



Post Closure Institutional Control Management Of Decommissioned Mine/Mill Properties Located On Crown Land

Background Paper

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**Government of
Saskatchewan**

Executive Summary

Saskatchewan currently has one of Canada's most effective regulatory frameworks covering all facets of mine and mill development, operation and decommissioning. Once appropriate notice to close a mine has been given and a mining company has completed its site decommissioning and reclamation plan, the site enters a period of transition phase monitoring wherein the mining company, at its expense, must demonstrate that the site is physically and chemically stable. The Province undertakes regulatory inspections and reviews the company's site monitoring and maintenance results. During this phase, the mining company is liable for human health and safety and any impacts on the environment.

When this transition-monitoring phase has been completed to the satisfaction of the Province, the operator may make application to be released from further monitoring and maintenance responsibilities and to be released from its surface lease. This would transfer custodial responsibility to the Province, which would manage the long-term liability for these former mine sites on Crown land. However, there is no formal framework to guide the transfer of custodial responsibility and the long-term management of these properties. This is what the institutional control framework addresses.

Mining companies want to know what requirements have to be met in order to transfer leased Crown land back to the custodial responsibility of the Province and to address the long-term management of these properties. The public and neighbouring communities want to know who will be responsible for the site once the company is gone. In the case of uranium, for the past two decades, the Province has consistently stated that, once a mining company has fulfilled its obligations and demonstrated, through transition phase monitoring, that the site is chemically and physically stable, it would accept custodial responsibility.

Institutional controls consist of those actions, mechanisms and arrangements implemented to maintain control or knowledge of a site after custodial transfer to the Province. These controls would inform current and future generations of any hazards or risks associated with a site and are an important tool to prevent or limit inadvertent human and environmental risk. Activities undertaken could range from the simple act of permanently recording the location of a site, to placing land use restrictions, to erecting fences, to conducting regular, frequent inspections that may or may not include active measurements and the collection of samples for analysis and potentially the eventual maintenance of certain aspects of the site.

When sites are judged to be in an appropriate condition to be transferred back to the Province, a publicly accessible Institutional Control Registry will maintain a formal record of all properties for which the Province has accepted custodial responsibility. It will provide the rules for that site and all its aspects, including any monitoring and maintenance to be undertaken, now and in the future.

Establishment of such a framework will ensure future generations will not be burdened with unreasonable residual liabilities resulting from current mining activities, especially when companies may no longer be in business and that human health and safety and the environment will be protected. The framework will allow negotiations to proceed with the Canadian Nuclear Safety Commission, which has a regulatory role regarding uranium mine, mill and tailings, in order to harmonize its mandated responsibilities with those of the Province. However, uranium mining is not unique in requiring monitoring for long periods of time. Tailings management facilities from gold and base metal mines require long-term monitoring as well, as many of the contaminants in non-uranium facilities will also remain toxic to the biophysical environment for a very long period of time.

Various forums, commencing in the fall of 2005, will be held with the mining industry, the public, Aboriginal people and stakeholders to gain their views on the appropriate means to address the framework, maintaining the Registry and the on-going monitoring and maintenance of sites contained in the Registry, as well as those costs associated with unanticipated future events.

FOREWORD

Mining is Saskatchewan's third largest industry after oil and gas and agriculture. It currently supports direct and indirect employment of 20,000 people, including close to 2,000 residents of northern Saskatchewan. Mining contributes over \$2 billion annually to the provincial economy in the form of wages, goods and services.

In 2004 the mineral sector generated \$355 million in the form of royalties and taxes, which help support various public services across Saskatchewan. This year, preliminary estimates indicate the mining industry will invest more than \$120 million in exploration alone. This is double the amount spent last year, with much of the growth related to increased exploration for uranium and diamonds.

Such resource development carries with it certain obligations, including the protection of the environment and public health and safety. To further address these dual obligations, an initiative has been undertaken to clarify future responsibilities for the long-term management of decommissioned mine/mill properties.

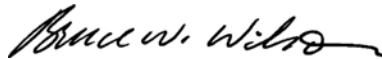
This background paper proposes a detailed Institutional Control Management Framework for your consideration and comment. This precedent-setting framework is distinctive and reinforces Saskatchewan's leadership role in ensuring environmentally responsible mineral resource development. The proposed framework responds to what we have heard from industry, environmental organizations and Northerners – that a clear, prescribed process is needed to guide the management of decommissioned mine/mill properties on Crown lands.

