

Stability tests, if incorporated into regulatory decisions, can quantify differences between reclaimed channel characteristics and natural, adjacent unmined areas. A standardized, quantitative approach will help maintain consistency within a process that has been historically rather subjective, and reviewer-specific. A minimum of work is necessary to develop the requisite data set: 1-2 days of surveying, depending on the desired number of data points, and a relatively basic statistical analysis.

Channel adjustment within reclaimed basins does not necessarily mean instability, and nonerosive conditions for reclaimed earthen channels do not exist. Engineered channels will approach the configuration of natural channels over time, and if designers and regulators have an idea of the direction of adjustments within natural settings, they can better evaluate the success of a designed channel to accommodate regional changes. In addition, natural resource regulators may be better able to recommend steeper slopes to minimize fluvial adjustments if natural systems are known, a priori, to be steeper. If channel reclamation truly intends to replicate natural drainage systems, then it follows that the designs should be judged based on the geomorphic characteristics and relations established in natural areas.

5.0 RECOMMENDATIONS

1. Establish permanent survey locations to monitor changes in channel cross section and longitudinal profiles of reclaimed channels. The cross sections could be resurveyed annually during the 3 year post-construction monitoring.
2. Investigate the geographic variability of relations that show strong correlation within the Rock Springs and Hanna areas. Additional work could verify application of AGI and channel hydraulic parameters to other regions of the state with active or abandoned coal mining.

3. Determine optimal sample size associated with defining relationships that influence ephemeral channel stability. This study shows 10-17 data points are acceptable but the lower limit has not been defined.
4. Investigate the role of pilot channels on designed stability. Pilot channels have formed in the bottoms of reclaimed channels at the Rainbow and Colony mines. If pilot channels are shown to develop naturally, then including them in channel designs may be unnecessary. Conversely constructing pilot channels will ensure they occur in desirable locations (not up against a bank), and of an adequate size determined by hydraulic calculations.

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