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DEPARTMENT OF INDIAN AFFAIRS  
AND NORTHERN DEVELOPMENT

# TOWARD A MINE SITE RECLAMATION POLICY FOR THE NORTHWEST TERRITORIES

A discussion paper in support of the development of a policy  
for the protection of the environment and the disposition of liability relating  
to mine closures in the Northwest Territories

## INTRODUCTION

For more than a hundred years, mines have been operating in Canada's North, providing important economic benefits, not only for northerners, but to all Canadians. Unfortunately, northern mining operations have also left a legacy of environmental liability that to date has, for the most part, fallen upon the federal government to assume.

A rough estimate of the cumulative value of metal and mineral production for the three territories since 1977 is over \$18 billion. By contrast, the value of the outstanding liability or contingent liability for mining properties in the North is estimated to be in the order of \$439 million.

While it is fairly clear that, on balance, mining in the North has been good for Canada, this assumption of hundreds of millions of dollars of liability by the federal government is not acceptable and we cannot afford for it to continue, let alone grow. Moreover, the public is becoming aware of the growing number of insolvencies and abandoned mining properties which are leaving environmental liabilities and are starting to express concerns and questioning their support for mining in the North.

The Department of Indian Affairs and Northern Development (DIAND) continues to look for opportunities to improve the way it carries out its resource management responsibilities. DIAND considers the development of a Northwest Territories Mine Site Reclamation Policy an important new component in our management toolbox.

## **Why do we need a Mine Site Reclamation Policy at this time?**

While the government has been aware for some time of the fragile nature of mining operations in the North, the growing magnitude of our environmental liability, as noted above, has drawn into sharp focus a clear requirement to improve the way we manage mine abandonment and closures.

The development of a Northwest Territories Mine Site Reclamation Policy (Policy) will serve three main objectives:

- ◆ reducing the environmental liability that will fall to government;
- ◆ providing industry and the public with a clear signal of government's expectations; and
- ◆ building positive and supportive relationships with the new regulatory authorities coming into operation in the North.

The development of a Policy was not the only option available to meet the above objectives. Government continues to look at legislative changes to support the principles set out in this Policy. While government has not ruled out these options, both legislative and regulatory initiatives take a relatively long time to accomplish and it is felt that timing has become a critical issue.

DIAND also recognizes that many of the provisions which will be incorporated into this policy are governmental "principles", specifically set out to provide general guidance and direction, rather than being prescriptive in and of themselves. In this way, they work in harmony with the existing regulatory framework and the regulators who are charged with their application. It is not the intent of this policy to diminish the existing regulatory responsibilities or authorities.

Implementation of federal environmental law is the cornerstone of our current system of environmental protection. It is essential that the federal government, boards and agencies as well as industry embrace a commitment to uniform minimum federal standards for the protection of the environment and the reclamation of producing mines sites. This Policy will provide a minimum standards model.

DIAND has been guided by **The Minerals and Metals Policy of the Government of Canada**, wherein specific reference is made to the challenges associated with mine site reclamation and the federal government's direct responsibilities in the three territories.

It should also be noted that DIAND has another complementary policy that relates to orphan or abandoned sites, including mines, namely the "Policy on the Management of Contaminated Sites in Canada's North". Both policies share the "polluter pays" principle and the intention of minimizing the liability to the federal government for remediating contaminated sites, including abandoned mines.

The policy on the Management of Contaminated Sites is directed to DIAND's commitment to reducing or eliminating the human health and safety dangers posed by contaminated sites, including any abandoned mines, for which it has had to assume responsibility in Canada's North.

In addition to the suite of legislation governing conventional placer and hard rock mining, the mining of uranium and other related hazardous minerals is also regulated by specific legislation (e.g. *The Atomic Energy Control Act*).

The proposed Policy is intended to be consistent with the existing legislative, regulatory and policy instruments currently in effect in the NWT.

The Policy will offer guidance for the planning and implementation of mine site reclamation in the NWT. To a large degree the principles outlined in this Policy have already been adopted and adhered to by the federal government and industry, within the existing regulatory framework in the NWT. This Policy will codify, clarify and provide more certainty. It will provide a template for the development and enhancement of operational procedures and processes required to ensure that our objectives are met.

Enforcement of regulatory provisions related to mine site reclamation will continue to be undertaken through the existing regulatory regimes. The *Territorial Lands Act* and its regulations, the *Northwest Territories*

*Waters Act* and the *Mackenzie Valley Resource Management Act* will be the primary vehicles used, although other pieces of federal and territorial

legislation are also in play (e.g. *Fisheries Act and the Canadian Environmental Protection Act*).

