



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

TYPE NAME/ADDRESS HERE

VENDOR

Copperhead Environmental  
 Consulting, Inc.  
 11641 Richmond Rd.  
 PO Box 73  
 Paint Lick, KY

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
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.						
001	1	LS		961-48	\$150.00	\$150.00
				SAMPLE IDENTIFIED TO GENUS LEVEL		
002	1	LS		961-48	\$0.00	\$0.00
				SAMPLE PICK UP/DELIVERY		
003	1	LS		961-48	\$80.00	\$80.00
				PROFESSIONAL STAFF REPRESENTATION OF DATA IN LEGAL/		

12/11/13 10:17:51AM  
 West Virginia Purchasing Division

SIGNATURE <i>[Signature]</i>	TELEPHONE 859-925-9012	DATE 12/10/2013
TITLE Biologist - PM	FEIN 27-0083689	ADDRESS CHANGES TO BE NOTED ABOVE

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



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RFQ COPY

**VENDOR**  
 TYPE NAME/ADDRESS HERE  
 Copperhead Environmental  
 Consulting, Inc.  
 11641 Richmond Rd.  
 PO Box 73  
 Paint Lick, KY

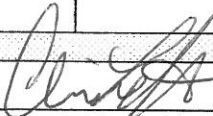
**SHIP TO**  
 ENVIRONMENTAL PROTECTION  
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LINE	QUANTITY	UOP	CAT NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
***** THIS IS THE END OF RFQ DEP16309 ***** TOTAL:						230

SIGNATURE  TELEPHONE 859-925-9012 DATE 12/10/2013  
 TITLE Biologist - PM FEIN 27-0083689 ADDRESS CHANGES TO BE NOTED ABOVE

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



**COPPERHEAD**  
ENVIRONMENTAL CONSULTING

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**PROPOSAL FOR:**  
**PROCESSING AND IDENTIFICATION OF**  
**BENTHIC MACROINVERTEBRATE SAMPLES**  
**COLLECTED FROM WV WATERS**



**WVDEP: DEP16309**

**10 DECEMBER 2013**

**COPPERHEAD ENVIRONMENTAL CONSULTING, INC.**

**P.O. BOX 73 ■ 11641 RICHMOND RD. ■ PAINT LICK, KENTUCKY, 40461**

**(859) 925-9012 OFFICE (859) 925-9816 FAX**

**[mwgumbert@copperheadconsulting.com](mailto:mwgumbert@copperheadconsulting.com)**

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**COPPERHEAD**  
ENVIRONMENTAL CONSULTING

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

10 December 2013

Re: RFQ # DEP16309.

*Processing and Identification of Benthic Macroinvertebrate Samples Collected From WV Waters.*

Mr. Whittaker,

Copperhead Environmental Consulting, Inc. is pleased to submit a proposal for the above-reference scope-of-work described in the RFQ.

Attached is the completed RFQ, Bid Sheet, Certification and Signature Page, Purchasing Affidavit and a summary of our qualifications.

Our team of Taxonomists has over 30 years of experience in the identification of aquatic macroinvertebrates and exceeds all the requirements of the RFQ. We hope this proposal provides the detailed information you require for your review. If you have any questions regarding this submittal or need additional information, please do not hesitate to contact me.

Sincerely,

Chris Leftwich  
Biologist / Contract Manager

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## OVERVIEW

Copperhead Environmental Consulting, Inc. (dba Copperhead) is a small environmental consulting firm located in Paint Lick Kentucky. Our staff is comprised of professional field biologists with extensive backgrounds in state and federal environmental regulations, wildlife management, terrestrial and aquatic ecology, wetland and soil science, botany, natural resource management, and land-use planning. Our staff includes recognized experts in benthic macroinvertebrates, mammalogy, herpetology, ornithology, ichthyology, botany, wetlands, gastropods (snails), and mussels.

In addition to Copperhead's taxonomist (Jeff Hawkins), we have teamed with WHM Group (Hannah Stout) and Samuel Call (formally of the Kentucky Division of Water) to assist with the processing and identification of macroinvertebrates during this contract. Ms. Stout's and Mr. Call's specific qualifications and experience are provided below. Together, Copperhead's team has decades of experience in the processing and identification of benthic macroinvertebrates.

Copperhead's team has conducted numerous projects that have involved the collection, processing, and identification of benthic macroinvertebrate in West Virginia, Kentucky, Tennessee, and Pennsylvania. Our team of taxonomists exceeds the requirements outlined in the RFQ and is proficient with the protocols outlined in "WVDEP Watershed Assessment Branch - Standard Operating Procedures for Processing Benthic Macroinvertebrate Samples." In addition, the Copperhead team has conducted projects for numerous private clients, federal government and state governments, including the WV DNR.

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## KEY PERSONNEL

### *SFS Certified Taxonomists*

#### **Jeff Hawkins (QA/QC Manager)**

Mr. Hawkins has spent numerous hours in the field and lab working with and identifying aquatic macroinvertebrates. Relevant coursework includes work with gastropods, mussels, and aquatic insects and he has made macroinvertebrate collections both as a requirement of coursework and professionally. Mr. Hawkins is experienced in the use of taxonomic keys and the methodologies involved in the collection, sorting, preparation, and identification of aquatic macroinvertebrates of eastern North America. Mr. Hawkins has completed several similar projects and is well qualified to conduct the work outlined in the RFP. Mr. Hawkins is a certified taxonomist by the Society for Freshwater Science (formally NABS) for the identification of eastern EPTs and eastern Chironomidae. As the lead taxonomist, Mr. Hawkins will oversee all aspects of the transport, handling, identification, preservation, data generation/transfer, and final QA/QC procedures associated with the project. Please see his resume in Appendix A for additional experience, qualifications and SFS certificates.

