

Applied Geomorphology-Geomorphic and Hydrologic Design Considerations to the Stabilization and Reclamation of Mining Disturbed Lands

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Abstract: Because long term maintenance is neither desirable nor possible, a standard engineering approach to the reclamation of mining disturbed lands can be superseded with an integrated geomorphic and engineering approach. The initial phase of all reclamation investigations should incorporate a qualitative geomorphic evaluation of the landscape and hydrologic features. This investigation is centered on the evolution of the premining landscape and the effect of mining on the controlling variables, which influence that landscape. The second phase of a reclamation investigation will integrate detailed earthwork analysis, slope stability, anticipated reclamation success with haul distances and cost. This phase will also utilize engineering models to address hydraulic and sediment transport analysis of higher order drainages. The modeling effort, which simulates the impact of channel plan form and geometry on hydraulics should incorporate model calibration, sensitivity analysis and verification using the previously developed geomorphic trend data. Final engineering design and construction follow these initial two phases.