In looking forward to a sustained strong mineral sector in Saskatchewan, the paper suggests obligations for industry and government that are consistent with the Government of Saskatchewan's objective of building a greener and more prosperous economy, now and into the future.

[Signed]



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GLOSSARY OF TERMS

During the development of this management framework, a detailed review was conducted of similar policies in various national and international jurisdictions. It became clear from that review and from internal discussions that a clear and concise definition of the applicable terms was necessary to ensure clarity in the discussion, and a consistent understanding of the management framework and its implications.

Definitions of the terms used in this background paper are as follows:

Abandoned Site

- A site at which the operator has unilaterally rejected custodial responsibility for ongoing reclamation or remediation. This can be voluntary, or involuntary as in the case of bankruptcy

Canadian Nuclear Safety Commission (CNSC)

- The CNSC is a federal government agency established to regulate the health, safety, security and environmental aspects related to the use of nuclear energy and nuclear materials and to fulfill Canada's international commitments on the peaceful use of nuclear energy. The Commission reports to Parliament through the Minister of Natural Resources Canada and receives its authority from the *Nuclear Safety and Control Act*, which is binding on Her Majesty in Right of Canada or a Province. The CNSC functions as a quasi-judicial administrative tribunal with the power to establish regulations, to issue and enforce licenses, and to generally perform all regulatory activities prescribed by the *Nuclear Safety and Control Act* and associated regulations

Closed Site

- A site at which all decommissioning, reclamation measures and transition phase monitoring have been completed to the satisfaction of the succeeding custodian

Custodial Transfer

- Transfer of custodial responsibility for a site to a new custodian willing to accept any residual liability (if it exists) and responsibility for long-term management

Decommissioning

- The activity of disassembling, dismantling, disposal, removal or otherwise addressing all infrastructure associated with a project site

Deed of Custodial Transfer

- Documentation confirming that reclamation or remediation objectives have been met and custodial transfer has been accepted by the new custodian from the transferring agent. (The '*Release From Decommissioning and Reclamation – Release Number XX*' issued by Saskatchewan Environment)

Disturbed Land

- Land that has been disturbed by human activities to the extent that there is a material difference in the physical, chemical or biological characteristics of the disturbed land. Disturbances can either improve or impair future land use options. Cleared land, re-graded land, waste rock piles, land affected by a

surface or groundwater contaminant plume are some examples of disturbed lands

Endowment for Residual Care

- A financial instrument identified or established to cover the costs of any surveillance, monitoring and/or maintenance required of the post-transfer custodian. In certain instances these costs can extend over a very long time

Institutional Controls

- Consists of those actions, mechanisms and arrangements implemented to maintain control or knowledge of a remediated site after custodial transfer. This control may be active (e.g. by means of monitoring, surveillance, remedial work, fences, etc.) or passive (e.g. land use restrictions, markers, records, etc). Activities undertaken by the post-transfer custodian can range from the simple act of permanently recording the location of a remediated site, all the way to conducting regular, frequent inspections that may or may not include active measurements, and the collection of samples for analysis, and, potentially, the eventual maintenance of certain aspects of the property

Institutional Control Registry

- An institution of the Saskatchewan Government mandated to maintain a formal record of all mining properties that have achieved closed site status and for which the Province has accepted custodial responsibility, and to discharge the institutional control duties defined by the Registry for each property recorded therein

Institutional Control Working Group

- Saskatchewan Government interdepartmental working group assigned to develop the institutional control management framework. The working group consists of representatives from:

- o Saskatchewan Environment,
- o Saskatchewan Industry and Resources,
- o Saskatchewan Northern Affairs,
- o Saskatchewan Justice,
- o Saskatchewan Finance, and
- o Executive Council

Orphaned Site

- An abandoned mine site for which a responsible party (custodian) can no longer be located or does not exist

Project Closure

- The action of completing all decommissioning, reclamation measures and transition phase monitoring to the satisfaction of the succeeding custodian

Transition Phase Monitoring

- A monitoring period of variable length (site specific) conducted by the operator after the completion of all decommissioning and reclamation activities to demonstrate that all remediated areas are performing as predicted, and the site is physically and chemically stable

Reclamation

- Actions intended to return the land surface to an equivalent undisturbed condition. Reclaimed land has achieved the desired condition

Rehabilitation

- The process of reshaping and re-vegetating land to restore it to a stable condition that, in turn, could accommodate a land-use that is appropriate for the particular location