#### **Hannah Stout, Ph.D.**

Dr. Hannah Stout will provide QA/QC support for EPT taxa, and will identify non-chironomid macroinvertebrates once sorted. She is the Aquatic Entomologist for the WHM Group, an environmental consulting/solutions firm headquartered in State College, PA. She is an SFS-certified taxonomist in Eastern EPT genera, and has nearly a decade of experience with terrestrial insect and freshwater macroinvertebrate taxonomy. As part of her dissertation research, she performed a two-season, multihabitat, whole-sample bioassessment of two central PA streams. Since she joined with The WHM Group, Dr. Stout has provided taxonomic services to a range of clients from Pennsylvania and West Virginia – from small watershed groups to large for-profit companies. For additional project-related experience and SFS certificates, please refer to Dr. Stout's resume in Appendix A.

#### **Samuel Call**

After receiving a master's degree from Eastern Kentucky University in biology (emphasis in aquatics), Mr. Call has spent 30+ years collecting and identifying Kentucky macroinvertebrates, including aquatic insects, crayfish, freshwater mussels, etc. Mr. Call participated in the first aquatic survey of the eastern and western coalfields of Kentucky while working at the Kentucky State Nature Preserve Commission in the 1970s, where he collected and identified all of the macroinvertebrates for those studies. Mr. Call worked for the Kentucky Division of Water (KDOW) for 25+ years collecting and identifying aquatic invertebrates. While at KDOW, he identified hundreds of

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macroinvertebrate samples that have been entered into the state aquatic biological data base EDAS. Since leaving the KDOW in 2004, he has completed macroinvertebrate work for the U.S. Forest Service, U.S. Parks Service, University of Louisville, University of Alaska Anchorage, and numerous private consulting firms, including Copperhead. Mr. Call will be responsible for macroinvertebrate identification and will have all required SFS certifications by February 2014. For additional project-related experience, please refer to Mr. Call's resume in Appendix A.

### *Laboratory Technicians*

In addition to taxonomists, Copperhead employs numerous degreed biologists who will perform sample processing/sorting and data entry. Jeff Hawkins will be responsible the quality of their work and will work directly with them to insure all QA/QC procedures are met.

### *Contract Manager*

#### **Chris Leftwich (Biologist/Project Manager)**

Mr. Leftwich will be the primary contract manager who will oversee Copperhead's responsibilities under this contract. All contract specific questions and invoicing questions should be directed to Mr. Leftwich.

Telephone No.: 859-925-9012 (office)  
859-339-9410 (cell)

Fax No.: 859-925-9816

Email: [cleftwich@copperheadconsulting.com](mailto:cleftwich@copperheadconsulting.com)

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## LAB PROCESSES - QA/QC

Copperhead maintains a fully equipped aquatic laboratory. Facilities of the Copperhead team include Meiji EMZ-13TR and a Leica model S8APO dissecting scopes and a Motic BA300, a Nikon Labophot 2, and Motic model BA200 compound scopes. Each member of the Copperhead team uses the most up-to-date taxonomic references available. Ancillary references used during the identification process include reference specimens and online sources such as the Integrated Taxonomic Information System (ITIS). Copperhead maintains an extensive in-house reference collection that includes both preserved specimens and a digital image library of organisms and many of the most important characters used in their identification. Images are used for reference purposes only and are taken from both compound and dissecting microscopes using a digital camera.

All sorted and identified organisms collected during the project will be properly preserved, retained, and made available upon completion of the project using guidelines outlined in the RFQ. Included in the final deliverables will be the original sample containers, voucher specimens, reference specimens, and sample residues (if required). Copperhead will maintain internal chain-of-custody until the results/data are accepted by the agency using DEP/DWWM provided forms.

All QA/QC procedures outlined in the RFQ will be strictly adhered to during all aspects of the project including transport, sorting, identification, preservation, and data recording. Sorting efficiency shall be evaluated for 5% of samples and recovery errors will not exceed 10% of the total sample. Similarly, 5% of samples will be re-identified by a second taxonomist. All QA/QC information collected during the sorting and identification of samples will be delivered to WAB, as needed.

