North American stoneflies (Plecoptera): systematics, distribution, and taxonomic references. *The Great Basin Nat.* 46(3):383-397.
- Stewart, K. W. and B. P. Stark. 2002. *Nymphs of North American stonefly genera (Plecoptera)..Second Edition*. The Caddis Press. Columbus, Ohio. xii + 510 pp.
- Tarter, D. C. D. A. Adkins, and K. B. Benson. 1982. A preliminary checklist of the stoneflies (Plecoptera) of Kentucky. *Trans. Kentucky Acad. Sci.* 43(3-4):138-141.
- Tarter, D. C. D. A. Adkins, and K. B. Benson. 1984. A checklist of the stoneflies (Plecoptera) of Kentucky. *Entomol. News* 95(3):113-116.

TRICHOPTERA

- Chapin, J. W. 1978. Systematics of nearctic *Micrasema* (Trichoptera: Brachycentridae). Ph.D. Dissertation, Clemson University, Clemson, South Carolina, 136 pp.
- Flint, O. S. 1960. Taxonomy and biology of nearctic limnephilid larvae (Trichoptera), with special reference to species in eastern United States. *Entomologica Amer.* 40:1-117.
- Flint, O. S. 1962. Larvae of the Genus *Rhyacophila* in eastern North America (Trichoptera: Rhyacophilidae). *Proc. U.S. National Mus. (Washington, D.C.)* 113:465-493.
- Flint, O. S. 1984. The genus *Brachycentrus* in North America, with a proposed phylogeny of the genera of Brachycentridae (Trichoptera). *Smith. Contrib. Zool. No.* 398.
- Floyd, M. A. 1995. Larvae of the caddisfly genus *Oecetis* in North America. *Bull. Ohio Biol. Surv., New Series, Vol. 10, No. 2, viii + 85 pp.*
- Glover, J. B. and M. A. Floyd. 2004. Larvae of the genus *Nectopsyche* (Trichoptera:Leptoceridae) in eastern North America, including a new species from North Carolina.
- Glover, J. B. 1996. Larvae of the caddisfly genera *Triaenodes* and *Ylodes* (Trichoptera: Leptoceridae) in North America. *Bull. Ohio Biol. Surv., New Series, Vol. 11, No. 2, vii + 89 pp.*
- Morse, J. C. 2000. Biology and identification of Southeastern mayfly, stonefly, and caddisfly larvae. Highlands Biological Station. Clemson University.
- Parker, C. R. and G. B. Wiggins. 1987. Revision of the caddisfly genus *Psilotreta* (Trichoptera: Odontoceridae). *Royal Ontario Museum, Toronto, Canada. Life Sci. Contrib.* 144, 55 pp.
- Pescador, M. L., A. K. Rasmussen, and S. C. Harris. 1995. Identification manual for the caddisfly (Trichoptera) larvae of Florida. Florida Dept. Env. Prot., Div. Water Facil., Tallahassee, Florida. 132 pp.
- Prather, A.L. and J.C. Morse. 2001. Eastern Nearctic *Rhyacophila* species, with revision of the *Rhyacophila invaria* group *Trichoptera: Rhyacophilidae*. *Trans American Entomol. Soc.* 127:85-166.
- Resh, V. H. 1975. A distributional study of the caddisflies of Kentucky. *Trans. Kentucky Acad. Sci.* 36(1-2):6-16.
- Resh, V. H. 1976. The biology and immature stages of the caddisfly genus *Ceraclea* in eastern North America (Trichoptera: Leptoceridae). *Annals Entomol. Soc. America* 69(6):1039-1061.
- Ross, H. H. 1944. The caddisflies, or Trichoptera, of Illinois. *Illinois Nat. Hist. Surv. (Urbana). Bull.* 23, Art. 1:1-326.
- Scheffer, P. W. and G. B. Wiggins. 1986. A systematic study of the Nearctic larvae of the *Hydropsyche morosa* Group (Trichoptera: Hydropsychidae). *Royal Ontario Mus., Toronto, Canada.* 94 pp.

