

RECOGNITION OF RECLAMATION COSTS

A.H. MILLIGAN, P. Ag.

SUPERVISOR, ENVIRONMENTAL SERVICES

WESTAIL MINING LTD.
BALMEE OPERATIONS
SPARWOOD, B.C.

RECOGNITION OF RECLAMATION COSTS

The Mining Industry has accepted the need and rationale for environmental regulations and controls as part of the cost of doing business. In fact, as an industry, the mines have been a major partner in the development of the technology and standards now controlling their operations. A major portion of these goals and standards were developed in the past when the industry was on an upswing and when the costs of attaining these standards did not impact as significantly on the selling price of the clean product. Now, however, the picture has changed. Tighter markets and lower selling prices have made it imperative that producers reduce costs in every area of their operations to remain competitive and survive in the present world economy. In light of these changes, I must emphasize that a company has to be extremely careful that it not place itself, at a financial disadvantage in the market through unrealistic application of standards. My intent is not to suggest that environmental standards be lowered or ignored, but rather that the industry and the regulatory agencies as a whole review the current situation and requirements and develop options to achieve the same goals at realistic cost.

In the past in this province, mining operations were much smaller, and while there is no doubt they impacted on the environment, this impact was also small. Once these sites were abandoned, the natural healing processes were, in many cases, able to reclaim the disturbances. Many water courses which were badly polluted now show little evidence of earlier damage. Of course I accept there are exceptions to this statement. The modern mining picture is much different. With modern technology, today's disturbances are so massive that these natural healing processes would take as long to restore a vegetative cover, if left entirely on their own, as did the surface of the land masses after the glaciers had retreated. For that reason, we cannot treat these disturbances as we did the earlier mines. To maintain environmental standards in the mining industry and yet continue to reduce costs, we must examine what has been done to date and rather than say that reclamation is a luxury and can no longer be afforded, we must look at other ways of achieving the same results. Any new approach in environmental protection must be acceptable to both the industry and those regulatory agencies whose mandate it is to protect the environment. Both believe in their goals and objectives and both believe the cause they are espousing is for the universal good. We must find the common ground.

Recently, I read an article by an economist, named Dr. Coase, that dealt with the social cost (as viewed by an economist) of the actions of business firms which have a harmful effect on others. In essence, the author examined a case, and I paraphrase, where a mining operation inflicts harm on the environment. The traditional resolution to this situation would be to restrain the mining operation. However, says the author, this is also wrong because the mining operation is then harmed and two economic harms do not make a right. At the conclusion of the paper the author advocates new approaches must be taken and outlined some major difficulties encountered in the traditional way of

RECOGNITION OF RECLAMATION COSTS

PAGE: 2

dealing with this kind of problem. He concluded that:

1. problems of social economics must ultimately dissolve into a study of aesthetics and morals;
2. a second feature of the usual treatment of these problems is that analysis proceeds in terms of a comparison between a state of "laissez faire" and some kind of ideal world;
3. traditional thinking inevitably leads to a looseness of thought - because the nature of the alternatives being compared is never clear.

I think most of us can relate to these conclusions, and consideration of them leads to the questions:

Are those of us in the field of reclamation attempting to attain some kind of ideal world instantly with our programmes without adequate recognition from government? Should we not accept our role in the scheme of things as to be that of accelerating the natural process of repairing the ecosystem and not that of trying to force a type of ideal world on the system at the outset? Let me quote an example which goes to the beginning of Westar's Balmer Mine environmental programme.

When the Reclamation Programme began in 1969, little was known of the technology of reclaiming large surface disturbances with the climate and elevational differences found in the Rocky Mountains. Due to a very high level of public concern at that time, it was imperative that the environmental issues be addressed as soon as possible. The company had to demonstrate that it was possible to establish a vegetative cover on areas disturbed by mining. In this regard, we were fortunate in that several small orphan mines were acquired with the property. So, instead of using small test plot», these total sites were resfoped and seeded as reclamation test sites. The aim was to blend these disturbances into the surrounding topography and create sites valuable to wildlife. The learning process was expensive, but the end result on these sites was to successfully establish a dense ground cover of grasses and legumes which was heavily used by wildlife at certain seasons. Without considering the implications and long term exposures, standards of reclamation for the mine had been set and these standards would influence the future reclamation planning and thinking for the operation. What was overlooked, however, was that this success coincided with the upswing in market prices and there was not the overwhelming urgency to control costs. In fact, it was a good time to learn the basics of reclamation - a challenging environment and no real scrutiny given to bottom line expenses. Later, when the reclamation of the surface disturbances began behind the operating mine, the

