LANDSCAPE DESIGN: A NEW PLANNING AND ASSESSMENT FRAMEWORK FOR MINE RECLAMATION

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ABSTRACT

Traditional mine reclamation has focused on greening up disturbed areas. As a mining operation finishes with the land, it is turned over to the reclamation department, regraded, topsoiled and planted. Eventually this land is turned back to the original owner. To date, this approach has had considerable success except that, in the end, lands are seldom returned to the original owner due to uncertainties in future landscape performance.

As mine sites become larger and expectations of regulatory agencies, other stakeholders and the mining companies become greater, greening up small areas in a patch-work quilt-like fashion can result in a landscape that fails to meet expectations. Recognizing that a broader approach with a new framework is required, Syncrude has been developing a process called landscape design to meet this challenge.

Landscape design begins with defining specific objectives for landscape performance, with a focus on providing acceptable long-term performance for specific end land uses. Objectives can be grouped in categories such as geotechnical stability, drainage and topography, groundwater, vegetation, soil, fish and wildlife, end land use, and health and safety. Qualified specialists evaluate the objectives using performance indicators (short-term indicators of long-term performance) wherever possible.

The performance objectives form a checklist for guiding reclamation and closure activities throughout a mine's life. This checklist is used to provide guidance in closure planning from the pre-feasibility studies and initial design of specific mining landforms, to detailed design of reclamation, and through the
decommissioning and reclamation certification process. Landscape design provides a simple, objective and transparent process for the design, construction and assessment of landscape performance. It also forms the basis for landscape performance monitoring and is integral to the development of a geographical information system (GIS).

Syncrude has started implementing the landscape design process at its oil sands mining operations near Fort McMurray, Alberta.