Final data submission will be delivered in MS Excel or Access and/or paper format, as required by WAB. Copies of all completed bench sheets, i.e., "WVDEP/WAB BENTHIC MACROINVERTEBRATE LAB SHEET" will be provided at project completion, or as needed. All results submitted to DEP/DWWM will include a bibliography of references used in their identification. Copperhead will maintain records of the data for a minimum of five (5) years

Completed results will be delivered to DEP/DWWM according to the following schedule:

- Samples submitted by April 1 are due August 31;
- Samples submitted by August 31 are due Dec.1;
- Samples submitted by December 31 are due Feb. 28;

## PAST EXPERIENCE

The following projects are similar in scope to this RFQ have been completed (or ongoing) by Copperhead or a member of the Copperhead Team:

- Benthic Macroinvertebrate and Fish Survey on the Pigeonroost Watershed, KY, 2013. Copperhead conducted a macroinvertebrate and fish survey at two sites for the Kentucky Division of Natural Resources (KYDNR as part of a long term monitoring project conducted by the KYDNR. Each sample was processed following Genus/Species-level Full Pick methods outlined in KDOW's Laboratory Procedures for Macroinvertebrate Processing, Taxonomic Identification and Reporting (KDOW 2009). The MBI scores and biological condition of each site was determined from the headwater table of KDOW's excel spreadsheet Genus\_Species Full Pick MBI template. A final report was provided to KYDNR.
- Boyd County Macroinvertebrate Identification, KY, 2011. Performed laboratory analysis (identification and counts) on fourteen samples from seven headwater streams in Boyd County, KY. Each sample was processed following Genus/Species-level Full Pick methods outlined in KDOW's Laboratory Procedures for Macroinvertebrate Processing, Taxonomic Identification and Reporting (KDOW 2009).
- HMB KYTC KY207/HMB Professional Engineers Macroinvertebrate Identification, KY 2011. Performed macroinvertebrate laboratory analysis for work associated with KYDOT's KY207 roadway project. Analysis was conducted on 19 samples from 10 sites collected from Greenup County, KY. Each sample was processed following Genus/Species-level Full Pick methods outlined in KDOW's Laboratory Procedures for Macroinvertebrate Processing, Taxonomic Identification and Reporting (KDOW 2009).
- Water Quality Monitoring for a Coal Refuse Impoundment, TN. 2010 – Ongoing. Mr. Hawkins identified macroinvertebrate samples collected at two sites in order to monitor the biological integrity and water quality of the New River above and below a coal refuse impoundment. Aquatic insects were collected, preserved, sorted, identified, and the resulting data was input into ecological matrices for comparison to baseline aquatic communities. Collection and identification of samples followed methodologies outlined in Tennessee's Department of Environment and Conservation, Division of Water Pollution Control "Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys."

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- Blackside Dace Monitoring of Outstanding Resource Waters, KY. 2009 – 2010. Mr. Hawkins collected and identified several macroinvertebrate samples collected as part of a Blackside Dace monitoring study of a surface mine required by KY Division of Water. Methodology for collection and identification of samples followed KY Division of Water’s “Laboratory Procedures for Macroinvertebrate Processing, Taxonomic Identification and Reporting”, and “Methods for Sampling Benthic Macroinvertebrate Communities in Wadeable Waters.”
- Blackside Dace Protection and Enhancement Plan, TN. 2008 - Ongoing. Mr. Hawkins identified macroinvertebrate samples collected at four sites over multiple season and years as part of Blackside Dace Protection and Enhancement Plan. Aquatic insects were collected, preserved, sorted, identified, and the resulting data was input into ecological matrices for comparison to baseline aquatic communities. Collection and identification of samples followed methodologies outlined in Tennessee’s Department of Environment and Conservation, Division of Water Pollution Control “Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys.”
- Water Quality Monitoring for a Coal Refuse Impoundment, TN. 2009 – Ongoing. Mr. Hawkins identified macroinvertebrate samples collected at two sites in order to monitor the biological integrity of the New River above and below a coal refuse impoundment. Aquatic insects were collected, preserved, sorted, identified, and the resulting data was input into ecological matrices for comparison to baseline aquatic communities. Collection and identification of samples followed methodologies outlined in Tennessee’s Department of Environment and Conservation, Division of Water Pollution Control “Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys.”
- Mr Call worked as an aquatic biologist for KDOW for 25+ years. During that time, he sampled and identified macroinvertebrates from every major stream system in the Commonwealth. The hundreds of samples he identified while at KDOW are stored in EDAS, a statewide aquatic biological data base. Mr. Call also wrote and edited numerous biological reports, many of which are available through KDOW.
- During the past 10+ years, Mr. Call has worked with the aquatic biologists at ENRI during the spring and summer, sampling streams throughout most of the ecoregions in Alaska. He has also identified macroinvertebrates from other selected Alaskan streams.

- Since 2005, Mr. Call has been identifying macroinvertebrates for Daniel Boone National Forest. During this period, he has identified approximately 100 samples that were collected within the boundaries of national forest in eastern Kentucky. All macroinvertebrate data was entered into the statewide biological data base EDAS.



# Appendix A

## Resumes and SFS Certificates

**Regulatory Expertise**

- ESA (Section 7 & 10)
- NEPA
- CWA
- Migratory Bird Treaty Act
- Bald and Gold Eagle Protection Act
- USFWS Land Based Wind Energy Guidelines

**Industry Clientele**

- Wind
- Utilities/Traditional Energy Sources
- Mines and Reclamation
- US Department of Defense
- US Forest Service
- US Fish and Wildlife Service
- National Park Service
- Corresponding State Agencies
- FHWA & State DOTs
- Academic Institutions & NGOs

**Listed Taxa Expertise**

- Bats
- Northern Flying Squirrels
- Bog Turtles
- Raptors
- Neotropical Migrant Birds
- Herptiles
- Plants

**Survey Expertise**

- Habitat Assessments
- Wetland Delineation
- Presence/Absence

**Certifications/Trainings**

**Society for Freshwater Science Eastern Chironomidae Taxonomist Certification, January 2013**

**Society for Freshwater Science (formally NABS) Eastern EPT Taxonomist Certification, June 2010**

**Aquatic Chironomid Taxonomy Workshop**  
Introductory/Intermediate workshop consisting of forty hours of instruction and lab work (5 – 9 November 2012) conducted at Watershed Assessment Associates, LLC., Schenectady, NY.



