

**Appalachian Ecosystem Restoration;
Stream Restoration Techniques and Case Studies in “Coal Country.”**

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Abstract: Ecosystem Restoration in the Appalachian region of the Mid-Atlantic has become synonymous with coal mining for many stream restoration practitioners. Subsurface deep mining and surface mining stretch across the mountainous regions of West Virginia, Ohio, Kentucky, Pennsylvania, and more infrequently in some southern states such as Virginia and Tennessee. Our society has relied upon the extraction of coal as a primary energy resource for decades and the culture in these regions have developed to accommodate this demand. Coal provides our country with affordable energy and often times results in environmental impacts that require mitigation to maintain healthy ecosystems. This type of mitigation is challenging and requires techniques that are unusual and intuitive. West Virginia has developed an in-lieu fee program and mitigation banks to compensate for impacts at offsite locations, however, many of the available sites that are suitable for restoration have historical mining impacts of their own. Therefore, to practice ecosystem restoration in “coal country” we need to understand and except the challenges that exist there. The topics discussed in this presentation will include the challenges and techniques used on streams in Appalachia for subsidence mitigation, high gradient headwater stream restoration along contour (high wall) mining, flow loss mitigation and the use of subsurface liners, and restoration at large scale surface mines.

About the Speakers: Nathan Ober is a geomorphologist and Ecosystem Restoration practice lead for Civil and Environmental Consultants, Inc. As a geomorphologist, Mr. Ober has managed and designed 40+ miles of stream restoration projects, drawing from more than 10 years of experience in fluvial geomorphology, natural channel design, construction management, and post-restoration monitoring. Previously of Stantec, Mr. Ober provided stream assessment and restoration design services, as well as environmental and geotechnical consulting for clients throughout the Southeast and Mid-Atlantic regions.