- Schuster, G. A. and D. A. Etnier. 1978. A manual for the identification of the larvae of the caddisfly genera *Hydropsyche* Pictet and *Symphitopsyche* Ulmer in eastern and central North America (Trichoptera: Hydropsychidae). EPA-600/4-78-060.
- Sherberger, F. F. and J. B. Wallace. 1971. Larvae of the southeastern species of *Molanna*. J. Kansas Entomol. Soc. 44(2):217-224.
- Weaver, J. S., III and T. R. White. 1981. Larval description of *Rhyacophila appalachia* Morse and Ross (Trichoptera: Rhyacophilidae). J. Georgia Entomol. Soc. 16(3):269-271.
- Wiggins, G. B. 1996. Larvae of the North American caddisfly genera (Trichoptera), 2nd Edition. Univ. Toronto Press, Canada. 457 pp.
- Wiggins, G. B. 1977. Larvae of the North American caddisfly genera (Trichoptera). Univ. Toronto Press, Canada. 401 pp.
- Wojtowicz, J. A. 1982. A review of the adults and larvae of the genus *Pycnopsyche* (Trichoptera: Limnephilidae) with revision of the *Pycnopsyche scabripennis* (Rambur) and *Pycnopsyche lepida* (Hagen) complexes. Ph.D. Dissertation, Univ. Tennessee, Knoxville, Tennessee. 292 pp.
- Wojtowicz, J. A. 1982. Description of the larva and female of *Pycnopsyche flavata* (Banks) with comparative notes on the ecology of *P. flavata* and *P. gentilis* (McLachlan) (Trichoptera: Limnephilidae).
- Yamamoto, T. and G. B. Wiggins. 1964. A comparative study of the North American species in the caddisfly genus *Mystacides* (Trichoptera: Leptoceridae). Canadian J. Zool. 42:1105-1126.

MEGALOPTERA

- Brigham, A. R., W. U. Brigham, and A. Gnilka (eds.). 1982. Aquatic Insects and Oligochaetes of North and South Carolina. Midwest Aquatic Enterprises, Mahomet, Illinois.
- Merritt, R. W. and K. W. Cummins (eds.). 2008. 4th Edition. An Introduction to the Aquatic Insects of North America. Kendall/Hunt Publishing Company, Dubuque, Iowa. 862 pp.

COLEOPTERA

- Brown, H. P. 1972. Biota of freshwater ecosystems, identification manual no. 6. Aquatic dryopoid beetles (Coleoptera) of the United States. WPCRS No. 18050, ELD04/72. Supt. Doc. No. 5501-0370, Washington, D.C. 82 pp.
- Epler, J. H. 1996. Identification manual for the water beetles of Florida (Coleoptera: Dryopidae, Dytiscidae, Elmidae, Gyrinidae, Haliplidae, Hydraenidae, Hydrophilidae, Noteridae, Psephenidae, Ptilodactylidae, Scirtidae). Florida Dept. Env. Prot., Tallahassee, Florida.

Schmude, K.L. 1992. Revision of the Riffle Beetle genus *Stenelmis* (Coleoptera: Elmidae) in North America, with notes on bionomics. PhD thesis at the university of Wisconsin-Madison.

DIPTERA (Chironomidae)

Bode, R. W. 1983. Larvae of North American *Eukiefferiella* and *Tvetenia* (Diptera: Chironomidae). Bull. New York State Museum 452:1-40.

Caldwell, B. A., P. L. Hudson, D. R. Lenat, and D. R. Smith. 1997. A revised annotated checklist of the Chironomidae (Insecta: Diptera) of the southeastern United States. Trans. Amer. Entomol. Soc. 123(1-2):1-53.

Epler, J. H. 1987. Revision of the Nearctic *Dicrotendipes* Kieffer (Diptera: Chironomidae). Evolutionary Monogr. No. 9. Univ. of Chicago, Ill. 102 pp.

Epler, J. H. 1995. (Revised Edition). Identification manual for the larval Chironomidae (Diptera) of Florida. Florida Dept. Env. Prot., Tallahassee, FL 302 pp.

Epler, J. H. 2001. Identification manual for the larval Chironomidae (Diptera) of North and South Carolina. EPA Grant #X984170-97, WQ Program Sec, 104(b)93, EPA Region 4 and Human Health and Ecological Criteria Division.

Groadhaus, G. 1987. *Endochironomus* Kieffer, *Tribelos* Townes, *Synendotendipes*, n. gen. and *Endotribelos*, n. gen. (Diptera: Chironomidae) of the Nearctic region. J. Kansas Entomol. Soc. 60:167-247.