**Aquatic Macroinvertebrate Workshop**

*Taxonomy and Natural History of Southern Appalachian Mayflies, Stoneflies, and Caddisflies* (3 – 15 May 2010). Highlands Biological Station, Highlands, NC.

**Mussel Identification Workshop**

*EDGEe Advanced Naturalist Workshop on Freshwater Mussels* (18 – 20 September 2009). Richard and Lucille Durell Edge of Appalachia Preserve, West Union, OH.

**Wetland Delineation Training**

Wetland Training Institute. KY Transportation Cabinet, Frankfort, KY, May 2007

**NAUI Open-water SCUBA Certification, 2006.**

**Indirect and Cumulative Impacts FHWA Seminar** Indiana Division/INDOT, May 2006.

**Rabies Pre-exposure Vaccination**

Vaccination to guard against rabies when handling bats and other carriers of the disease, 2003.

## Qualifications and Background

Mr. Hawkins has sixteen years of professional field experience conducting surveys of natural resources. He has worked with a wide variety of taxa, including plants, birds, bats, reptiles, amphibians, and aquatic invertebrates. Relevant coursework includes work with gastropods, mussels, and aquatic insects and he has made mussel collections both as a requirement of coursework and professionally.

Mr. Hawkins has participated in numerous mussel surveys including a multi-day sampling effort of the worst case scour areas associated with the proposed Ohio River Bridges Project along stretches of the Ohio River and Harrods Creek near Louisville, KY. This project involved SCUBA survey techniques along 33 transects along three proposed impact areas. Mr. Hawkins is

comfortable in the use of methodologies involved in the collection, sorting, preparation, and identification of the mussels of eastern North America.

Mr. Hawkins is a SFS (formally NABS) certified taxonomist and has spent numerous hours in the field and lab working with aquatic invertebrates. He is comfortable in the use of taxonomic keys and the methodologies involved in the collection, sorting, preparation, and identification of aquatic invertebrates of eastern North America.

Mr. Hawkins participates in scientific writing, and has co-authored dozens of technical reports and papers written in support of NEPA, ESA, and other permitting applications, including lead on contributing roles in HCP, EIS, and BA documents.

## Experience

**Copperhead Environmental Consulting, Inc.** – Wildlife Biologist 2007 – Present.

**Environmental Solutions & Innovations, Inc.** – Biologist/Regional Manager, 2001 – 2007.

**Eastern Kentucky University,** Field Technician, 1993– 1998.

## Education

**M.S. Biology (pending thesis),** 2001, Eastern Kentucky University, Richmond, Kentucky

**Kentucky Teacher Certification,** 2001, Eastern Kentucky University, Richmond, KY

**B.S. Wildlife Biology,** 1996, Eastern Kentucky University, Richmond, Kentucky

## Affiliations

- Southeastern Bat Diversity Network
- The Wildlife Society
- Society for Freshwater Science

## Project-related Experience

**Biologist - Arcadis Mussel Survey Cincinnati, OH. Summer 2013.** Completed a freshwater mussel survey of the proposed construction occurring below Brent Spence Bridge near Cincinnati, OH. Duties included scuba, qualitative survey of bank and substrate, etc.

**Project Manager - KYDNR Benthic Macroinvertebrate and Fish Survey. Spring 2013.** Mr. Hawkins was the project manager of a benthic macroinvertebrate and fish survey of the Pigeonroost Fork and Hobbs Fork, Martin County, Kentucky. Mr. Hawkins completed the macroinvertebrate identification and was the primary author of the subsequent report.

**Freshwater mussel survey of Big Creek in Clay County, KY. 2012.** Mr. Hawkins participated in a freshwater mussel survey for a bridge replacement on CR 1113A in Clay County, KY. Duties included, transect placement, snorkel and SCUBA survey along transects, qualitative survey of banks and riffles, and identification of mussel species.

**Spring 2013 Benthic Macroinvertebrate survey for Mine Area #12 (OSM #3248), Campbell County, Tennessee.** Mr. Hawkins completed a macroinvertebrate/water quality study for the Mine Area #12 as part of a long-term monitoring program. He collected physical parameters of Stinking Creek, Campbell County, Tennessee, collected macroinvertebrates and identified specimens in laboratory. He also completed subsequent report.

**Benthic macroinvertebrate survey for mine area No. 1 (OSM Permit #3207), Campbell County, Tennessee. Spring 2009 - Present.** Mr. Hawkins completed a macroinvertebrate/water quality study for the Mine Area #1 as part of a long-term monitoring program. He collected physical parameters and macroinvertebrates of Hog Camp Branch, and identified specimens in laboratory. He also completed subsequent report.

**Benthic macroinvertebrate survey of Jordan Ridge Refuse Area (Permit #3253), Scott County, Tennessee. Spring 2010 - Present.** Mr. Hawkins completed a macroinvertebrate/water quality study for the Jordan Ridge Refuse Impoundment Area as part of a long-term monitoring program. He collected physical parameters and macroinvertebrates on the New River, and identified specimens in laboratory. He also completed subsequent report.

