RECLAMATION CERTIFICATION CRITERIA: BALANCING COMPETING INTERESTS

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Abstract

Alberta's *Environmental Protection and Enhancement Act* requires operators to conserve and reclaim land and to obtain a reclamation certificate. The government, in cooperation with industry and other stakeholders, has developed reclamation certification criteria for wellsites and for railways. Criteria are being developed for pipelines, sand and gravel pits, roadways, and other activities. The criteria measure the success of industry's efforts to return disturbed land to equivalent land capability. Factors such as activity type and size, age of the disturbance, geographic location, need for consistency and at the same time flexibility, need for equal treatment between and within industries, administrative and technical simplicity, and stakeholder views are considered when developing the criteria. Some of these factors conflict with each other. This paper describes how the factors are weighed in developing the final criteria.

Key Words: Reclamation criteria; wellsites; pipelines; stakeholders

Introduction

Alberta's *Environmental Protection and Enhancement Act* (EPEA) came into force September 1, 1993. EPEA requires operators of specific industrial developments to conserve and reclaim land and to obtain a reclamation certificate. The activities covered include coal mines, oil sands mines, quarries, sand and gravel pits, pipelines, wellsites, railways and roadways.

The *Conservation and Reclamation Regulation* gives the Director the ability to establish criteria for certification. It also lays out the information that must be submitted with an application for a certificate.

The objective of reclamation in Alberta is the return of equivalent land capability. This means that the ability of the land to support various land uses after conservation and reclamation is similar to the ability that existed prior to an activity being carried conducted on the land, but that the individual land uses will not necessarily be the same. The intent is to retain the original range of land use options for future generations. At the same time, there is flexibility to change the capability for various land uses (e.g., good forestry capability can be replaced by good wildlife capability).

In general, the land uses before and after development are the same, especially on smaller disturbances such as wellsites and linear disturbances such as pipelines. However, the land use can be different if all stakeholders agree. Thus criteria for reclamation certification must be flexible and able to address a variety of potential land uses.

To date we have developed and published criteria for wellsites (*Reclamation Criteria for Wellsites and Associated Facilities*). Criteria for railways are ready to be released but require an amendment to the regulations before they can be published. Criteria for sand and gravel pits, pipelines and roadways are being developed and should be available in 1996.

Development and Implementation of the Criteria

Alberta Environmental Protection (AEP) develops criteria jointly with our partners in industry and the affected publics. Stakeholder committees prepare draft criteria. When they are finished, the draft criteria are sent for review and comment to a variety of stakeholder groups. These groups represent industry and landowners who have a direct interest in land reclamation. The criteria are redrafted based on their comments and are published. The criteria are then tested for a period of time. Periodic reviews of the effectiveness of the criteria are conducted and revisions made if necessary.

In the case of the wellsite criteria, courses were developed jointly between government and industry. The Petroleum Industry Training Service delivered the courses to people who would be using the criteria to evaluate sites. The private sector also offered courses.

Need for Criteria

Criteria provide industry with a clear understanding of the government's expectations for reclamation. This allows industry to plan their activities with the "target" in sight. After a site has been reclaimed, the criteria allow reclamation success to be measured. Finally, the criteria allow government, industry and consultants to train their staff in the certification process and requirements.

Interpreting Criteria: Consistency vs. Flexibility

Criteria also help to ensure that industry's reclamation efforts will be evaluated the same way by different government inspectors. The need for consistency between inspectors was a key factor in industry's request for criteria.

At the same time, inspectors are encouraged to use professional judgement when faced with site specific issues. Industry is allowed to submit reclamation applications when sites do not exactly meet the criteria if they can justify the reasons for variation.

This combination of consistent application of criteria combined with a flexible interpretation by field staff ensures that reclamation objectives are met. It also ensures a fair regulatory system for industry.

Kinds of Criteria

Alberta has considerable experience with reclamation of agricultural land and forested land. With this knowledge base, we were able to design criteria to assess the characteristics of these kinds of lands. However, as noted above, there are times when the land use may change; for example, to a lake or wildlife habitat. We have not developed detailed criteria for these kinds of lands.

To date, most of the certification of lakes and wildlife habitat has been done on sites with approvals. For example, TransAlta Utilities, regional stakeholders and the government jointly developed the design of East Pit Lake at the Whitewood coal mine. When the lake was completed and the site revegetated, the company submitted detailed information on the lake (e.g., water temperature and chemistry, vegetation surveys, fish growth rates, etc.) and requested a reclamation certificate. The certificate was granted after a careful review of the site conditions relative to the approved plan and several site inspections. In addition, the physical, chemical, and biological data were also evaluated to ensure the lake was a viable waterbody.

