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Monitoring Strategies for Reclamation Programs Involving Multiple Sites
M Curran*[1], B Robertson[2], T Robinson[3], J Dillon[4], and S Bower[1], [1]*Abnova Ecological Solutions*, *Cheyenne, WY, USA*, [2]*University of Canterbury*, *Christchurch, NZ*, [3]*University of Wyoming*, *Laramie, WY, USA*, [4]*Cedar Creek Associates*, *Fort Collins, CO, USA*.
mike@abnovaecology.com

Monitoring reclamation efforts from energy development is critical for regulatory compliance, to assess site performance, and to inform management actions. While the importance of collecting useful information in timely and cost-effective manners at individual sites is recognized, little work has been done to address efficient methods to monitor and report findings for entire reclamation programs. It is common for large numbers of individual sites requiring reclamation to fall under the umbrella of one company or agency. Upstream oil and gas companies may have hundreds of well pads with varying reclamation status within an individual field, while midstream companies may have thousands of miles of pipeline right-of-way to reclaim across ecological and ownership boundaries. Even with efficient site-level monitoring, obtaining valuable and useful data across all sites requiring monitoring may be impractical and too costly to implement. In this talk, we discuss methods to categorize individual sites into groups, or panels, for purposes of improving program-wide monitoring efforts. A method which is particularly useful to monitor entire reclamation programs is called a rotating panel design. This method is used to conduct statistically valid field sampling across spatial and temporal schedules, resulting in major time and cost-savings without sacrificing monitoring quality. Examples of implementing rotating panel designs will be given with specific emphasis on natural gas fields. These methods will result in robust, reliable data collection which can feed into a database management framework accompanied by a dashboard system to provide rapid assessment for management decisions. While our focus will be on natural gas fields, instances where rotating panel designs are effective for other development projects will be explained.
Keywords: environmental monitoring, rotating panel design, decision management