**Intec/Rex Mine Stinking Creek Macros, Fall 2011 - Present.** Mr. Hawkins completed a macroinvertebrate/water quality study for the Rex Mine. He collected physical parameters of Stinking Creek, Campbell County, Tennessee, collected macroinvertebrates and identified specimens in laboratory. He also completed subsequent report.

**ACOE Freshwater Mussel Survey of the Salt and Rolling Fork rivers at Fort Knox. Bullitt County, KY. 2009 - 2011.** Mr. Hawkins participated in a mussel survey on the Fort Knox Military Installation. Duties included SCUBA, snorkel, and view bucket survey (qualitative and quantitative) for freshwater mussels.

**KY207/HMB Professional Engineers Macroinvertebrate Identification. Fall 2011.** Performed macroinvertebrate laboratory analysis for work associated with KYDOT's KY207 roadway project. Analysis was conducted on 19 samples from 10 sites collected from Greenup County, KY.

**Boyd County Macros/Entran Macroinvertebrate Identification, Spring 2011.** Performed laboratory analysis (identification and counts) on fourteen samples from seven headwater streams in Boyd County, KY.

**Davis Creek Water Quality Monitoring Study, TN. 2008 - Present.** Mr. Hawkins has led a team in the collection and performed the in-lab identification of benthic macroinvertebrate samples collected bi-annually at several sites over several seasons as part of a water quality monitoring study being conducted in support of the Blackside Dace Protection and Enhancement Plan on reclaimed mine sites in northern TN. Aquatic insects were collected, preserved, analyzed, and the resulting data was input into ecological matrices for long-term comparison to baseline aquatic communities. Mr. Hawkins was also a contributing author of the annual reports written in support of this study.

**KY30/HMB Professional Engineers Macroinvertebrate Identification. Summer 2010.** Performed macroinvertebrate laboratory analysis (identification and counts) for work associated with KYDOT's KY30 roadway project. Analysis was conducted on 32 samples from 16 sites from Owsley County, KY.

**Endangered mussel survey, Jefferson Co., KY. 2007.** Completed a mussel survey along worst case scour areas associated with the proposed Ohio River Bridges Project along stretches of the Ohio River on both the KY and IN and Harrods Creek in KY. This project involved SCUBA techniques along 33 transects along three proposed impact areas.

**Water Quality Monitoring, Campbell County, TN. 2006 -2007.** Conducted water quality monitoring to ensure mining permit compliance. Water chemistry and quality parameters were collected with a Eureka Amphibian including temperature, DO, pH, salinity, conductivity, and flow.

**Water Quality Stream Assessment, Tates Creek, Madison County, KY. 2005.** Established baseline population and community data on a stream in central Kentucky impacted by effluent from a water treatment facility. The class project included an extensive survey and bioassessment of fish and macroinvertebrates within the stream. Performed electro-fishing and seining surveys in the field, then calculated an Index of Biotic Integrity incorporating multiple metrics based on survey captures.

### Publications & Reports

- Hawkins, J.A. 2013. Blackside Dace (*Chrosomus Cumberlandensis*) Protection and Enhancement Plan for Davis Creek Energy, LLC, Mine Areas No. 4 and No. 5, Campbell County, Tennessee: Autumn 2013 Macroinvertebrate Survey.
- Hawkins, J.A. and G.A. Shirk. 2013. Spring 2013 benthic macroinvertebrate and fish survey of Pigeonroost Fork and Hobbs Fork, Martin County, Kentucky. KYDNR DOC ID# PON 128 1300002120 1
- Hawkins, J.A. 2013. Final Report: Spring 2013 benthic macroinvertebrate survey for Rex Mine (Permit #3216), Campbell County, Tennessee.
- Hawkins, J.A. 2013. Final Report: Spring 2013 Benthic macroinvertebrate survey for Mine Area #12 (OSM #3248), Campbell County, Tennessee.
- Hawkins, J.A. 2013. Spring 2013 benthic macroinvertebrate survey of Jordan Ridge Refuse Area (Permit #3253), Scott County, Tennessee.
- Hawkins, J.A. 2013. Final Report: spring 2013 benthic macroinvertebrate survey for mine area No. 1 (OSM Permit #3207), Campbell County, Tennessee.
- Shirk, G.A., J.A. Hawkins, P.L. Sewell. 2012. Blackside Dace (*Chrosomus Cumberlandensis*) Protection and Enhancement Plan for Davis Creek Energy, LLC, Mine Areas No. 4 and No. 5, Campbell County, Tennessee, Spring 2012.
- Hawkins, J.A. and C.A. Leftwich. 2012. Blackside Dace (*Chrosomus Cumberlandensis*) Protection and Enhancement Plan for Davis Creek Energy, LLC, Mine Areas No. 4 and No. 5, Campbell County, Tennessee: Autumn 2012 Macroinvertebrate Survey.
- Shirk, G.A., J.A. Hawkins, P.L. Sewell. 2012. Blackside Dace (*Chrosomus Cumberlandensis*) Protection and Enhancement Plan for Davis Creek Energy, LLC, Mine Areas No. 4 and No. 5, Campbell County, Tennessee, Spring 2012.
- Hawkins, J.A. 2012. Benthic Macroinvertebrate Survey for Gum Branch Refuse Impoundment (=Refuse Impoundment No. 3), Anderson County, Tennessee: January 2012 Impact Analysis.
- Hawkins, J.A. 2012. Benthic Macroinvertebrate Survey for Gum Branch Refuse Impoundment (=Refuse Impoundment No. 3), Anderson County, Tennessee: Spring 2012.