The environmental assessment processes will continue to identify and consider the environmental, social, cultural and economic effects of a mining project and its reclamation and ensure that the appropriate participation of the potentially affected public occurs during the monitoring and reporting of mine site reclamation.

The principles and objectives laid out in this Policy will guide DIAND's decision making powers in matters where DIAND retains authority (e.g. issuing surface leases) and will shape DIAND's position as an intervener in regulatory processes carried out by resource management boards. It is also intended that the policy will have the support of the new resource management bodies in the NWT and will help guide them in developing their policies and administrative guidelines.

DIAND will continue to be guided by other federal policies concerning regulatory efficiency and environmental protection. Given the number of regulatory authorities emerging in the North, it is critical that this Policy be integrated with the existing regulatory and policy framework.

## **PRINCIPLES FOR MINE SITE RECLAMATION**

The development and distribution of a clear set of principles and positions respecting mine site reclamation in written form is required to replace the ad hoc and potentially confusing approach currently in use. Written

documentation provides proponents, boards and government departments with the same degree of certainty and consistency of expectations regarding standards and process.

Mine site reclamation in the NWT should be based on the following principles:

### **General**

- ◆ Every new mining operation should be able to support the cost of reclamation. Existing mining operations will also be held accountable for their reclamation liabilities;
- ◆ Shutdown, closure and post-closure should be included as a cost in the project approval feasibility study and will be considered in the economic review of project approvals;
- ◆ Best management practices, including progressive reclamation should be applied to advance environmental protection and to reduce environmental risks; and
- ◆ Communication and consultation between all applicable parties should be comprehensive, complete and timely, as defined in legislation or regulation (e.g. land claim settlement acts, *Mackenzie Valley Resource Management Act*, *NWT Waters Act*).

### **Reclamation Planning**

- ◆ The direct closure impact of all components of a mine site should be addressed as an integral part of the design criteria employed during the detailed engineering phase of the project, including tailings handling, disposal of chemicals and hydrocarbons and pit shutdown;
- ◆ The selection of key reclamation and closure alternatives should be backed up with a full suite of technical information generated by experts such as competent, credible consultants;

- ◆ Every mine will have a Mine Closure Plan (Plan), including a Temporary Closure Plan;
- ◆ In accordance with requirements of regulatory authorities, mine site reclamation and closure Plans should be sufficiently flexible to allow adjustments as the life of the mine progresses, including the flexibility to adapt to new and improved technologies and/or methodologies, allowing for progressive reclamation, while ensuring that the obligations under the Plans are preserved; and
- ◆ An active, self monitoring plan should be maintained to ensure compliance with government and company requirements and to provide the framework for progressive reclamation activities.

### **Post-Closure Responsibilities**

- ◆ Following mine closure, mining companies will continue to be responsible for the site, including the remediation of any additional environmental complications which develop. If clearly warranted by site conditions, the monitoring period may be extended to ensure that remedial measures are met.

### **Financial Security**

- ◆ The total financial security required at any time during the life of the mine will neither be less than or greater than 100 percent of the total outstanding reclamation liability for land and water combined (calculated at the beginning of the work year, to be sufficient to cover the highest liability over that time period);
- ◆ The recognized standard for calculating reclamation costs for the purposes of financial security will be the RECLAIM or similar model, mutually agreeable to all regulatory jurisdictions;
- ◆ The required standard of rehabilitation in respect of estimating reclamation costs for the purposes of financial security will be based on the 1994 Whitehorse Mining Initiative definition, "...returning mine sites and affected areas to viable and, wherever practicable, self-

sustaining ecosystems that are compatible with a healthy environment and with human activities”;

- ◆ Consideration will be given to alternate or innovative forms of security provided they meet certain criteria that protect the government’s interests and objectives;
- ◆ Financial security for reclamation will be set out in the appropriate regulatory instruments established for the management of lands and water; and
- ◆ Mining operators will be credited for approved progressive reclamation and the value of financial security required will be adjusted in a timely fashion.

### **Regulatory Authorities**

- ◆ DIAND undertakes to serve as the co-ordinator to facilitate consistent application of this policy among the various regulatory authorities sharing jurisdiction with respect to the management of lands and water, particularly as it relates to the provision of financial assurance for environmental liability;
- ◆ The regulatory regime governing mine site reclamation should provide industry and stakeholders with the certainty and clarity required to accept the risks associated with mine developments; and
- ◆ Status reports on the progress of mine site reclamation and revisions to Plans will be required pursuant to the relevant regulatory authority.