RECOGNITION OF RECLAMATION COSTS

PAGE: 3

resloping of dumps to 26° - 28° was undertaken as a matter of course, although a test slope of 30° was successfully developed and seeded - more from curiosity than a serious attempt to challenge the regulations. Very little consideration was given to the fact that the original slope studies had been carried out on orphan mine spoil with high coal fines content - very different from the large grained coarse overburden resulting from modern mining methods. Grasses and legumes were seeded with the aim of establishing the same level of cover as was achieved on the earlier areas. When this cover fell short of the previously established standards, criticism was accepted as valid, and additional studies and work was undertaken to improve the vegetative cover. Too readily we were accepting one standard for all situations rather than taking a site specific approach to different areas within the one minesite. As I stated earlier, those standards achieved previously were incorporated without question into the life of mine reclamation plan. The expectations of both the regulatory agencies and the Company's Environmental staff were high; both had proved to their detractors that the Job could and would be done with a number of sites having achieved a self-sustaining status. In respect to vegetative cover - the reclamation guidelines states under the heading of productivity "...not less than existed prior to mining on an average property basis unless the proponent can produce adequate documentation to support the impracticability of this level. Land shall be revegetated to a self-sustaining state using appropriate plant species". At Balmer, the levels of productivity on low elevation reclaimed sites deemed to be self-sustaining were nearly twice that of the most productive type of native meadow in adjacent habitat. At high elevations, we have not measured productivity of the native grasslands since 1983. In that year, a site that had been reclaimed for 8 years had a standing crop near to that of the native site and those sites slightly younger were approaching this level.

When the downturn of the economy arrived, it had one positive result - it provided the opportunity for a complete evaluation of the reclamation programmes - past and present - and allowed for a critical look at the programme's future direction. Although the company's commitment to Environmental Protection and Reclamation was unchanged, it had to be cognizant of the current financial restraints. Each aspect of the programme had to be examined with these restraints in mind. Was it possible to achieve the same end land use goals using a different approach? The annual monitoring of the reclaimed sites indicated one possible consideration that had been ignored. Monitoring showed there is a noticeable increase in the number of useful invader species including grasses and trees on sites where the productivity is not as high as the level aimed for. There is little invasion on sites with higher productivity where the established vegetation appears to out-compete any invader species. In certain sites it might be necessary to ensure high productivity to provide forage for wildlife. On other sites, however, with only a potential to be summer range it may be more expedient to accelerate the initial vegetative cover to a self-sustaining level and then encourage natural invasion to create the species diversity necessary for the permanent rehabilitation of the site. The species diversity could (itself be accelerated by small island plantings of desired tree and shrub species, substantially

RECOGNITION OF RECLAMATION COSTS

PAGE: 4

lower in numbers than the annual planting proposals in the current reclamation plan. A perceived problem with this approach is the difficulty in monitoring the success of a project with so many uncertainties in the course and rate of succession and one with such an indefinite end period. Cynically, you could say that it is only deferring reclamation into the future.

With respect to waste dumps, the reclamation guidelines state that they shall be recontoured so that the angle of repose does not exceed 27 unless proved otherwise. While planning for the ultimate reclamation of all dump areas is an integral part of the mine plan - these hard economic times force closer integration of mine planning, mine development and the ultimate reclamation. The money is no longer available for earth moving to recreate landscapes after mining. The use of wrap-around dumps is valuable as they provide physical stability to the structure and they present a potential for reclamation without incurring enormous costs associated with dump resloping. In fact, concentrating the establishment of vegetation on the benches may be the most practical approach. Unfortunately, mine plans change in response to changing market requirements and this can result in high dumps being created without the planned-for lower elevation wrap around dump being formed in subsequent years as the mine is moved for other types of coal. In these cases the elevation difference between the crest and the toe precludes the possibility of resloping without enormous expense.

As an industry, we have - in the main - honoured our commitments to reclamation and the environment. Considerable sums of money are invested in controlling dust and sediment on an annual basis around the mine site. When it comes to reclamation we find ourselves in a situation; partly of our own doing, where we have not foreseen the consequences of the earlier approach. I suggest there will be areas around a mine site that will never be reclaimed unless it is economically feasible, and if we are required to make ALL disturbances on a mine as productive or better than existed prior to mining - then I urge that the mining industry needs an economic incentive - say in the form of tax credits or reduced royalties - that will recognize reclamation effort. As an industry, we have contributed much to the province for many years and hope to continue in the future. We now need to re-examine our approach - not for the purpose of ignoring our commitment to the environment, but to find a more equitable means of achieving our common land use and economic objectives.

Literature Cited:

Coase, R.H. 1960 "The Problem of Social Cost", in the Journal of Law and Economics 1960.