

RiverStone Academy



2008 Education Catalog

riverstone academy 2008

Welcome to the Canaan Valley Institute's RiverStone Academy 2008. CVI has joined together with experts in the restoration industry, as well as academic institutions, to form a sensational training program. We are excited to continue offering our high quality courses in natural stream design and its applications. We have expanded our course offerings in 2008 to include topics such as stream restoration permitting, sustainable flood alleviation schemes, decentralized wastewater, and geographic information systems. Additionally, CVI will be the first institution to present a course on a stream assessment concept called WARSSS (Watershed Assessment of River Stability and Sediment Supply).



CVI recognizes the importance of continuing education for professionals working in their respective fields. We believe that **continuing education units (CEUs)** and professional development hours through a recognized institution of higher education ensure a quality educational experience. For this reason, Canaan Valley Institute has partnered with Pierpont Community & Technical College of Fairmont State University to provide CEUs for the RiverStone Academy courses. Please see the course descriptions for the CEUs offered for each workshop.



Promoting excellence in
environmental education

Additionally, CVI has adopted the North American Association of Environmental Educators (NAAEE) **Guidelines for Excellence**. The NAAEE developed a series of Guidelines that set the standard for high-quality environmental education. The Guidelines were developed by a diverse team of professionals and each has gone through a substantive review by thousands of professionals prior to its publication. NAAEE is taking the lead in establishing guidelines for the development of balanced, scientifically accurate, and comprehensive environmental education programs. Like the CEUs, the adoption is another way to ensure a quality, accurate, and comprehensive training program.

Thank you so much for your interest in CVI's education program as well as environmental restoration. Please join us for a quality educational experience that is entertaining as well as inspiring.

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**To register, go to www.canaanvi.org, 'Events and Education'
or call 1-800-922-3601**

gis fundamentals

Instructor: Janette Bennett,
CVI

Dates: March 12-13, 2008

Location: Canaan Valley Resort,
Davis, West Virginia

Length: 2 days

CEUs: 6

Cost: \$400; includes instruction,
CEUs, materials, books, lunches,
and snacks

Prerequisite: None

***Note:** Student must bring
laptop



Fundamentals of Geographic Information Systems

Geographic information systems (GIS) are a collection of functional mapping and analysis tools used by communities, watershed groups, and other agencies and organizations. This course will provide an intensive introduction to GIS, including a discussion and illustration of the applications pertinent to these various groups. ESRI ArcExplorer, free downloadable basic GIS software, will be used in this course. This course also explores the availability of tools and data on the Internet. The course will conclude with practical, hands-on exercises in ArcExplorer.

Who should attend: Anyone interested in understanding GIS and how GIS can be used for planning, decision making, stream restoration purposes, and many other applications. Also, anyone interested in performing analyses on digital data and producing maps for internal use, public information dissemination, or other applications.

Class size: 20 students

Participants will:

- Understand the general principles of geographic information systems (GIS)
- Recognize how GIS is used in environmental applications
- Become familiar with the available tools and data for GIS
- Explore the basic functionality of GIS through basic hands-on exercises

stream surveying

Introduction to Stream Surveying

This one and one-half day class provides an introduction and overview to surveying techniques as applied to fluvial geomorphology. The class will begin with an overview of methods and equipment. The class will be field-based in order to receive hands-on experience with data collection. Students will also analyze and review data in the classroom.

Who should attend: Biologists, hydrologists, engineers, natural resource personnel, habitat specialists, permitting officials, stream restoration designers, construction supervisors and managers, and others involved in stream restoration projects

Class size: 40 students

Participants will:

- Understand basic surveying skills
- Understand how to use surveying equipment
- Survey a longitudinal profile and cross section
- Practice measuring bed materials
- Become proficient in recording and processing data

Instructors: CVI staff

Dates: April 3-4, 2008

Location: Canaan Valley Resort,
Davis, West Virginia

Length: 1.5 days

CEUs: 4

Cost: \$425; includes instruction,
CEUs, materials, books, lunch, and
snacks

Prerequisite: None





wastewater

Instructors : CVI staff and guest instructors

Dates: April 8-9, 2008

Location: Canaan Valley Resort, Davis, West Virginia

Length: 2 days (1.5 classroom and 0.5 days field)

CEUs: 7

Cost: \$450 (engineers) or \$250 (nonprofit organizations, local and state agencies, and academic institutions); includes instruction, CEUs, materials, books, field transportation, lunches, and snacks

Who should attend: Planners, local government officials, watershed groups, engineers, state agency staff, professors, water utility staff, and public service district board members and staff

Class size: 40 students

Prerequisite: None

Decentralized Wastewater in West Virginia

Many of West Virginia's rural communities lack adequate wastewater treatment. At the same time, newer housing developments are increasingly situated in isolated areas far from existing infrastructure. In the face of dwindling funding, new and creative approaches to wastewater treatment are critically needed.