## **IMPLEMENTATION CONSIDERATIONS**

### **Mine Reclamation Plan**



All proposals for a new mine must include an initial Plan, as this is critical to the long-term future and environmental legacy of the development site. For greater efficiency, a comprehensive plan should integrate the requirements associated with leasing surface rights and water licencing. At the very least, a Plan will be a requirement of the surface lease and, for most of the NWT, this may also require that DIAND develop administrative arrangements with the boards responsible for licencing water use so as to harmonize reclamation planning requirements.

### **Elements of the Mine Reclamation Plan**

Planning for closure, before development occurs, provides the opportunity to develop a flexible and cost-effective design which helps ensure that mine reclamation takes place and that the responsibility for costs is borne by industry. It can be expected that techniques and methodology for mine site reclamation will continue to evolve with changes to our scientific understanding and technology. Therefore, approaches to mine site reclamation needs to remain dynamic and evolving “best practices” should be an integral component of reclamation planning.

Best practices includes regulatory and voluntary/non-regulatory efforts, including policies, programs, technologies, reclamation research and other measures that have been found to be cost-effective and environmentally appropriate. Best practices encompass and build upon measures that are embodied within local, national and international initiatives.

A Plan must fully address the following:

Progressive reclamation of the site during the life of the operation, to the extent feasible, given the mining and processing methods employed:

- ◆ Removing or stabilizing any structures and workings remaining at the site after closure to ensure that, over time, they remain physically sound and no threat to public safety;
- ◆ The design of tailings and waste rock disposal areas within accepted engineering standards for slope, stability and erosion control;
- ◆ Rehabilitation of the surface to acceptable standards;

- ◆ Meeting or exceeding currently accepted standards of water quality for drainage from the site; and
- ◆ Leaving the site in a condition which will minimize or eliminate long-term care and maintenance requirements.
- ◆ The content of the Plan should include detailed measures for the reclamation, closure and decommissioning of the mine including but not necessarily limited to:
  - buildings and other structures
  - roads and airstrips
  - tailings disposal facilities and management
  - waste rock disposal management
  - quarries and open pits
  - petroleum and chemical storage areas and facilities
  - pipelines and electrical transmission lines
  - sewage and waste disposal areas and facilities
  - mine and site drainage systems
  - mine workings
  - mine shaft, adit and decline openings
  - site hydrology and water quality including water flows leaving the site
  - re-vegetation of the site where practicable
  - recycling of materials
  - site specific requirements
- ◆ An approved cost estimate of the reclamation work that will be required to close the mine, for each year of the proposed operating life. At a minimum cost estimates will be based on work performed by an independent contractor as a result of default but could include the differences which could arise where the work would be performed by the mining company or by an independent contractor not as a result of a default.
- ◆ A list of contingency measures for temporary closure of the mine, outlining specific actions and their scheduling, to be taken during the

temporary closure. As temporary closure is commonly an uncertain condition, the schedule will be necessarily progressive as each week, month, season or year passes.

- ◆ A plan for post-closure monitoring of the site including monitoring schedule and reporting frequencies. For a monitoring program to be meaningful, it must include provision for appropriate progressive responses which trigger action whenever exceeded, including the establishment of thresholds or the identification of changes in circumstances.

### **Progress Reporting on Reclamation**

Status reports on the progress of mine site reclamation work will be required. Since reporting on progressive reclamation is directly related to amendments to the financial security, the timing and content of the reports will need to match the provisions found in each Plan relating to amendments to the financial security (see Financial Security).

Status reports need not be elaborate documents but should include basic details such as the reclamation work performed, amounts of materials moved, dollars spent and a general account of areas yet to be reclaimed.

### **Mine Reclamation Plan Revisions (Updates)**

When revisions to approved mining plans require significant changes in reclamation requirements, an amendment to the reclamation plan is required in addition to the above described progress report. In many cases this will be the result of a significant change in operations, requiring revisiting through the regulatory process. This will involve consultation with appropriate agencies, such as a board and may also involve additional environmental screening.

A significant component of any revision will be the evaluation of the degree to which reclamation costs will vary as a result of the revision and the implications for the amount of financial assurance already in place.

### **Financial Security**

A key element of the Plan is the relationship between the remediation and abandonment obligations and the financial security provided to ensure that the liability for complete restoration remains with the mining company.

DIAND recognizes that the Policy must consider a number of complex matters relating to financial security:

- 1) Required Standard of Rehabilitation
  - 2) Forms of Security
  - 3) Co-ordination with Regulatory Regimes
  - 4) Progressive Reclamation
  - 5) Adjusting Financial Security levels in response to Progressive Reclamation
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- 3) Required Standard of Rehabilitation

The standards of rehabilitation or reclamation required of operators will clearly affect the cost of restoration and consequently the amount of financial assurance required.