Hudson, P. L., D. R. Lenat, B. A. Caldwell, and D. Smith. 1990. Chironomidae of the southeastern United States: a checklist of species and notes on biology, distribution, and habitat, U. S. Fish and Wild. Service, U. S. Fish and Wildl. Res. No. 7 46 pp.

Jackson, G. A. 1977. Nearctic and Palearctic *Paracladopelma* Harnisch and *Saetheria* n. gen. (Diptera: Chironomidae). J. Fish. Res. Bd. Can. 34:1321-1359.

LeSage, L. and A. D. Harrison. 1980. Taxonomy of *Cricotopus* species (Diptera: Chironomidae) from Salem Creek, Ontario. Proc. Entomol. Soc. Ontario 111:57-114.

Maschwitz, D. E. 1975. Revision of the Nearctic species of the subgenus *Polypedilum* (Chironomidae: Diptera). Ph.D. Dissertation, Univ. Minnesota, St. Paul, Minnesota. 325 pp.

Oliver, D. R. and M. E. Roussel. 1983a. Redescription of *Brillia* Kieffer (Diptera: Chironomidae) with description of Nearctic species. Can. Entomol. 115:257-279.

Oliver, D. R. and M. E. Roussel. 1983b. The insects and arachnids of Canada. Part II. The genera of larval midges of Canada (Diptera: Chironomidae). Agric. Canada Public. 1746:1-263.

- Roback, S. S. 1980. The immature stages of the genus *Coelotanypus* (Chironomidae: Tanypodinae: Coelotanypodinae) in North America. Proc. Acad. Nat. Sci. Phil. 126:9-19.
- Roback, S. S. 1976. The immature chironomids of the eastern United States I. Introduction and Tanypodinae-Coelotanypodini. Proc. Acad. Nat. Sci. Phil. 127:147-201.
- Roback, S. S. 1977. The immature chironomids of the eastern United States II. Tanypodinae-Tanypodini. Proc. Acad. Nat. Sci. Phil. 128:55-87.
- Roback, S. S. 1978. The immature chironomids of the eastern United States III. Tanypodinae-Anatopyniini, Macropelopiini and Natarsiini. Proc. Acad. Nat. Sci. Phil. 129:151-202.
- Roback, S. S. 1980. The immature chironomids of the eastern United States IV. Tanypodinae-Procadiini. Proc. Acad. Nat. Sci. Phil. 132:1-63.
- Roback, S. S. 1981. The immature chironomids of the eastern United States V. Pentaneurini-*Thienemannimyia* Group. Proc. Acad. Nat. Sci. Phil. 133:73-128.
- Roback, S. S. 1985. The immature chironomids of the eastern United States VI. Pentaneurini-genus *Ablabesmyia*. Proc. Acad. Nat. Sci. Phil. 137:153-212.
- Roback, S. S. 1986. The immature chironomids of the eastern United States VIII. Pentaneurini-genus *Nilotanypus*, with the description of new species from Kansas. Proc. Acad. Nat. Sci. Phil. 138:443-465.
- Roback, S. S. 1987. The immature chironomids of the eastern United States IX. Pentaneurini-genus *Labrundinia* with the description of some neotropical material. Proc. Acad. Nat. Sci. Phil. 139:159-212.
- Saether, O. A. 1977. Taxonomic studies on Chironomidae: *Nanocladius*, *Pseudochironomus* and the *Harnischia* complex. Bull. Fish. Res. Bd. Can. 196:1-143.
- Saether, O. A. 1985. A review of the genus *Rheocricotopus* Thienemann and Harnisch, 1932, with the description of three new species (Diptera: Chironomidae). Spixiana Suppl. 11:59-108.
- Simpson, K. W. 1982. A guide to basic taxonomic literature for the genera of North American Chironomidae (Diptera) – adults, pupae, and larvae. Bull. 447, New York St. Mus., Albany, New York.
- Simpson, K. W. and R. W. Bode. 1980. Common larvae of Chironomidae (Diptera) from New York State streams and rivers – with particular reference to the fauna of artificial substrates. Bull. 439, New York St. Mus., Albany, New York.
- Simpson, K. W., R. W. Bode, and P. Albu. 1982. Keys for the genus *Cricotopus* adapted from "Revision der Gattung *Cricotopus* van der Wulp und ihrer Verwandten (Diptera, Chironomidae)" by M. Hirvenoja. Bull. 450, New York St. Mus., Albany, New York.