Decentralized wastewater technologies have successfully been applied in other states, and the trend is quickly gaining momentum in West Virginia. This course will provide participants with an overview of decentralized wastewater technologies, as well as system components and manufacturers. New rules, regulations, and practices governing decentralized wastewater in West Virginia will be reviewed. Case studies and examples of regional wastewater planning efforts, private and public funding packages, and management of community systems incorporating decentralized technologies will be presented.

Participants will:

- Understand decentralized wastewater technologies, including system components, and manufacturers
- Become familiar with new rules, regulations, and practices governing decentralized treatment from the WV Public Service Commission, WV Department of Environmental Protection, and the WV Bureau of Public Health
- Hear lessons learned from case studies of successful decentralized wastewater projects from communities across the region

watershed assessment

Watershed Assessment of River Stability and Sediment Supply (WARSSS)

WARSSS is a technical framework of methods for assessing suspended and bedload sediment in rivers and streams. WARSSS (a web-based assessment tool) was designed to assess sediment-impairment for restoration planning purposes. CVI has been conducting a WARSSS assessment since 2005, one of the first in the country. The project has incorporated historical aerial photography, LiDAR data, fluvial geomorphological assessments, local stakeholder support and input, bedload and suspended sediment sampling, benthic macroinvertebrate sampling, and fish surveys. This workshop will review some of the products and lessons learned from this WARSSS study, and will attempt to explain how the information learned has informed restoration efforts in the watershed. This process can be used to aid in the development of a total maximum daily load (TMDL) for sediment.

Who should attend: Watershed managers and anyone who has an interest in assessing watersheds to implement solutions to sediment and sediment-related problems.

Class size: 40 students

Participants will:

- Understand the natural variability in sediment dynamics
- Gain an understanding of sediment sources
- Review erosional and depositional processes
- Predict sediment loads
- Analyze stream channel stability and departure from reference conditions

Instructors : CVI staff

Dates: April 29-May 1, 2008

Location: Canaan Valley Resort,
Davis, West Virginia

Length: 3 days

CEUs: 12

Cost: \$950; includes instruction, CEUs, materials, books, field transportation, lunches, and snacks

Prerequisite: None



stream processes

Instructors: Steven Kite, PhD,
Todd Petty, PhD, and Donald Gray,
PhD, West Virginia University;
Neal Carte, West Virginia
Division of Transportation

Dates: May 19–22, 2008

Location: Ramada Inn,
Morgantown, West Virginia

Length: 3 days

CEUs: 14

Cost: \$950; includes instruction,
CEUs, materials, books, field
transportation, lunches, and
snacks

Prerequisite: None

Introduction to Stream Processes and Ecology

This course introduces the fundamentals of stream channel dynamics, structure, functions, and ecology that serve as the basis for natural stream design and river corridor restoration. The workshop will concentrate on the response of rivers and streams to physical, chemical, and biological inputs. An overview of stream assessment will be reinforced by collecting field data. Although applied fluvial geomorphology and freshwater ecology are global issues, particular attention will be paid to geological history, on-going processes, land uses, and restoration goals unique to Mid-Atlantic Highland rivers and streams.

Who should attend: Anyone working in the monitoring, assessment, or design of stream restoration or reclamation projects; officials; planners; and construction supervisors

Class size: 40 students

Participants will:

- Recognize the many functions and components of rivers and streams
- Identify bankfull stage indicators
- Analyze hydraulic geometry to understand the significance of bankfull
- Collect basic geomorphology and habitat data in the field
- Classify a stream reach at a beginner skill level





stream morphology

Applied Fluvial Geomorphology: Rosgen I

This introductory course is designed to familiarize students with the fundamentals of river behavior and the general principles of fluvial geomorphology, sedimentation, hydraulics, restoration, fish habitat improvement, riparian grazing management, and stream bank erosion. Applications of these principles will be presented utilizing a stream classification system. Problem solving techniques for watershed management, riparian assessment, fish habitat structure evaluation, stream restoration, and nonpoint source pollution, as well as the integration of ecosystem concepts into watershed management, will be taught. A combination of both lecture and field application will be provided. This course is a prerequisite for Wildland Hydrology's River Morphology, River Assessment and Monitoring, and River Restoration and Natural Channel Design. This has been the basic river morphology course offered throughout North America since 1986.

