

Application of Geomorphic Principles for the Reclamation of Surface Coal Mines in Wyoming

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Abstract: The state of Wyoming is the nation's leader in coal production, accounting for 35% of North America's coal production in 2004. With rising coal production trends predicted, Wyoming's coal regulatory program will continue to administer responsible extraction practices as well as insure environmental impacts are minimized. The reconstruction of an appropriate postmine topography is fundamental to achieving environmental compliance including acceptable surface water hydrology and sediment control. Wyoming coal producing regions demonstrate local landform features that have evolved within a semi arid environment and tertiary sedimentary geology. These landforms exist in what researchers have described as dynamic equilibrium. The challenge of reclamation is re-creating a postmine landform that can adequately handle projected forces acting upon the landform as well as satisfy the more immediate regulatory constraints. Permit review demonstrates that the inventory of pre and postmine basin morphometry has served as the dominant regulatory tool in evaluating reclaimed landforms, though published regional studies have provided significant information regarding observed geomorphic relationships in Wyoming. As more mines begin to realize areas of full reclamation, post mining compliance and monitoring information will be used to assess the surficial stability of the reconstructed landforms, indicating what methods have proven successful and where improvements could be applied.