Surface Lease

- A surface lease is a contractual agreement between the provincial government and a land user that primarily covers land rental that may also contain other relevant conditions and obligations. Anyone occupying provincial Crown land in Saskatchewan must have authority to do so from the Province. The common form of land disposition instrument used for mining operations located on such land is a mineral surface lease

1. INTRODUCTION

“Institutional Control”, by internationally accepted definition, consists of those actions, mechanisms and/or arrangements implemented to maintain control or knowledge of a waste management site after project closure (IAEA, 2002). In Canada, the National Research Council (2000) defined institutional control as:

“restrictions on land access or use through such devices as easements, deed notification, zoning, permits, fences, signs, government ownership, and leases; also legal measures to ensure continued access to privatized sites for the purpose of monitoring and, if necessary, further remediation”.

In the context of this background paper, institutional control consists of those actions, mechanisms and arrangements implemented to maintain control or knowledge of a remediated site after project closure and its custodial transfer to some form of responsible authority. This control may be active (e.g. by means of monitoring, surveillance, remedial work, fences, etc.) or passive (e.g. land use restrictions, markers, records, etc). Activities undertaken by the post-transfer custodian (responsible authority) could range from the simple act of permanently recording the location of a remediated site, all the way to conducting regular, frequent inspections that may or may not include active measurements, the collection of samples for analysis and potentially the eventual maintenance of certain aspects of the property.

Figure 1 summarizes the various activities that must be undertaken during the progression of a mining/milling facility through decommissioning, transition phase monitoring, custodial transfer and the eventual allocation of the property to an institutional control management framework. The process illustrated in the diagram could be applied equally to any other industrial waste management site situated on Crown land.

This management framework paper discusses issues related to the design and implementation of an institutional control framework for the management of all decommissioned mine/mill properties located on Saskatchewan Crown land that have reached a closed site status and for which the Province is willing to accept custodial responsibility.

In establishing and implementing an institutional control management framework, the Province is acknowledging that a formal process for the long-term monitoring and management of such sites is required and is reaffirming its position that once all decommissioning, reclamation measures and transition phase monitoring have been completed to the satisfaction of Saskatchewan Environment, (i.e. the property has achieved a closed site status) the property will revert to the Crown.

In answering the policy question as to whether or not the Province of Saskatchewan should accept custodial responsibility for uranium mining and milling properties once the operator has fulfilled their decommissioning and reclamation obligations, consideration must be given to the fact that, for the past two decades, the Province has consistently stated that, once the operator of such a facility has fulfilled its obligations and demonstrated, by transition phase monitoring, that the site is chemically and physically stable, it would accept custodial responsibility.

In 1977, Justice E.D. Bayda and two Commission members were appointed to conduct a public inquiry into the probable environmental, social, economic and other implications of the proposed uranium mine at Cluff Lake, as well as the social and economical implications of an expansion of the uranium industry in Saskatchewan. In their final report, the Cluff Lake Board of Inquiry made reference to what today is referred to as institutional control. The Report stated:

“To be confident of the long-term security of abandoned tailings ponds from uranium, or indeed other mines, it appears axiomatic that a precise long-term program of regular inspections or surveillance should be established by a responsible regulatory body. The responsibility for the carrying out of that program should not belong to the mining companies, since some might have a relatively short lifetime.” (CLBI, 1978)

In the Government’s Position on Proposed Uranium Mining Developments in Northern Saskatchewan (Midwest Project and Cigar Lake Project, April 1998) the Province addressed the issue of long-term monitoring and mitigation of uranium mining sites. That document states:

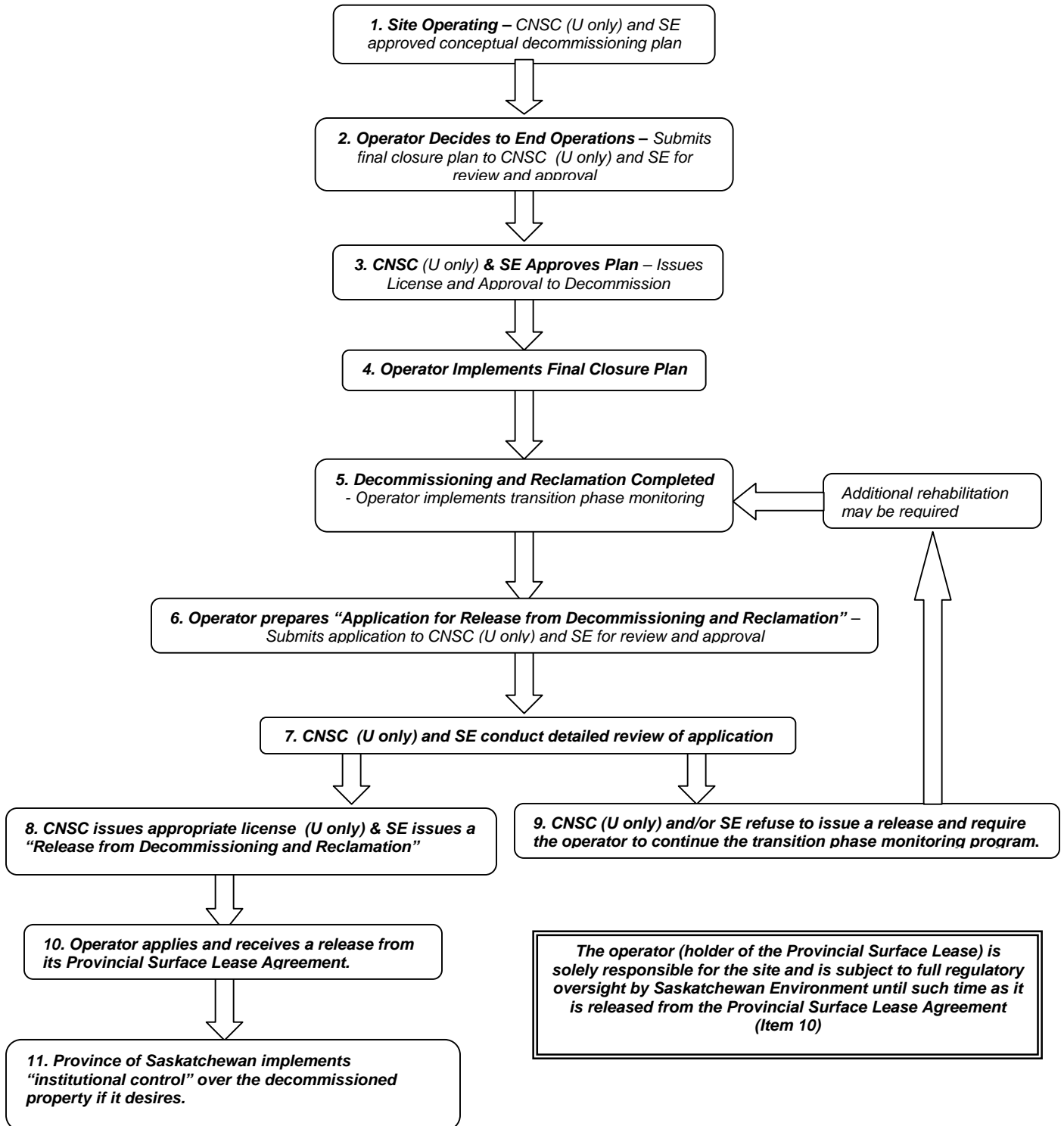
The Province acknowledges its responsibility for the long-term monitoring and potential mitigation of uranium sites in the province. To ensure environmental impacts are minimized, not only for current generations but for future generations as well, the Province has developed a rigorous regulatory scheme.

As the Panel has stated in its November report, the word ‘decommissioned’ when used in context with uranium tailings management facilities means the site will be left in a condition that will require only infrequent monitoring and minimal maintenance. It does not mean that the site will be completely abandoned and forgotten.

When the site demonstrates stable, long-term performance, acceptable to the department, the site will revert back to the Crown. The provincial government will then assume long-term responsibility for managing the site.” (SASK. 1998)

It must be recognized that since these decisions were taken and the statements made, the national and international regulatory framework surrounding the institutional control of radioactive wastes, and therefore uranium mining and milling facilities, has changed significantly. This change is due in large part to the fact that the Government of Canada, as a member of the International Atomic Energy Agency of the United Nations, has become a contracting party to the *Joint Convention on the Safety of Spent Fuel Management* and on the *Safety of Radioactive Waste Management* (2001), that the Government of Canada has promulgated the *Nuclear Safety and Control Act* (2000) and the fact that the *Act* is binding on Her Majesty in Right of Canada or a Province.