Participants will:

- Review the concepts of fluvial geomorphology and the role of the river including discharge and flood frequency, valley morphology, and bankfull discharge
- Explore the role of sediment processes, shear stress, and transport relations
- Understand the stream classification system's necessity to restoration and relationship to geomorphology through application of the classification process
- Perform a field assessment
- Review traditional restoration methods and natural stream design projects
- Participate in discussion on lessons learned

Instructors: Dave Rosgen, PhD, Wildland Hydrology ; Field instruction by CVI staff

Dates: June 2-6, 2008

Location: Canaan Valley Resort, Davis, West Virginia

Length: 4.5 days (2.5 classroom & 2 field days)

CEUs: 16

Cost: \$1,850; includes instruction, CEUs, materials, books, field transportation, lunches, and snacks

Prerequisite: Strong survey skills

Who should attend: Biologists, hydrologists, natural resource personnel, permitting officials, stream restoration designers, and construction supervisors/managers

Class size: 40 students

nsd construction

Instructors: CVI staff

Dates: June 24-26, 2008

Location: Canaan Valley Resort,
Davis, West Virginia

Length: 3 days

CEUs: 8

Cost: \$950; includes instruction,
CEUs, materials, books, field
transportation, lunches, and
snacks

Prerequisite: None

Natural Stream Design Construction Workshop

Natural stream design (NSD) is being applied to a wide spectrum of environmental restoration projects, including highway bridge construction, flood management, coal mine reclamation, water quality, and in-stream habitat improvement. Aimed at project designers, construction site managers, and equipment operators, the course will provide step-by-step instruction from initial background concepts, through site management and construction, to final clean-up. Students will spend two days on a CVI project under construction that includes pattern, dimension, and profile restoration. Training will be provided on construction stakeout and installation of in-stream structures. This workshop will be an intensive mix of classroom and field work.

Who should attend: Project designers, construction supervisors/managers, equipment operators, and permitting officials

Class size: 40

Participants will:

- Review the basic principles of watershed science and fluvial geomorphology
- Walk through the entire stream restoration process from initial design, through site management and construction, to final clean-up
- Practice techniques to improve communication between a project's sponsor, designer, permit reviewer, and site supervisor



assessment & analysis

Assessment and Analysis of Stream Channels and Habitats

This course is a field-oriented fortification of the fundamentals of stream science, geared toward geomorphic characterization and habitat assessment. A team-based approach will be used, although all participants will have the opportunity to try each field assessment technique. Map and field methods will be used to determine the hydraulic geometry of rivers and streams, characterize bedload sediment, and assess bank stability. Habitat assessment will focus on measures of overall stream health, including channel features suitable for targeted aquatic species. The workshop will also explore natural habitat features that can be replicated by in-stream structures and other restoration techniques.

Who should attend: Anyone working in the monitoring, assessment, or design of stream restoration or reclamation projects; officials; planners; and construction supervisors

Class size: 40 Students

Participants will:

- Measure morphologic attributes indicative of essential fluvial processes and stream characterization
- Identify bankfull flow indicators and characterize bedload material
- Utilize real-world data to assess hydraulic geometry and classify a variety of streams
- Collect and assess fish habitat data

Instructors: Steven Kite, PhD, and Todd Petty, PhD, West Virginia University; Neal Carte, West Virginia Division of Transportation

Dates: July 7-11, 2008

Location: Blackwater Falls State Park, Davis, West Virginia

Length: 4 days

CEUs: 16

Cost: \$950; includes instruction, CEUs, materials, books, field transportation, lunches, and snacks

Prerequisite: Completion of Introduction to Stream Processes and Ecology, Wildland Hydrology Course I, or consent



stream design

Instructors: Will Harman,
Michael Baker Corporation; Steve
Kite, PhD, West Virginia University

