A COMPUTER-BASED MODEL FOR ESTIMATING MINE DRAINAGE TREATMENT COSTS[1]

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Abstract. In the last 20 years, coal mining in Appalachia has produced approximately 1500 pollutional discharges. State and Federal agencies are developing a strategy, which includes consideration of treatment costs, to ensure long-term treatment of these discharges. The U.S. Office of Surface Mining Reclamation and Enforcement, in cooperation with the states of Pennsylvania and West Virginia, developed a free Windows-based computer program, termed AMDTreat, designed to estimate the capital and annual costs to abate pollutional mine discharges. AMDTreat uses a three-step approach to estimate treatment costs: 1. Users enter water quality and quantity data, 2. Users "build" an active and/or passive treatment system by selecting the applicable treatment components from the software menu, and 3. Users customize each treatment system to site-specific conditions by controlling the size, quantity, and unit cost of treatment components. Treatment types for which AMDTreat can estimate costs include vertical flow pond, anoxic limestone drain, Mn removal bed, anaerobic and aerobic wetlands, oxic limestone channel, hydrated lime, caustic soda, anhydrous ammonia, pebble quicklime, and soda ash. The model combines costs from these treatment methods with costs of ancillary treatment components, such as settling ponds and ditching, to calculate a site-specific capital cost. Similarly, AMDTreat calculates annual costs by taking into account user-provided information regarding sampling, labor, maintance, pumping, chemical consumption, and sludge removal. Capital and annual costs can be used in conjunction with AMDTreat's financial forecasting utility to evaluate the economics of long-term treatment. Additional features of the application include the ability to forward predict or back calculate costs, and an extensive help system. AMDTreat was designed for anyone interested in mine drainage treatment; including State and Federal agencies, industry, and watershed groups.

If interested, one can download the computer software program from http://amd.osmre.gov/tt2/download.htm.

Additional Keywords: Passive Treatment, Chemical Treatment, Active Treatment, AMD, Acidity, Iron, and Chemistry

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