- Hawkins, J.A. and C.A. Leftwich. 2011. Blackside Dace (*Chrosomus cumberlandensis*) Protection and Enhancement Plan for Davis Creek Energy, LLC, Mine Areas No. 4 and No. 5, Campbell County, Tennessee: Autumn 2011 Macroinvertebrate Survey.
- Hawkins, J.A. and P.L. Sewell. 2011. Biological Assessment for the Indiana bat (*Myotis sodalis*), Gray bat (*Myotis grisescens*), Pink Mucket Pearlymussel (*Lampsilis abrupta*); Ring Pink Mussel (*Obovaria retusa*), Rough Pigtoe Mussel (*Pleurobema plenum*), Clubshell Mussel (*Pleurobema clava*), Pyramid Pigtoe Mussel (*Pleurobema rubrum*), Purple Catpaw Pearlymussel (*Epioblasma obliquata obliquata*), Orangefoot Pimpleback Mussel (*Plethobasus cooperianus*), Fanshell Mussel (*Cyprogenia stegaria*), Sheepnose Mussel (*Plethobasus cyphus*), Snuffbox Mussel (*Epioblasma triquetra*), and the Rabbitsfoot Mussel (*Quadrula c. cylindrica*). LAW-93C-0.00 Ironton-Russell Bridge Replacement Project, Greenup County, Kentucky and Lawrence County, Ohio
- Hawkins, J.A. 2011. 2011 Benthic Macroinvertebrate survey of Jordan Ridge Refuse Area, Scott County, Tennessee. Report submitted to National Coal, Inc.
- P.L. Sewell, G.A. Shirk, J.A. Hawkins. 2010 - 2011 Mussel Survey of the Rolling Fork and Salt Rivers on the Fort Knox Military Reservation, Fort Knox, KY
- Hawkins, J.A. 2011. Benthic macroinvertebrate survey for Gum Branch Refuse Impoundment (=Refuse Impoundment No. 3), Anderson County, Tennessee. Report written for Irtec, Inc.
- Copperhead Consulting, Inc. 2011. Spring 2011 Benthic macroinvertebrate survey for Mine Area No. 1, Campbell County, TN. Report written for Irtec, Inc.
- Hawkins, J.A. 2010. 2010 Benthic Macroinvertebrate survey of Jordan Ridge Refuse Area, Scott County, Tennessee. Report submitted to National Coal, Inc.
- Copperhead Consulting, Inc. 2010. Spring 2010 Benthic macroinvertebrate survey for Mine Area No. 1, Campbell County, TN. Report written for Irtec, Inc.
- Copperhead Environmental Consulting, Inc. 2010. Benthic macroinvertebrate survey for Refuse Impoundment No. 3, Anderson County, Tennessee. Spring 2010. Report written for Irtec, Inc.
- Copperhead Environmental Consulting, Inc. 2009. Benthic macroinvertebrate survey for Refuse Impoundment No. 3, Anderson County, Tennessee. Report written for Irtec, Inc.
- Copperhead Consulting, Inc. 2009. Spring 2009 Benthic macroinvertebrate survey for Mine Area No. 1, Campbell County, TN. Report written for Irtec, Inc.

Technical Presentations

Hawkins, J.A. 2009. *Spring 2009 radiotelemetry and habitat characterization study of Indiana bats for the Cumberland HCP, Fentress County, TN.* Presented at Cumberland HCP Science Advisory Committee Annual Meeting, Cumberland Mountain State Park, Cookeville, TN.

Hawkins, J. A. 1996. Provisioning Behavior of Adult Downy Woodpeckers. Presented at annual Kentucky Academy of Sciences Symposium, Frankfort, KY.



# TAXONOMIC CERTIFICATION

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*This five year certification is awarded to*

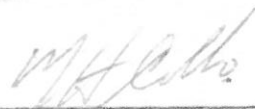
***JEFFREY HAWKINS***

*In recognition of excellence for specimen identification to Genus*

*Eastern*

*Ephemeroptera, Plecoptera & Trichoptera*

**NORTH AMERICAN BENTHOLOGICAL SOCIETY**



Dr. Murray Colbo

July, 2015

Date of Expiry

# TAXONOMIC CERTIFICATION

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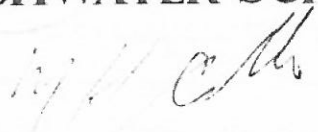
*This five year certification is awarded to*

***JEFFREY HAWKINS***

*In recognition of excellence for specimen identification to Genus for*

*Eastern  
Chironomidae*

**SOCIETY FOR FRESHWATER SCIENCE**

  
\_\_\_\_\_  
Dr. Murray Colbo

**January, 2018**  
Date of Expiry

**RESUME**  
**Sam M. Call**

**Home Address:**



**Personal:**

Birth Date:



Birth Place:

**Education:**

Masters of Science Degree in Biology  
Eastern Kentucky University  
Richmond, KY 40475

Thesis: Benthic Macroinvertebrates as Indicators of Domestic  
Sewage Pollution in Town Branch and South Elkhorn  
Creek Riffles, Fayette and Woodford Counties, Kentucky.