Figure 1 - Progression of a Mine/Mill/Waste Management Site
(From Operations, Through Decommissioning, Transition Phase Monitoring and The Issuance of a Release from Decommissioning & Reclamation)



2.0 ADDRESSING A NEED

2.1 Introduction

Saskatchewan currently has one of Canada's most effective regulatory frameworks covering all facets of mine and mill development, operation and decommissioning. This "Cradle to Grave" regulatory oversight begins with the necessity for every new development to prepare an environmental impact assessment for public review and approval by the Minister pursuant to *The Environmental Assessment Act*.

In Saskatchewan, planning for decommissioning and reclamation is a legislative requirement from the initial stages in the development of a mine or mill property. *Project Specific Guidelines for the Preparation of an Environmental Impact Assessment*, issued by Saskatchewan Environment's Environmental Assessment Branch for a proposed mine and/or mill, will require the proponent of the project to include a conceptual decommissioning and reclamation plan in its environmental impact statement.

Once approval for the proposed mine and/or mill is received under *The Environmental Assessment Act*, the *Mineral Industry Environmental Protection Regulations, 1996* issued pursuant to the *Environmental Management and Protection Act*, require any person seeking to operate a pollutant control facility, mine or mill to first submit a detailed decommissioning and reclamation plan for review and approval by the Minister, as represented by his/her officers, and a financial assurance to ensure the completion of the decommissioning and reclamation of the mine site as approved by the Minister and established by the operator.

Those same regulations require the operator of the pollutant control facility, mill or mine to conduct a detailed review of the decommissioning plan and the financial assurance instrument at least once every five years, whenever requested to do so by the Minister or within the 12 months preceding the permanent closure of one or all such facilities.

Section 18 of the regulations require that an operator who wishes to permanently close a pollutant control facility, mine or mill advise the Minister in writing at least 60 days before commencing the permanent closure. This section also requires the operator to implement the approved decommissioning and reclamation plan according to the timeframe set out in the plan (*Figure 1, Item 2*).

After the operator has completed the approved decommissioning and reclamation activities, the site enters a period of 'transition phase monitoring' (*Figure 1, Item 5*). During the transition phase monitoring period, the operator is required to:

- Continue monitoring and maintaining the site, as per the requirements in the decommissioning and reclamation plan, at their own expense; and,
- Maintain financial assurances sufficient to cover the cost of the remaining obligations outlined in the decommissioning and reclamation plan and any monitoring and maintenance requirements for the balance of the transitional period, as well as a contingency, to be negotiated, for any unexpected occurrences.

Mine/Mill Decommissioning and Reclamation

The Mineral Industry Environmental Protection Regulations 1996 require all mine and mill properties to be decommissioned by the operator.

Decommissioning of a mine and mill property consists of disassembling, dismantling, disposing, removing or otherwise addressing all infrastructure associated with the project.

Reclamation actions are undertaken to improve the land previously disturbed by mining and milling activity to achieve a desired use or to an equivalent undisturbed condition. Reclaimed land has achieved the desired condition.

Generally, decommissioning consists of:

- *The salvaging of all underground equipment;*
- *An assessment and, when necessary, the addressing of underground mine crown pillars to ensure long-term stability and safety;*
- *Permanently sealing all underground mine openings to surface using an approved closure method (i.e. concrete bulkhead, etc.);*
- *Assessing all open pit mines, and when necessary, addressing pit wall stability and appropriate egress avenues to ensure long-term stability and safety;*
- *Permanently capping, covering or otherwise addressing mill tailings to limit short, medium- and long-term impacts to the biophysical and/or hydro-geological environment;*
- *Dismantling all buildings and associated infrastructure and disposing the associated materials in an appropriate and approved manner;*
- *Dismantling all water treatment and pollution abatement infrastructure and disposing of associated materials in an appropriate and approved manner;*
- *Dismantling and appropriately disposing of all treatment pond sludges and pond liners;*
- *The demolition of all concrete foundations, floors, etc. and appropriate disposing of such material; and,*
- *Dismantling and disposing any and all additional material associated with the property.*

Generally, reclamation consists of:

- *The re-contouring of all waste rock piles, dykes and contaminated berms, with the objectives of ensuring long-term slope stability, a similar topography to that of the surrounding area and promoting re-vegetation when appropriate;*
- *General earthworks to return the site and all related borrow areas associated with the site to a safe and stable state with a similar topography to that of the surrounding area and to a state that promotes re-vegetation when appropriate; and,*
- *Scarifying all roads and access trails to limit access and promote re-vegetation when appropriate.*

In some instances active re-vegetation may be required. Such re-vegetation must be completed with the objective of ensuring that the final plant community existing on the property be comprised of only those species of plants indigenous to the area.