Approvals vs. Criteria

Certain activities require approvals from the Department before they can be developed. In the approval process, the company and government agree to the conservation and reclamation methods to be used on the site. The company's plan and the approval conditions meet the intent of the reclamation criteria. The plan provides the opportunity for refinement of the criteria to meet the site specific conditions of the project. As a result of this agreement, measuring the company's reclamation success is based on adherence to the site specific plan, rather than on a set of criteria.

Landscape vs. Soil vs. Vegetation

The criteria developed to date evaluate three main components of a reclaimed site: landscape, soils and vegetation. Preference is not given to one or the other. The criteria for wellsites do allow the inspector to waive the need for a soils assessment on sites that fall into the Grassland category if the vegetation has been established for three years. The inspector may request soils information if it appears that the company has not replaced all available topsoil.

Field Assessment vs. Laboratory Assessment

When criteria were developed for wellsites there was considerable debate regarding the role of soil analysis in reclamation certification. Analytical tests were suggested for determining organic matter content, salinity, and contaminants.

After much discussion it was agreed that field assessments of soils and vegetation would be adequate for the majority of sites. If problems are suspected on a site, the inspector may ask the company to do soils analyses to identify the nature and extent of the problem.

The reclamation criteria we have developed to date state that all contamination must be remediated **before** an operator applies for certification. Criteria for contaminant remediation (e.g., *Alberta Tier I Criteria for Contaminated Soil Assessment and Remediation*) are provided by the Chemicals Assessment and Management Division of AEP.

Simplicity vs. Technical Detail

Once the decision was made to use field assessments to judge reclamation success, the debate centred on the nature of the assessments to be performed. Ideally, professional soil and

vegetation specialists would be employed by each company to evaluate each reclamation site. However, we do not live in an ideal world.

Thus the criteria strike a balance between simple measures (e.g., topsoil depth) requiring little training (except for the ability to determine what topsoil is when confronted with admixed soils or mixed soil layers) and more complex measures requiring some soils knowledge (e.g., soil texture). Vegetation assessments are based on a combination of measurements (e.g., plant height) and visual estimates (e.g., percent cover and percent composition). Landscape assessments are all based on visual estimates.

In all cases, if there is a difference of opinion between the company's assessment of the site and the inspector's, the company would be expected to provide measured, rather than estimated, data.

Generic Criteria vs. Industry-Specific Criteria

Criteria are being developed for each industry taking into account the nature of their disturbance. The objective of equivalent land capability is the same for all industries, as is the general format (i.e., landscape, soils, vegetation parameters) of the criteria. The differences in criteria relate mainly to the extent of information and sampling required (e.g., number and location of samples) to evaluate reclamation success.

In the case of railways, the criteria recognize that the railbeds have been in place so long that land use has adapted to their presence (e.g., new water courses have developed). Thus removal of the railbed is not required for certification. The same will likely hold true for roadways.

Regional vs. Province-Wide Criteria

Province-wide criteria would be the simplest to develop and implement, however they would not address the variability in Alberta's soils, vegetation and land uses.

The wellsite criteria have five separate categories: cultivated land, grasslands, forested land with cultivation potential, other forested land, and peatland. The criteria for these categories differ in the level of assessment required to show the objective of equivalent capability has been met.

Time of Construction vs. Time of Abandonment

Many of Alberta's industrial sites were constructed many years or decades ago. At the time of construction there may have been no requirement for topsoil conservation or reclamation. Thus the criteria recognize that older disturbances can have lower expectations for reclamation success that newer ones. These sites, however, are still expected to meet some level of reclamation success.

For example, the wellsite criteria recognize three construction dates: prior to 1983, when topsoil salvage was not enforceable; 1983 to 1994, when salvage was required but no written criteria were in place; and after 1994 when the criteria were put in place.

Conclusions

Reclamation criteria provide clear, achievable, and measurable targets for industry. They provide a framework for industry to develop plans for construction, operation and reclamation of their sites. The criteria format serves as a basis for development of criteria for other industries. They also allow government, industry and consultants to be trained to evaluate reclamation success.

To date, Alberta has successfully developed criteria through a process where industry, government and other stakeholders work together. As a result, all stakeholders "own" the criteria. Once developed, the effectiveness of the criteria are evaluated by all stakeholders and are reviewed from time to time to determine if changes are required.

The criteria are tailored to each industry and account for the differences in Alberta's diverse soils, vegetation and landscapes. Within the criteria for each industry sector, there is flexibility for consideration of site-specific issues. At the same time, they ensure the objective of equivalent land capability has been met.

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