Soponis, A. R. 1977. A revision of the nearctic species of *Orthocladius* (*Orthocladius*) Van Der Wulp (Diptera: Chironomidae). Mem. Entomol. Soc. Canada No. 102 187 pp.

DIPTERA (Other)

Adler, P. H. and K. C. Kim. 1986. The black flies of Pennsylvania (Simuliidae, Diptera). Bionomics, taxonomy, and distribution. The Pennsylvania State Univ., Agric. Exp. Stat. Bull. 856, 85 pp.

Gelhaus, J.K. 2002. Manual for the identification of aquatic Crane Fly larvae for the Southeastern United States. Carolina Benthological Society, Durham, NC.

McAlpine, J. F. (ed.). 1981. Manual of Nearctic Diptera, Vol. 1., Res. Br. Agri., Canadian Monogr. 28: 674 pp.

Moulton, J. K. and P. H. Adler. 1995. Revision of the *Simulium jenningsi* species-group (Diptera: Simuliidae). Trans. American Entomol. Soc. 121(1-2):1-57.

Pechuman, L. L., D. W. Webb, and H. J. Teskey. 1983. The Diptera, or true flies, of Illinois. I. Tabanidae. Illinois Nat. Hist. Surv. Bull. 33(1):1-122.

Webb, D. W. 1977. The Nearctic Athericidae. J. Kansas Entomol. Soc. 50: 473-495.

MOLLUSCA

Branson, B. A. 1987. Keys to the aquatic gastropoda known from Kentucky. Trans. Kentucky Acad. Sci. 48(1-2):11-19.

Burch, J. B. 1972. Biota of freshwater ecosystems, identification manual no. 3. Freshwater sphaeriacean clams (Mollusca: Pelecypoda) of North America. WPCRS No. 18050, ELD03/72. Supt. Doc. No. 5501-0367, U. S. Environ. Prot. Agency, Washington, D.C. 31 pp.

Burch, J. B. 1982. Freshwater snails (Mollusca: Gastropoda) of North America. EPA-600/3-82-026. U. S. Environ. Prot. Agency, Washington, D.C. 294 pp.

Parmalee, P.W. and A.E. Bogan. 1998. The Freshwater Mussels of Tennessee. University Tennessee Press. Knoxville, Tennessee. 328 pp.

SampleID	Grids	Organisms	Final ID	Ref Collection	Damaged	Immature	Adult	Pupae	Larvae	Total Count
13-INT-001	6	480	Allocapnia sp	FALSE	FALSE	FALSE			71	71
13-INT-001			Amphinemura sp	FALSE	FALSE	FALSE			2	2
13-INT-001			Caecidotea sp	FALSE	FALSE	FALSE			28	28
13-INT-001			Cambaridae	FALSE	FALSE	TRUE			1	1
13-INT-001			Ceratopogonidae	FALSE	FALSE	FALSE			1	1
13-INT-001			Chaetocladius sp	FALSE	FALSE	FALSE			1	1
13-INT-001			Cricotopus/Orthocladius gr	FALSE	FALSE	FALSE			186	186
13-INT-001			Cultus sp	FALSE	FALSE	FALSE			1	1
13-INT-001			Diamesa sp	FALSE	FALSE	FALSE			1	1
13-INT-001			Diplectrona sp	FALSE	FALSE	FALSE			1	1
13-INT-001			Eukiefferiella sp	FALSE	FALSE	FALSE			1	1
13-INT-001			Gammarus sp	FALSE	FALSE	FALSE			162	162
13-INT-001			Haliplus sp	FALSE	FALSE	FALSE	1			1
13-INT-001			Lumbriculidae	FALSE	FALSE	FALSE			23	23
13-INT-001			Neophylax sp	FALSE	FALSE	FALSE			6	6
13-INT-001			Parametricnemus sp	FALSE	FALSE	FALSE			3	3
13-INT-001			Rhyacophila sp	FALSE	FALSE	FALSE			11	11
13-INT-001			Wormaldia sp	FALSE	FALSE	FALSE			4	4
13-INT-002	7	410	Allocapnia sp	FALSE	FALSE	FALSE			144	144
13-INT-002			Amphinemura sp	FALSE	FALSE	FALSE			6	6
13-INT-002			Caecidotea sp	FALSE	FALSE	FALSE			15	15
13-INT-002			Cambaridae	FALSE	FALSE	FALSE			1	1
13-INT-002			Ceratopogonidae	FALSE	TRUE	FALSE			1	1
13-INT-002			Cheumatopsyche sp	FALSE	FALSE	FALSE			1	1
13-INT-002			Chimarra sp	FALSE	FALSE	FALSE			25	25
13-INT-002			Cricotopus/Orthocladius gr	FALSE	FALSE	FALSE			30	30
13-INT-002			Cultus sp	FALSE	FALSE	FALSE			6	6
13-INT-002			Diamesa sp	FALSE	FALSE	FALSE			4	4
13-INT-002			Diplectrona sp	FALSE	FALSE	FALSE			4	4
13-INT-002			Gammarus sp	FALSE	FALSE	FALSE			61	61
13-INT-002			Naididae	FALSE	FALSE	FALSE			1	1
13-INT-002			Neophylax sp	FALSE	FALSE	FALSE			2	2
13-INT-002			Nigronia sp	FALSE	FALSE	FALSE			2	2
13-INT-002			Parametricnemus sp	FALSE	FALSE	FALSE			74	74
13-INT-002			Pseudolimnophila sp	FALSE	FALSE	FALSE			4	4
13-INT-002			Rhyacophila sp	FALSE	FALSE	FALSE			2	2
13-INT-002			Stenelmis sp	FALSE	FALSE	FALSE	1			1
13-INT-002			Tanypodinae	FALSE	TRUE	FALSE			1	1
13-INT-002			Tipula sp	FALSE	FALSE	FALSE			1	1
13-INT-002			Tvetenia sp	FALSE	FALSE	FALSE			1	1

