

Evaluating Community Level Processes to Determine Reclamation Success. Edith B. Allen, Research Associate Professor, Department of Biology and Systems Ecology Research Group, San Diego State University, San Diego, CA 92182-0057.

The 1977 SMCRA refers to the reclamation of community level structure and processes in Sec. 515 (19) when it requires the operator to: "establish...a diverse, effective, and permanent vegetative cover of the same seasonal variety..." Naturally high levels of diversity can seldom be economically replicated on mined land, but a functional diversity that includes the dominant life forms and plants of varying phenology can be achieved. Within- and between habitat diversity also need to be considered, as natural landscapes contain heterogeneous patches of vegetation. An effort to simulate natural patchiness may result in more successful reclamation if plant mixtures are chosen for adaptations to microenvironmental conditions. To maximize species diversity and productivity, plants should be chosen to minimize competitive interactions in mixtures. This can be done by choosing species that are different in their temporal and spatial use of resources. The goals of high diversity and high productivity are sometimes at odds, as there are numerous examples of high yielding species that respond to fertilization, and that exclude more slowly growing species. The goal of reclamation is to create communities that are as resilient and stable as are undisturbed communities, or more so. There are as yet few examples of stable, artificially reclaimed communities that have also met the criteria of diversity. With time, researchers will be able to test hypotheses concerning long-term stability.