During the transitional monitoring period, the Province and, in the case of uranium facilities, the Canadian Nuclear Safety Commission staff or authorized inspectors, continues to:

- Conduct periodic regulatory inspections of the site to monitor the company's maintenance activities to ensure that the performance targets provided in the decommissioning and reclamation plan are being achieved; and,
- Review and verify monitoring results and maintenance activities.

The operator continues to remain fully liable for any impacts the site has on the environment, surrounding communities and public safety, as per the requirements of *The Environmental Management and Protection Act, 2002*.

If the site performs in accordance with the decommissioning and reclamation plan and achieves the predicted stability during transition phase monitoring, the operator may make an *Application for a Release from Decommissioning and Reclamation* to obtain a release from further monitoring and maintenance responsibilities and from the obligation to maintain financial assurances (*Figure 1, Item 6*).

The *Application for Release from Decommissioning and Reclamation* must, at a minimum:

- Summarize the decommissioning and reclamation activities completed by the operator;
- Describe the performance of the site during the transition phase monitoring period;
- Predict, based on the documented performance of the site over the transition phase, the likely ongoing performance of the site and the likely expenditures the Province could accrue in the future to adequately maintain and monitor the site if it assumes custodial responsibility for the property;
- Assess the risk of unforeseen contingencies based on performance of the site over the transitional period; and,
- Provide an estimate of the potential costs to the Province to address such contingencies should it assume custodial responsibility.

Upon receiving the application, the Province and CNSC (uranium only) will initiate a review of the application (*Figure 1, Item 7*). Public input will be sought on any conditions that might be applied before the *Release from Decommissioning and Reclamation* is issued and on the type of institutional controls that will apply to the site.

Only after these steps are completed to the satisfaction of the Province would a *Release from Decommissioning and Reclamation* be issued to the operator (*Figure 1, Item 8*). Having received the Release, the operator may then proceed to apply and receive a release from its surface lease (*Figure 1, Item 10*). Release from the surface lease would transfer custodial responsibility for the property from the operator to the institutional control management framework (*i.e.* The requirements of the Institutional Control Registry) (*Figure 1, Item 11*).

Currently, no formal framework exists for the long-term management of a property after a *Release from Decommissioning and Reclamation* has been issued.

By establishing and implementing an institutional control management framework as proposed, the Province is acknowledging that a formal process for the long-term monitoring and management of decommissioned mining and milling properties is required. It is also reaffirming its position that once all decommissioning, reclamation measures and transition phase monitoring have been completed to the satisfaction of Saskatchewan Environment; the property will revert to the Crown.

The establishment of an institutional control management framework with an appropriate funding mechanism is also a demonstration of the Province's commitment to ensuring that future generations will not be burdened with unreasonable residual liabilities resulting from current mining activities.

The framework will also ensure long-term public safety and environmental protection once responsibility for a decommissioned site reverts to the Crown. This subject is considered a high priority by industry and is required to complete the full suite of regulatory tools to implement and sustain development and management of provincial resources.

2.2 Uranium Mine/Mill Properties

2.2.1 Historical Context

In answering the policy question as to whether or not the Province should accept custodial responsibility for uranium mining and milling properties once the operator has fulfilled its decommissioning and reclamation obligations, consideration must be given to the fact that for the past two decades, the Province has consistently stated that once the operator of such a facility has fulfilled its obligations and demonstrated, by transition phase monitoring, that the site is chemically and physically stable, it would accept custodial responsibility.

Examples:

Letter From P. van Es, Deputy Minister, Saskatchewan Environment to K. Haapanen, V.P. Mining, Eldorado Nuclear Limited, June 5, 1985

"If the monitoring demonstrates that the decommissioning work is successful and the site is environmentally acceptable after five years, the Province will assume institutional control and responsibility for the site."

The Government's Position on Proposed Uranium Developments in Northern Saskatchewan, Midwest Project, Cigar Lake Project, Government of Saskatchewan April 1998

"The government acknowledges its responsibility for long-term monitoring and possible mitigation of decommissioned and reclaimed uranium mines facilities after they have reverted to the control of the Crown." Page 2

However, since these statements were made, the national and international regulatory framework surrounding the institutional control of radioactive wastes (and therefore uranium mining and milling facilities) has changed significantly. The Government of Canada, as a member of the International Atomic Energy Agency of the United Nations, has become a contracting party to the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (2001)*. Canada has also promulgated the *Nuclear Safety and Control Act (2000)* and it is binding on Her Majesty in Right of Canada or a Province (section 4.0).