Dates: July 28-August 1, 2008

Location: Sleep Inn & Suites,
Princeton, West Virginia

Length: 4.5 days

CEUs: 16

Cost: \$1,500; includes instruction,
CEUs, materials, books, field
transportation, lunches, and
snacks

Prerequisite: Introduction to
Stream Processes and Ecology AND
Assessment and Analysis of Stream
Channel and Habitats, Applied
Fluvial Geomorphology, or consent

Natural Channel Design Techniques

This workshop will provide participants with an overview of the natural channel design process, building on techniques learned in Introduction to Stream Processes and Ecology and Assessment and Analysis of Stream Channel and Habitats courses. The workshop will cover a variety of natural stream design concepts, including watershed and geomorphic assessments, hydrology and hydraulics, natural stream design, sediment transport, sediment and erosion control, and bank stabilization. Participants will work through two problem sets: one for a low gradient, alluvial valley setting and one for a steep gradient headwater setting. Emphasis will be placed on the processes that affect channel geometry and why certain design techniques are more conservative than others.

The workshop will include a tour of a wide variety of restoration projects in the Mitchell River Watershed in North Carolina. Participants will visit examples of steep gradient, step-pool channels; small, low gradient meandering streams; and sites where in-stream structures were used to improve fish habitat.

Who should attend: Engineers and scientists from
public agencies and private companies

Class size: 40 students

Participants will:

- Understand the diverse and required river assessment procedures
- Review the monitoring requirements to sustain a successful project



stream ecosystems

Stream Ecosystem Assessment for Mitigation and Restoration

This course focuses on sampling and analysis techniques used to quantify stream ecosystem structure and function. There is a special emphasis placed on stream assessments needed for permitting, mitigation plan development, and monitoring stream restoration projects. Field sessions will allow participants the opportunity to assess riparian habitats and functions; identify physical, chemical, and biological characteristics of stream ecosystems; and perform water quality sampling. Statistical analysis of habitat and biological data collected in the field will conclude the workshop.

Who should attend: Anyone working in the monitoring, assessment, or design of stream restoration or mitigation projects; officials; planners; and construction supervisors

Class size: 40 students

Participants will:

- Review the physical, chemical, and biological processes influencing stream ecosystems
- Design and conduct stream ecological assessments in accordance with requirements from state and federal regulatory agencies
- Utilize data to quantify the current ecological condition of the stream
- Analyze data to identify key physical and chemical factor limiting aquatic ecosystem health and determine how best to design a restoration and monitoring program
- Use ecological data to assess the effectiveness of stream restoration or mitigation projects

Instructor: Todd Petty, PhD, West Virginia University

Dates: August 3-8, 2008

Location: Camp Caesar, Cowen, West Virginia

Length: 5 days

CEUs: 16

Cost: \$1,180; includes instruction, CEUs, materials, books, field transportation, and lodging with meals while in residence

Prerequisite: None.

This course may be taken for credit (3 hours graduate level) through the WVU Division of Forestry and Natural Resources



permitting

Instructors: Jim Rawson and Ken Dzaack, CVI

Dates: August 20, 2008

Location: Canaan Valley Resort, Davis, West Virginia

Length: 1 day

CEUs: 3

Cost: \$350; includes instruction, CEUs, materials, manual, lunch, and snacks

Prerequisite: None

Natural Stream Design Permit Process in West Virginia

This course will provide an overview of federal, state, and local permit requirements for stream restoration projects in West Virginia. The range of permits required will be outlined and available guidance discussed. The course will describe the administrative steps and regulatory requirements of the permit application process. It will also outline the permit monitoring conditions and reporting requirements.

Who should attend: Contractors, resource agencies, restoration firms, and consultants

Class size: 40 students

Participants will:

- Become familiar with the permit process including a timeline for application and delivery
- Know which permits are needed for a project
- Become familiar with the applications and what information should be included
- Understand the compliance process with the permit conditions





river management

River Management for Transportation Engineers

Transportation corridor construction can contribute to stream channel destabilization. Transportation infrastructure can also be vulnerable if in-stream and watershed changes, either natural or manmade, trigger instability that migrates through the river system. This course addresses the processes that control river morphology and why river channels are destabilized. It also provides a river classification scheme for assessing river conditions, which is a useful tool for understanding how channel modifications function. The course focuses on processes that can control the river's natural capacity, flood, and sediment conveyance. The latest information on natural stream design will be presented.