DEP16309
 BID SHEET

Item No.	Quantity	Description	Unit Price	Amount
1	500	Per sample un-sorted, identified to Genus level: 200-organism subsample	200.00	100,000.00
2	4	Per each "sample pick-up/delivery" not "per sample" (Assume 100 samples per pickup)	0.00	0.00
3	5 hr	Cost/hour for professional staff representation of data in legal/administrative setting	80.00	400.00

TOTAL = 100,400.00

Contractor:

Third Rock Consultants, LLC

Signature:

Marcia P. Weston

Date:

December 10, 2013

Quantities listed on the bid schedule are for bid evaluation purposes only and are not a guarantee of quantities to be ordered over the life of the contract. Actual quantities ordered may be more or less than those stated on this schedule.

VENDOR PREFERENCE CERTIFICATE

Certification and application* is hereby made for Preference in accordance with *West Virginia Code*, §5A-3-37. (Does not apply to construction contracts). *West Virginia Code*, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the *West Virginia Code*. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Resident Vendor Preference, if applicable.

1. Application is made for 2.5% resident vendor preference for the reason checked:

- Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
- Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
- Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; or,

2. Application is made for 2.5% resident vendor preference for the reason checked:

Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,

3. Application is made for 2.5% resident vendor preference for the reason checked:

Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,

4. Application is made for 5% resident vendor preference for the reason checked:

Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; or,

5. Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:

Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; or,

6. Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:

Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

7. Application is made for preference as a non-resident small, women- and minority-owned business, in accordance with *West Virginia Code* §5A-3-59 and *West Virginia Code of State Rules*.

Bidder has been or expects to be approved prior to contract award by the Purchasing Division as a certified small, women- and minority-owned business.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (*West Virginia Code*, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: _____ Signed: _____

Date: _____ Title: _____

NA
mlw
12-10-13

RFQ No. DEP16309

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

MANDATE: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Third Rock Consultants, LLC

Authorized Signature: Marcia P. Weston Date: December 10, 2013

State of Kentucky

County of Fayette, to-wit:

Taken, subscribed, and sworn to before me this 10 day of December, 2013.

My Commission expires 5-28, 2014.

AFFIX SEAL HERE

NOTARY PUBLIC Virginia Bradman

Purchasing Affidavit (Revised 07/01/2012)

CERTIFICATION AND SIGNATURE PAGE

By signing below, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this bid or proposal for review and consideration; that I am authorized by the bidder to execute this bid or any documents related thereto on bidder's behalf; that I am authorized to bind the bidder in a contractual relationship; and that to the best of my knowledge, the bidder has properly registered with any State agency that may require registration.

Third Rock Consultants, LLC
(Company)

Marcia L. Wootton
(Authorized Signature)

Marcia L. Wootton, Environmental Planner
(Representative Name, Title)

859-977-2000 859-977-2001
(Phone Number) (Fax Number)

December 10, 2013
(Date)