Bachelors of Science Degree in Biology  
Minor in Chemistry  
Eastern Kentucky University  
Richmond, KY 40475

**Affiliations:**

Southeastern Water Pollution Biologist Association (SWPBA)  
I have served as President of SWPBA, and as a member of the  
Executive Committee.

Society for Freshwater Science (formerly the North American  
Benthological Society). I have served on three SFS executive  
committees.

**Employment:**

Date: August 2004 to Present

Employer: Self Employed  
1623 Amster Grove Road  
Winchester, KY 40391

Duties: I operate an aquatic biology/aquatic ecology consulting business  
from my residence. I analyze aquatic data and identify aquatic  
invertebrates and fish.

Date: August 2004 to May 2013

Employer: Bluegrass Community and technical College  
Cooper Drive  
Lexington, KY 40506

Position: Adjunct Professor

Duties: I taught general biology and general ecology courses to non-  
majors.

Dates: April 1981 to August 2004  
Employer: Kentucky Division of Water  
Ecological Support Section  
14 Reilly Road  
Frankfort, KY 40601  
Position: Environmental Biologist III (Aquatic Biologist)  
Duties: I coordinated the field and laboratory activities for the Watershed Biological Monitoring Program. This included the collection, analysis, and interpretation of biological and physicochemical data, as well as report development. My duties also involved the taxonomic identification of aquatic macroinvertebrates including freshwater mussels, crayfish, and aquatic insects.

Dates: March 1978 through December 1980  
Employer: Kentucky Nature Preserves Commission  
801 Schenkel Lane  
Frankfort, KY 40601  
Position: Aquatic Biologist  
Duties: I supervised field activities, which included collecting biological and physicochemical data. I was also responsible for taxonomic identification of aquatic macroinvertebrates, analyzing and interpreting macroinvertebrate data, as well as report development.

Dates: June 1973 through March 1978  
Employer: Lexington-Fayette Urban County Health Department  
650 Newtown Pike  
Lexington, KY  
Position: Environmental Health Supervisor  
Duties: I supervised the activities in the water pollution, drinking water, and solid waste programs as well as a water pollution laboratory. I was also responsible for the resolution of complaints from the public concerning the aforementioned programs.

**Additional  
Experience and  
Qualifications:**

I have provided complimentary consulting services to the University of Kentucky's Anthropology Department, Kentucky Heritage Commission, Kentucky Historical Society, Kentucky Nature Preserve Commission, Kentucky Department of Fish and Wildlife, Kentucky Department of Transportation, United States Army Corps of Engineers, United States Forest Service, United States Environmental Protection Agency, University of Alaska's Environmental and Natural Resources Institute, two Provincial Canadian environmental agencies and numerous other states environmental agencies. I have also served as a paid consultant

to several private consulting firms and various government agencies. I have routinely taken biology courses since receiving my masters degree. I have an excellent knowledge of Kentucky freshwater mussels, crayfish, and aquatic insects. I also have a working knowledge of Kentucky fishes.

**Publications:**

A list of publications is available upon request.

**Hannah L. Stout, Ph.D.**  
*Aquatic Entomologist*

hannahs@whmgroup.com  
(814) 689-1650 ext. 137

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**EDUCATION**

**Ph.D. -- Entomology** *Aug 2005 – May 2012*  
**The Pennsylvania State University** *University Park, PA*

Dissertation: "The green drakes of Spring Creek: Toward reestablishing a population of the mayfly *Ephemera guttulata* Pictet 1843 (Ephemeroptera: Ephemeridae)"

**B.S. -- Biobehavioral Health** *Aug 1999 – Dec 2002*  
**Neuroscience Minor**  
**The Pennsylvania State University** *University Park, PA*

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**TAXONOMIC CERTIFICATIONS**

Society for Freshwater Science

- **Aquatic Insect Families of North America** *Jan 2013 – Jan 2018*
- **EPT Genera of Eastern North America** *Jun 2013 – Jun 2018*

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**PROFESSIONAL EXPERIENCE**

**Aquatic Entomologist**

- The WHM Group<sup>SM</sup> *State College, PA* *Oct 2012 - present*
- Spring Creek Watershed Association *State College, PA* *Apr 2012 – Feb 2013*

**Founder and Principal Investigator**

*Jan 2009 – present*

Green Drake Restoration Project *State College, PA*

**Graduate Research and Teaching Assistant**

*Aug 2005 – May 2011*

Department of Entomology  
The Pennsylvania State University *University Park, PA*

**Assistant Director**

*May – Jun 2008*

Bug Camp for Kids  
The Pennsylvania State University *University Park, PA*

**Docent Coordinator**

*Apr 2006 – Jun 2008*

Frost Entomological Museum  
The Pennsylvania State University *University Park, PA*

**Parataxonomist**

*Jun – Aug 2006*

Invertebrate Inventory of Gettysburg National Military Park  
Center for BioDiversity Research  
The Pennsylvania State University *University Park, PA*

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**AWARDS**

**Graduate Student Conservation Research Award** *May 2009*  
Society for Freshwater Science

**College of Agricultural Sciences Graduate Student Travel Award** *Oct 2007*  
The Pennsylvania State University *University Park, PA*

**William Yendol Memorial Research Award** *Oct 2007*  
The Pennsylvania State University *University Park, PA*

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**CONSERVATION PROJECTS**

**Green Drake Restoration Project** *State College, PA* *Jan 2009 – present*

What began as my dissertation research evolved into a “town and gown” collaboration of volunteers, working together to restore Spring Creek's once-legendary "eastern green drake" mayfly population. Annual reintroduction efforts began in 2009, and are expected to continue in the years to come.

