

CONSTRUCTING TREATMENT WETLANDS-MARYLAND'S EXPERIENCE. Frederick L. Bagley and Constance A. Lyons, State of Maryland, Department of Natural Resources, Bureau of Mines, 69 Hill Street, Frostburg, Maryland.

Maryland's experience building wetlands to treat acid mine drainage (AMD) began in 1986. To date, we have constructed or enhanced an additional 10 systems. Four additional systems will be built or enhanced in 1990. Our experience in Maryland indicates that constructing treatment wetlands in the field requires designing for natural differences. Variations in seep chemistry, seep flows, topography, slope and accessibility are factors to consider when planning a wetland system. Designs should plan for seasonal changes and annual flow variations. Future expansion or enhancement strategies can be included during initial construction plans. Flexible construction techniques and proper equipment have helped address the diverse nature of the AMD problem. In Maryland, multiple seeps at AMD sites are a frequent problem. Under conditions of low flow and/or moderate seep chemistry, multiple seeps are pooled before beginning wetland cell treatment. With more severe seep conditions (>10 gal/min, pH<4.5 and, Fe>50 mg/l), systems that separate and treat smaller quantities of water appear more effective. Cell size to flow ratios are 1500-2000 sq ft or larger for each gal/min. Contouring wetland cells to the topography maximizes limited space and provides a more natural looking system. Maryland is presently filling cells with a deep layer of manure compost and hay. Cattails are planted throughout the cells. Snags, up-rooted tree stumps and large rocks are utilized to enhance the naturalness of the wetland. Maryland has a strong commitment to research and develop wetland treatment technology. Water quality data is collected monthly at all sites. Several research projects inhouse and with outside consultants are planned for this year.

ADDITIONAL KEY WORDS: Flow ratios, techniques, multiple seeps, research