Class size: 40 students

Participants will:

- Recognize how natural rivers function and the need to design with nature
- Understand why bankfull discharge is critical to project design
- Collect field data to undertake river classification and preliminary river stability assessments
- Introduce solutions for designing natural and sustainable stream channel and transportation infrastructure interactions
- Prepare preliminary designs based on field data

Instructors: Richard Hey, PhD, PE, University of Birmingham, Edgbaston, UK, and Michael Baker Corporation

Dates: September 15-19, 2008

Location: Canaan Valley Resort, Davis, West Virginia

Length: 4.5 days (2.5 classroom & 2 field days)

CEUs: 16

Cost: \$1,500; includes instruction, CEUs, materials, books, field transportation, lunches, and snacks

Who should attend: Engineers working in the transportation sector

Prerequisite: None

sustainable river design

Instructor: Richard Hey, PhD, PE, University of Birmingham, Edgbaston, UK, and Michael Baker Corporation

Dates: September 22-26, 2008

Location: Canaan Valley Resort, Davis, West Virginia

Length: 4.5 days (2.5 classroom & 2 field days)

CEUs: 16

Cost: \$1,500; includes instruction, CEUs, materials, books, transportation, lunches, and snacks

Who should attend: Engineers, permitting officials, stream restoration designers, planners, floodplain managers, construction supervisors and/or managers, and others involved in transportation, floodplain management, and stream restoration projects

Class size: 40 students

Prerequisite: None

Design of Sustainable River Channels for Flood Events

Stream channel modifications to provide relief from flooding can adversely impact the stability of rivers by changing their flow and sediment transport characteristics. To maintain these modifications, major investments are often required. This is not only expensive but is also detrimental to the conservation, fisheries, and amenity value of the aquatic environment. To avoid these problems, engineering works need to be developed that are in harmony with river and watershed processes to sustain a river's diverse functions. This course reviews the effect of various types of flood alleviation schemes on river stability. Current information on natural stream design procedures will be presented.

Participants will:

- Understand why common flood alleviation engineering processes can fail
- Recognize how natural rivers operate and the importance of designing with nature
- Appreciate why bankfull discharge is critical to project design
- Collect field data to classify a river channel and assess river stability
- Obtain latest scientific solutions for designing natural and sustainable flood alleviation schemes
- Develop preliminary designs based on field data



instructor bios

For expanded instructor bios, photos, and links, visit Canaan Valley Institute at www.canaanvi.org under 'Events and Education'

Janette Bennett has a strong educational background in the application of GIS technology to human health and resource management issues. Ms. Bennett coordinates and conducts education-based GIS initiatives, develops spatial products relating to community-led initiatives, and designs GIS solutions with the best spatial data available to enhance local decision-making. She has provided support to the Aquatics Resources Team in surveying longitudinal profiles and stream cross sections to monitor effects of natural stream design projects.

Dave Clark works directly with local governments, community planning groups, and watershed associations focused on infrastructure development, land use planning, and education initiatives. At CVI, Mr. Clark assists with the development and implementation of comprehensive wastewater treatment strategies, groundwater protection plans, farmland protection and easement programs, and community-based education initiatives. He currently works with groups in the Southern Coalfields and elsewhere, utilizing decentralized wastewater technologies to address water quality concerns. Mr. Clark is an AICP Certified Planner.

Neal Carte has 16 years experience as a stream and wetland specialist. His work has included field surveys for highway project impacts, technical assistance in developing plans for stream restoration projects, and supervision of crews working on wetland replacement and stream restoration projects utilizing natural stream design. Mr. Carte instructs courses in natural stream design in affiliation with West Virginia University and is associated with planning, research, and monitoring efforts involving the use of native plants for highway plantings along West Virginia highways.

Ken Dzaack has extensive experience leading crews and managing various types of construction and landscaping projects. He has hands-on and classroom experience in surveying, sediment sampling, heavy equipment operation, site management, budgeting, and permit compliance. Mr. Dzaack has completed Wildland Hydrology's Level II training and NSD construction management training. He has spent the majority of his time working on CVI's Horseshoe Run restoration project in Tucker County, WV.