2.2.2 Canada's International Obligations

Canada is a "Contracting Party" to the International Atomic Energy Agency (IAEA's) Joint Convention on the *Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*. Article 17 of the Convention defines the requirements for institutional control measures after closure of radioactive waste management sites, including uranium mine/mill tailings facilities by stating:

Each Contracting Party shall take the appropriate steps to ensure that after closure of a disposal facility:

- (i) records of the location, design and inventory of that facility required by the regulatory body are preserved;*
- (ii) active or passive institutional controls such as monitoring or access restrictions are carried out, if required; and*
- (iii) if, during any period of active institutional control, an unplanned release of radioactive materials into the environment is detected, intervention measures are implemented, if necessary.*

Article 19 obligates each Contracting Party to establish and maintain a legislative and regulatory framework to govern the safety of spent fuel and radioactive waste management, and that the legislative and regulatory framework shall provide for:

- (vi) a system of appropriate institutional control, regulatory inspection and documentation and reporting.*

Article 20 of the Convention requires each Contracting Party to establish or to designate a regulatory body entrusted with the implementation of the legislative and regulatory framework referred to in Article 19. In Canada, this requirement has been addressed by promulgating the *Nuclear Safety and Control Act*, which empowers the Canadian Nuclear Safety Commission.

Article 21 requires that responsibility for radioactive waste management rests with the holder of the relevant license and that the Contracting Party shall take the appropriate steps to ensure that each such license holder meets its responsibility. Based on this article, some form of responsible authority will be required to hold a license on a decommissioned uranium tailings management area and, potentially, on some areas of waste rock.¹

Section 2.8 of the *Management of Radioactive Waste from the Mining and Milling of Ores Draft Safety Guide, Safety Standards Series No. WS-G-1.2, DS277*, International Atomic Energy Agency, Vienna (March 2002) states:

“After closure of a mining and milling facility and assurance that the operator has fulfilled its obligations, the regulatory body should ensure that responsibility for the waste is transferred from the operator to an appropriate body with the powers to implement any required institutional control [4]. In many cases, the body that has the greatest potential for maintaining these controls is a governmental organization. The regulatory framework should provide a mechanism for this transfer of responsibility. A mechanism should also be provided to ensure that the necessary funding to support institutional control is, and continues to be, available.”

As a Contracting Party to the Convention, the Government of Canada is required to take the appropriate steps to ensure that an appropriate institutional control framework is in place to address the long-term management of decommissioned uranium mine/mill facilities in Saskatchewan.

While Canada signed on to the *Joint Convention* in 1998, the Convention did not come into force until July 18, 2001 as a result of IAEA procedural considerations.

¹ Currently, in Canada this requirement is enabled by the federal *Nuclear Safety and Control Act* and enforced solely at the discretion of the Canadian Nuclear Safety Commission. Section 7 of the Act does, however, provide the Commission with the ability to exempt any activity, person, class of person or quantity of a nuclear substance, temporarily or permanently, from the application of the Act or the regulations or any provision thereof.

2.2.3 Federal Regulatory Context

The Government of Canada's regulatory framework as it applies to uranium mining and milling facilities is exercised by the *Nuclear Safety and Control Act* and associated regulations (particularly the *Uranium Mines and Mills Regulations* and the *General Nuclear Safety and Control Regulations*).

Section 4 of the *Nuclear Safety and Control Act* states:

4. Subject to an order made pursuant to section 5, this Act is binding on Her Majesty in right of Canada or a province.

(Note - Section 5 refers to the Armed Forces)

Section 26 of the Act states:

26. Subject to the regulations, no person shall, except in accordance with a licence,
(a) possess, transfer, import, export, use or abandon a nuclear substance, prescribed equipment or prescribed information;...
or
(e) prepare a site for, construct, operate, modify, decommission or abandon a nuclear facility;

Subsection (a) refers to a 'nuclear substance' while subsection (e) refers to a 'nuclear facility'.

