Duck Creek Watershed Study

Background and Overview

Duck Creek is a tributary of the Ohio River, approximately 30 miles long, in south eastern Ohio and drains into the Ohio River at its mouth near Marietta. The creek drains an area of 287 sq. miles in Washington, Noble, Guernsey, and Monroe counties and consists of two main tributaries, East Fork, approx. 20 miles long, and West Fork, approx. 30 miles long.

A contract was entered into between The Ohio State University, Department of Civil, Environmental and Geodetic Engineering and the Ohio Coal Association in October of 2012. Part I – “A Closer Look at Coal Remining: A review of Duck Creek Watershed and Remining’s Role on Mitigating the Impacts from Pre-law Legacy Mining” study chronicles the impacts from legacy mining (pre-1972) and its impacts on the land and water resources in Duck Creek Watershed highlighting data in the State funded “Land Reborn Study” (1974).

In 1972, Ohio passed the most stringent and rigorous surface mine law in the country. This law required mine operators to save topsoil, backfill highwalls, control runoff, reclaim and revegetate all affected areas, and minimize impacts to the hydrologic regime. Following the passage of modern mining laws, the active forces of remining and state administered abandoned mined land (AML) projects, combined with the passive forces of attenuation or time, have allowed the watershed to make a dramatic improvement in the land and water resources in the watershed. These improvements are described in the study, on a sub-watershed basis, comparing water quality and land form changes from different sources and time frames.

Watershed highlights up to 2009:

- Prior to 1975, 3,467 acres of abandoned surface mine lands were unreclaimed.
- 895 acres have been reclaimed.
- 553 acres or 16% reclaimed by remining.
- 342 acres were reclaimed through the use of federal AML grants on state administered AML projects.
- By 1975, there were 239 miles of unreclaimed highwall present.
- 40 miles of highwall have been eliminated as a result of remining.
- 199 miles of dangerous highwalls remain unreclaimed.

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Monitoring data indicate that water quality steadily improved for four streams in the Duck Creek Watershed adversely affected by legacy mining and enhanced by remining (green). Two of those streams also experienced AML projects. Conversely, watersheds with no remining present failed to reach full attainment status (red). Beginning in the late 1970’s remining operations began re-affecting legacy sites and reclaiming those areas to modern mining standards. Concurrently, legacy sites began the long process of attenuation where pyritic material became oxidized and volunteer grass and tree species became established on some areas. AML projects were also conducted in the Duck Creek Watershed. When considering the processes occurring in the Duck Creek Watershed including remining, AML reclamation projects, and time or attenuation, the active force of remining is the quickest and most cost effective approach.

Best Management Practices (BMP) in remining operations are used to improve the hydrologic balance and reduce pollutants. Previous coal-augered areas are often a source of AMD production and remining eliminates this source. B&N Coal Company approaches this type of remining operations on a subwatershed basis that covers extensive amount of acres (above).

In summary, remining minimizes environmental risks to local communities, protects the public from dangerous landforms, and provides an ecological and terrestrial lift to the watershed. Remining mitigates impacts from legacy surface mining, and thus, should be granted mitigation status or credits by the regulatory authorities.

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