Ryan Gaujot has a BS and MS in Geology, with additional training in hydrology, limnology, geomorphology, surveying, and reclamation. Mr. Gaujot provides technical assistance to communities, associations, agencies, and other businesses in watershed assessment, planning,



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► design, and monitoring of natural stream design projects. He has completed Wildland Hydrology training through Level IV and has assisted as a technical instructor in over six-hundred hours of CVI's NSD training courses. He is also a certified FEMA floodplain manager.

Donald Gray is a professor and group coordinator for Environmental and Hydrotechnical Engineering in the Department of Civil and Environmental Engineering at West Virginia University. He has been a principal lecturer in more than a dozen short courses on natural stream restoration, alternative sewer design, and urban stormwater systems. Dr. Gray completed his graduate and doctoral work at Purdue University. He has authored or co-authored over 100 papers and reports on various aspects of fluid mechanics.

Will Harman is recognized as a national leader in stream geomorphology and natural stream design. In the course of his 16-year career, he has participated in dozens of ecosystem restoration projects across the southeastern United States and beyond. As vice-president of Ecosystem Restoration for the Michael Baker Corporation where he provides technical oversight and natural stream design assistance to engineers, scientists, and their clients. Mr. Harman was a founder and owner of River Works,

Inc., which was formed in November 2003 to specialize in stream and wetland restoration construction. As a member of the faculty at North Carolina State University, Mr. Harman co-founded and led the North Carolina Stream Restoration Institute and served as chair of the North Carolina Stream Hydrology Task Force.

Richard Hey is a professor of Applied Environmental Sciences in the School of Environmental Sciences at the University of Birmingham, Edgbaston, in the United Kingdom, specializing in river mechanics and engineering. He was awarded a PhD from Cambridge University for his research on the morphology of gravel-bed rivers. Dr. Hey is a member of the American Society of Civil Engineers and the Chartered Institute of Water and Environmental Management. His research, funded by UK Research Councils, has focused on the processes controlling natural river morphology and the development of design equations for predicting their dimension, pattern, and profile.

Steve Kite earned a PhD from the University of Wisconsin in 1983. Since then, Dr. Kite has taught geomorphology in the Department of Geology and Geography at West Virginia University. Much of his research has focused on the geoarcheology and long-term geologic history of the Appalachians and the Ohio River Valley. Dr. Kite has



instructor bios

been an active member of the Geological Society America, chairing the Society's 1,400 member Quaternary Geology and Geomorphology Division in 2002 and 2003.

Todd Petty received a PhD in Forest Resources from University of Georgia at Athens. As an associate professor of Aquatic Sciences at West Virginia University, he teaches courses in freshwater biology, watershed restoration and management, and population ecology. Dr. Petty's research focuses on basic stream ecology, fish population and community ecology, and stream and watershed restoration. Specifically, his research examines how best to design restoration programs to maximize biodiversity and stream ecosystem function at a watershed scale.

Jim Rawson received a BS and MS in Forestry from West Virginia University. Mr. Rawson has worked for the Wildlife Resources Section of WV Division of Natural Resources. His work experience includes wildlife research, planning, environmental compliance, and permitting. Mr. Rawson has completed Wildland Hydrology's Level I training and is a certified wetland delineator. His duties at CVI have included project management, liaison with resource and regulatory agencies, and environmental compliance and permitting.

Dave Rosgen is a registered professional hydrologist and principal hydrologist of Wildland Hydrology Consultants. He has 42 years of experience in stream morphology; restoration; sedimentology; stream classification development and applications; grazing and riparian systems management; cumulative water resource impact assessment and modeling; and fish habitat enhancement. He also conducts research in river studies. Dr. Rosgen designs, supervises, contracts, and monitors a variety of large scale river restoration projects throughout the United States. Dr. Rosgen conducts short courses throughout North America for government agency personnel, universities, and consulting firms in river morphology, restoration, and hydrology. He is the author of *Applied River Morphology*, published in 1996.

Ed Watson received a MS in Forestry from the University of Montana. Mr. Watson has designed and constructed eight restoration/stabilization projects and is currently working on a final design for Blacks Run in Purcell Park in Harrisonburg, VA. Trained through Level IV, he has assisted in hosting many of CVI's Wildland Hydrology courses. Mr. Watson has five years of experience using LiDAR data to perform hydraulic modeling using HEC-RAS and more than nine years using ESRI's ArcView, ARCGIS, and ARCInfo.



For more information about Canaan Valley Institute's services and programs or to register for a course, visit our website at www.canaanvi.org