Case Studies of Ecosystem-Based Approaches To Remediation. K. Trimble.
Abstract: Applications of the ecological sciences to site remediation have becoming increasingly common, as objectives have expanded from surface stabilization and aesthetic improvement to actual ecosystem reconstruction. In the fields of surface mining reclamation, specific techniques are often applied to common problems such as slope instability and erosion. The influence of larger scale physical and biological pressures on a site from the surrounding ecosystem, such as vegetation succession, is usually ignored. These processes affect the success of reclamation techniques, the management effort required to achieve success, the appropriateness of choices where alternative techniques exist, and the long term ecosystem sustainability. We stress a need for design approaches that examine the broad ecological context of site specific projects. Using cases study examples, we discuss cost-effective considerations including successional trajectory, bioregional wildlife and vegetation management criteria, and large scale biodiversity targets. Such considerations are used in establishing goals for site specific projects, and as tools in choosing appropriate techniques. In one example, the rehabilitation design for a limestone quarry in southern Ontario addressed regional aquatic habitat requirements, wildlife and forest community targets, and bioregional populations of internationally significant species, while at the same time minimizing approval and maintenance issues.
Additional Key Words: ecosystem restoration, biodiversity.