Site specific criteria will be developed by regulators for assessing the adequacy of reclamation efforts, based on the 1994 **Whitehorse Mining Initiative** principle of "...returning mine sites and affected areas to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and with human activities".

Where regulatory boards with jurisdiction for land and water management have developed specific guidelines and standards of rehabilitation, these will be adopted for use in the applicable region.

- 4) Forms of Security

Discussion with industry respecting the type and form of security which will be acceptable to the Minister is ongoing. While DIAND's preference for cash based security remains, DIAND recognizes that the amount of capital tied up in sureties can be substantial and an impediment to investment.

Ongoing discussions with both large and small mining companies have identified concerns that conventional security instruments may not be sufficient to meet the future needs of mining in Canada's North. DIAND is prepared to consider novel approaches, provided they meet certain basic criteria, including:

- ◆ That they be relatively simple to administer, including assurance that they can be harmonized between various regulatory legislation currently in effect;
- ◆ That they be accessible to the Crown at all times;
- ◆ That the Crown has first draw on the funds;
- ◆ That access to the funds is unconditional;
- ◆ That they retain their value throughout the life of the mine and if applicable, beyond; and
- ◆ That they remain beyond the control of the mining company or its creditors.

This means that, provided the above criteria are preserved, DIAND will consider security instruments which will reduce the cost to operators. Included in this consideration are specifically developed reclamation insurance programs, reclamation trusts and certain corporate guarantees.

Discussions on alternatives to financial security such as "accreditation", "certification" or "track record" have not advanced sufficiently to satisfy the department that they can meet the government's interests at this time. However, DIAND is prepared to continue discussions on these alternatives, with the view to moving in this direction in the long-term.

#### 4) Co-ordination with Regulatory Regimes

Regulatory authority to require financial assurance for mine site reclamation is not contained in a single statute. For example, in the Mackenzie Valley, Land and Water Boards have the authority for both land and water related aspects. In the Mackenzie Delta, the Northwest Territories Water Board has the authority for water related aspects, while DIAND or the Inuvialuit, as land

administrators for the land use and leases, have authority for land related aspects.

Since financial security has become a multi-jurisdictional issue, co-ordination is an important consideration. To ensure that financial security is most efficiently and effectively applied, DIAND will facilitate discussions between the various regulatory bodies to promote the co-ordination of financial security obligations.

Discussions will include the following:

- ◆ The ongoing development and updating of the recognized standard for calculating reclamation costs mutually agreeable to all jurisdictions (e.g. RECLAIM model). Risk management planning dictates that calculations will be based primarily on a highest cost model, which usually means that a mining company has declared insolvency prior to planned mine closure and the subsequent requirement for government intervention;
- ◆ That at any given time during the life of the mine, the total financial security in place is equal to or exceeds the total outstanding reclamation liability of the mine site and that the financial security for closure related activities, imposed by land and water jurisdictions cumulatively, does not exceed the total reclamation cost estimates for both the land related and water related reclamation elements at each mine and that they are not excessive, punitive or duplicative in coverage;
- ◆ The terms and conditions of access or "triggers" to the financial security are the same for all regulatory authorities; and
- ◆ The feasibility of "staging" regulatory determinations required from each decision-maker (e.g. the Minister, the land and water boards, DIAND Lands) to facilitate the co-ordination and integration of all financial security obligations.

## 5) Progressive Reclamation

Ongoing reclamation throughout the life of the mine is preferable from both the environmental and financial liability perspectives.

The implementation of progressive reclamation will be based on the following considerations:

- ◆ When ongoing reclamation work reduces the outstanding environmental liability it will result in a reduction in the level of financial security required to be maintained;
- ◆ Credit for progressive reclamation work should be made in a timely fashion in accordance with authorities set out in the applicable legislation. In most instances, this will occur on the application for water licence renewal or amendment;
- ◆ The value of reclamation work will be based on generally accepted modelling (e.g. RECLAIM model) and calculated as the difference between previous outstanding liability and estimates made of liability remaining following the reclamation work (as opposed to actual costs, if actual costs do not fully reduce outstanding liability); and
- ◆ Progressive reclamation will never reduce the financial assurance required to zero, as a residual amount is required under the *Northwest Territories Waters Act*, not for closure, but for mitigative measures that might be necessary during the operation of the mine.

#### 6) Adjusting Financial Security levels in response to Progressive Reclamation

The amount of financial security on deposit will normally increase proportionately as mining proceeds. Generally, this implies that the mine site grows, water usage increases and the cost to restore a site expands. Accordingly, reclamation costs usually are estimated to rise over the life of the mine.

