EVALUATION OF GEOMORPHIC RECLAMATION PERFORMANCE AND MODELS IN THE SOUTHWESTERN UNITED STATES[1]

M. Stone[2], J. Stormont, E. Epp, C. Byrne, S. Rahman, R. Powell, W. Rider, and S. Perkins

Abstract: The objectives of this study are to assess the performance of geomorphic reclamation in the southwestern United States; analyze the effectiveness of the Water Erosion Prediction Project (WEPP) and Soil, Erosion, Discharge by Computer Aided Design (SEDCAD) models in describing watershed processes on geomorphically reclaimed land; and model watershed response to land cover change, climate change, and wildfire. The implementation of geomorphic reclamation is based on the idea that natural landscapes most often evolve over long periods of time under localized conditions. This creates a natural system that minimizes the impact of storm events. In its design, geomorphic reclamation formations are intended to mimic the surrounding natural systems and provide stability to a reclaimed landscape that traditional reclamation does not. This two-year study is being conducted at La Plata Mine in northwestern New Mexico with funding from the Office of Surface Mining. The study provides a unique opportunity for researchers from the University of New Mexico to work in partnership with industry personnel from BHP-Billiton - San Juan Coal Company. The study involves the monitoring and modeling of three catchments: two reclaimed watersheds and one natural watershed adjacent to the reclamation area. Monitoring and modeling of the sites has begun and performance of the La Plata reclamation is being assessed. Catchment basins and v-notch weirs have been installed on or near the sites to measure sediment yield and runoff volumes, respectively. Analysis of the watershed modeling will provide insight into the benefits modeling can have on geomorphic reclamation in the future.

Additional Key Words: sediment yields, process models

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[2] Mark C. Stone, Assistant Professor, Department of Civil Engineering, University of New Mexico, Albuquerque, NM, 87106; John C. Stormont, Professor and Chair, Department of Civil Engineering, University of New Mexico, Albuquerque, NM 87106; Edward Epp, Environmental Specialist, Environmental Services Department, BHP Billiton, Farmington, NM, 87401; Colin Byrne, Graduate Research Assistant, University of New Mexico, Albuquerque, NM, 87106; Shahedur Rahman, Graduate Research Assistant, University of New Mexico, Albuquerque, NM, 87106; Rachel Powell, Graduate Research Assistant, University of New Mexico, Albuquerque, NM, 87106; Warren Rider, Environmental Specialist, Environmental Services Department, BHP Billiton, Farmington, NM, 87401; Steven Perkins, Environmental Specialist, Environmental Services Department, BHP Billiton, Farmington, NM, 87401