

## **Establishment of Vegetation in Constructed Wetlands using Biosolids and Quarry Fines<sup>1</sup>**

Timothy P. Danehy, EPI<sup>2</sup>, Robert Zick<sup>3</sup>, Dr. Fred Brenner<sup>4</sup>, Dr. Jerry Chmielewski<sup>5</sup>, Margaret H. Dunn, PG<sup>6</sup>, Charles D. Cooper, PE<sup>7</sup>

**Abstract.** A common problem with constructing wetlands on abandoned mine sites is the lack of adequate soil needed to establish vegetation. One component of a full-scale passive treatment system built at Jennings Environmental Education Center in Brady Township, Butler County, PA addressed this issue through the development of a "field trial" to find an inexpensive alternative substrate for wetland plants. A simple soil "recipe" was followed which called for the mixing of an inorganic material with a nutrient-rich organic material. The inorganic constituent used was silt-size pond cleanings from a sand and gravel operation. The organic material used was a composted product made from exceptional-quality biosolids. Both soil components were obtained from local sources (less than 16 kilometers (12 miles) from the site) and mixed on site with a Caterpillar 963 track loader. The soil was used to construct a channel wetland 3 meters (10 feet) wide by 61 meters (200 feet) long. A seed mixture which contained 24 different wetland plant species native to western Pennsylvania was added to the substrate prior to releasing the water from the vertical flow system into the wetland. After one year, the vegetation was studied to determine the percent cover and species composition in order to document the effectiveness of this method of wetland construction. The preliminary results of this study indicate that this is an effective means to establish and sustain wetland vegetation. The addition of a fabricated substrate consisting of composted biosolids and silt can be a very effective method to establish dense and diverse vegetation in a constructed wetland.

**Additional Key Words:** Acid Mine Drainage, Passive Treatment, Abandoned Mine Reclamation

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<sup>2</sup>Timothy P. Danehy, EPI, Environmental Scientist, BioMost, Inc., 338 Glen Eden Road, Rochester, PA 15074.

<sup>3</sup>Robert Zick, Chester Engineers, 600 Clubhouse Drive, Moon Township, PA 15108.

<sup>4</sup>Dr. Fred Brenner, Professor of Biology, Grove City College, Grove City, PA 16127.

<sup>5</sup>Dr. Gerald Chmielewski, Associate Professor of Biology, Slippery Rock University, Slippery Rock, PA 16057.

<sup>6</sup>Margaret H. Dunn, PG, Stream Restoration Inc., 338 Glen Eden Road, Rochester, PA 15074.

<sup>7</sup>Charles D. Cooper, PE, C D S Associates, Inc. 1000 Hiland Ave. Coraopolis, PA 15108.