However, as reclamation work is performed, the environmental liability is reduced and therefore the financial security required may decrease proportionately.

If, during a specific period, the value of any progressive reclamation exceeds the value of new reclamation liability created through additional mining operations, the Minister, in consultation with the Boards, will be prepared to reduce the reclamation liability so that it continues to match the level of security held.

### **Post-Closure Reclamation and Final Decommissioning**

Near the end of production when closure is anticipated, the most recent approved Plan will be the basis for final decommissioning. As reclamation

work is successfully completed and environmental liability is reduced, the amounts of financial assurance required will be proportionately reduced and the surplus refunded.

Once the reclamation work required by the plan is deemed completed, the site will be allowed to stabilize, during which time monitoring will be conducted by the company and verified by DIAND and other agencies as appropriate. The duration of the required monitoring phase will be reviewed and confirmed at the time of closure and will be dependent on the risks associated with the potential impacts on the environment.

During this period, the mining company will continue to be responsible for the site, including the remediation of any additional environmental complications which develop. If warranted by site conditions, the monitoring period may be extended to ensure remedial measures are met.

Some mines are anticipated to require long-term care and maintenance after closure.

Examples include:

- ◆ Sites where acid mine drainage requires neutralization by water treatment;
- ◆ Sites where tailings containment structures require periodic monitoring and maintenance; and
- ◆ Sites where remediation technology are not proven.



Where there is a reasonable probability of a predicted long-term liability, the Minister will hold back an appropriate amount of financial assurance to cover requirements for the site. In such cases, the mining company will retain responsibility for the care and maintenance of the site and maintain a claim to any remaining financial assurance.

When the Minister is satisfied that the operator has met the requirements for decommissioning under the relevant legislation and that the objectives of the plan have been fully met, the Minister will provide the mining company with a written acknowledgement that the mine site is fully closed. This would only release the company from any further responsibility for compliance with the Plan, it does not remove their overall liability and responsibility for further intervention if necessary in the future.

### **Transition Rules for Existing Mines**

This Policy is also intended to cover existing mining operations.

However, it is recognized that the status of reclamation planning and the degree of financial assurance in effect varies considerably from mine to mine. Therefore, the application of this Policy will have to take account of the specific situation and issues on a case by case basis. It must be recognized that the long-term goal is to move all existing mines towards complete financial security for outstanding environmental liability.

As noted above, this Policy is not intended to diminish the current authorities under existing legislation and regulations. It is intended, however, to work with the regulatory authorities to ensure that the financial securities imposed reflect 100 percent of the outstanding environmental liability, whether they need to be adjusted up or down as the case may be.

Discussions on the application of this Policy to existing mines will focus on how existing mines may be able to continue operations while planning to meet their obligations for compliance without the Crown incurring new unsecured environmental liability in the interim. While DIAND does not intend to force existing mines into financial insolvency through

the imposition of this Policy, it is not acceptable to allow outstanding liabilities to continue or grow.

The issue of mine insolvencies poses a distinct and unique challenge to the application of this Policy. While mines that have entered into the process of protection from creditors will be responsible for the compliance with the provisions of their regulatory authorities, there must be consideration for the possibility of various outcomes, including the following:

- the mine is brought back into operation;
- the mine is closed, utilizing the latest closure and de-commissioning practices;
- the mine is abandoned and the Crown assumes the outstanding environmental liability; or
- the mine is sold.

The potential for such differing outcomes necessitates some flexibility in the application of the Policy. The Minister may consult with the regulatory authorities respecting interim measures while negotiating a final settlement to the bankruptcy process.

## CONCLUSION

The continued development of mining opportunities in the NWT is a fundamental component of a healthy northern economy. However, the government or public's assumption of millions and sometimes hundreds of millions of dollars of liabilities for

adequate restoration of mine sites can call into question the overall value of mining operations.

A practical solution to this dilemma is the development and implementation of a Northwest Territories Mine Site Reclamation Policy which:

- ◆ Re-affirms that liability for reclamation remains with the mining company as a capital expenditure item;
- ◆ Establishes a clear definition of rehabilitation, as per the 1994 **Whitehorse Mining Initiative**;
- ◆ Utilizes the latest technical information and expertise to fairly assess reclamation liabilities;
- ◆ Embraces a practice of open, complete and comprehensive communication and consultation with all interested parties;
- ◆ Applies reasonable financial security obligations, provides for innovative security instruments and tracks them over the life of the mine, through the completion of progressive reclamation efforts; and
- ◆ Integrates and co-ordinates the various regulatory authorities with responsibilities for mining land and water use in the NWT.