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**PROFESSIONAL MEMBERSHIPS**

Entomological Society of America  
Society for Freshwater Science  
The Xerces Society for Invertebrate Conservation



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## **WEBSITES**

**The WHM Group<sup>SM</sup> - Entomological Consulting Services:**

<http://www.whmgroup.com/Entomological/HomePage>

**LinkedIn Profile:** [www.linkedin.com/pub/hannah-stout/b/570/a30](http://www.linkedin.com/pub/hannah-stout/b/570/a30)

**Green Drake Restoration Project on Facebook:**

<https://www.facebook.com/GreenDrakeRestorationProject>

**Green Drake Restoration Project on Twitter:** <https://twitter.com/GDRP2009>

**Green Drake Restoration Project on YouTube:**

<http://www.youtube.com/user/GDRP09>

# TAXONOMIC CERTIFICATION

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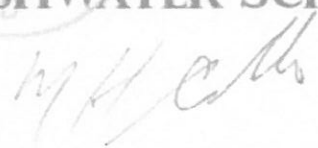
***HANNAH STOUT***

*In recognition of excellence for specimen identification to Genus for*

*Eastern*

*Ephemeroptera, Plecoptera & Trichoptera*

**SOCIETY FOR FRESHWATER SCIENCE**

  
\_\_\_\_\_  
Dr. Murray Colbo

July, 2018  
Date of Expiry

# Appendix B

## Bench Sheet & QA/QC Form

**BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET**

Stream Name _____						Location _____											
Station # _____			Rivermile _____			Stream Class _____											
Lat _____			Long _____			River Basin _____											
# of Kicks _____						Agency _____											
Collected By _____			Date _____			Lot # _____											
Taxonomist _____			Date _____			Subsample Target 100 200 300 Other _____											
Organisms					No.	LS	TI	TCR	Organisms					No.	LS	TI	TCR
Oligochaeta									Megaloptera								
Hirudinea									Coleoptera								
Isopoda																	
Amphipoda									Diptera								
Decapoda																	
Ephemeroptera									Gastropoda								
									Odonata								
Plecoptera																	
									Hemiptera								
Trichoptera									Other								

<b>Subsampling/Sorting QC</b> Primary Sorter _____  Sort Date _____  QC YES NO  QC Date _____  QC Officer _____ _____	Number of grids picked: _____ Time expenditure _____ No. of organisms _____ Indicate the presence of large or obviously abundant organisms  _____ % Sorting Efficiency (>90%= Pass;<90%=Fail)  <p style="text-align: center;"><i>Percent Sorting Efficiency:</i>  <math>PSE = A / A+B \times 100</math></p> <p><i>A = # of organisms counted by Primary Sorter</i>  <i>B = # of organisms counted by QC Officer</i></p> Action taken:
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<b>Taxonomic QC</b> Primary Taxonomist _____  Date of ID _____  QC Yes No  Second Taxonomist _____ _____  Date of QC _____	_____ PDE      _____ PTD Percent Difference in Enumeration (PDE) Percent Taxonomic Disagreement (PTD)  <p style="text-align: center;"><math>PDE = (n^1 - n^2) / (n^1 + n^2) \times 100</math>  <math>PTD = (1 - comp_{pos} / N) \times 100</math></p> <p><i>n1 = number of specimens counted by Primary Taxonomist</i>  <i>n2 = number of specimens counted by Second Taxonomist</i>  <i>comp<sub>pos</sub> = number of positive comparisons</i>  <i>N = total number of specimens in larger of two samples</i></p> Explain TCR Ratings of 3-5:
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	Organisms	No.	LS	TI	TCR
Other					

Taxonomic certainty rating (TCR) 1-5: 1= most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills).  
 LS= Life stage: I = immature; P = pupa; A= adult  
 TI= Taxonomists initials

DEP16309  
 BID SHEET

Item No.	Quantity	Description	Unit Price	Amount
1	500	Per sample un-sorted, identified to Genus level: 200-organism subsample	\$150.00	\$75,000.00
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 = \$75,400.00

Contractor: Capehead Environmental Consulting, Inc.

Signature: *[Handwritten Signature]*

Date: 10 Dec 13

**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.**

RFQ No. PEP 16309

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 exceed 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: Copperhead Environmental Consulting Inc.

Authorized Signature: [Signature] Date: 9 Dec 13

State of Kentucky

County of Garrard, to-wit:

Taken, subscribed, and sworn to before me this 9 day of Dec, 2013

My Commission expires 1-17, 2016

**AFFIX SEAL HERE**

**NOTARY PUBLIC**

[Signature]



**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.

Copperhead Environmental Consulting, Inc.  
(Company)

Chris Helfrich  
(Authorized Signature)

Chris Helfrich Biologist / PM  
(Representative Name, Title)

859-925-9812      859-925-9816  
(Phone Number)      (Fax Number)

9 Dec 13  
(Date)