In the context of this discussion, a "nuclear facility", as defined in the *Act*, means any of the following facilities:

- A uranium or thorium mine or mill;
- Any other facility that is prescribed for the development, production or use of nuclear energy or the production, possession or use of a nuclear substance, prescribed equipment or prescribed information; and
- This includes, where applicable, the land on which the facility is located, a building that forms part of, or equipment used in conjunction with, the facility and any system for the management, storage or disposal of a nuclear substance.

In addition, section 19 of the *General Nuclear Safety and Control Regulations* states that facilities for the management, storage or disposal of waste containing radioactive nuclear substances at which the resident inventory of radioactive nuclear substances contained in the waste is 10^{15} Bq or more are prescribed as nuclear facilities for the purpose of paragraph (i) of the definition "nuclear facility" in section 2 of the *Nuclear Safety and Control Act*.

Therefore, while an argument can be made that a fully decommissioned and rehabilitated uranium mine/mill site does not constitute a 'nuclear facility', such a site will contain decommissioned mill tailings and waste rock piles that are both defined as 'nuclear substances' and could potentially be defined as a 'nuclear facility'.

Section 26 of the *Nuclear Safety and Control Act* requires that no person can 'possess' a nuclear substance unless it is licensed under *Act*.

CNSC staff have indicated that, should a third party such as the Province agree to take responsibility for the institutional control of a decommissioned uranium mine and/or mill facility or the land on which it existed, either:

- (a) The Province would be required to hold a license as specified by section 26 the *Nuclear Safety and Control Act*; or

- (b) The Canadian Nuclear Safety Commission would have to issue an exemption to the Province from licensing under section 7 of the *Nuclear Safety and Control Act*.

The proposed Institutional Control Registry, in conjunction with the monitoring prescribed by the Registry has been designed to be comparable to an active "license" issued by the CNSC pursuant to the *Nuclear Safety and Control Act*. It is believed that implementation of the Registry will satisfy the CNSC in terms of Canada's obligations under the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* (IAEA) and the requirements of the *Nuclear Safety and Control Act*. However, the Canadian Nuclear Safety Commission itself will decide on the acceptability of the implementation of the Registry on a site-by-site basis under the *Nuclear Safety and Control Act*.

2.2.4 Additional Considerations

If the Province is to accept long-term custodial responsibility for uranium properties, Saskatchewan Environment must have the authority to define and to enforce decommissioning and reclamation criteria at such sites. It is unreasonable for the Province to consider accepting custodial responsibility for a site for which the Province's close out criteria has not been met. It should however be noted that the Canadian Nuclear Safety Commission has final authority while the site is under a CNSC license. The Province will seek a formal agreement with the CNSC that no operator will be released from CNSC licensing until the Province first confirms in writing to the CNSC that the operator should be released from such a license.

2.2.5 Option - Refusing to Accept Custodial Responsibility for Uranium Properties

The option exists for the Province to refuse to accept custodial responsibility for uranium properties once the operator has fulfilled its decommissioning, reclamation and transition phase monitoring obligations. If such a decision is taken, the Province must inform the Government of Canada and the CNSC of its decision, so they can develop the necessary framework to meet Canada's international obligations under the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* (IAEA).

However, a review of Section 4 of the *Nuclear Safety and Control Act* by representatives of Saskatchewan Justice expressed the opinion that the *Act* is binding on Her Majesty in Right of Canada or a Province, while other sections of the *Act* empower the CNSC to unilaterally issue licenses and regulations, subject to procedural constraints. Either one of these instruments could be used by the Commission to force the Province to accept custodial responsibility of uranium properties once the operator has fulfilled its obligations.

2.3 Orphaned Mines in Northern Saskatchewan

Good governance dictates that all orphaned sites located on Crown land in northern Saskatchewan as identified in the recently-completed *Assessment of Abandoned Mines in Northern Saskatchewan* eventually be included in the Institutional Control Registry. Currently, approximately 35 such sites pose little environmental and/or human safety risk and could therefore be included in the Institutional Control Registry during its start-up. This would not significantly add to the cost of monitoring under the Registry, as the majority of the sites are benign in nature and should not require institutional control monitoring or maintenance.

Entering such sites in the Registry will simply maintain a permanent record of the sites and reduce public perception that such sites pose a significant level of environmental or public safety risk.

Those sites that require some level of remediation to enhance environmental and/or public safety will be entered in the Registry once remediation activities are complete and Saskatchewan

Environment, as the primary regulatory authority, has agreed that the site has achieved the desired end-point of those remediation activities.

3.0 PROPOSED INSTITUTIONAL CONTROL MANAGEMENT FRAMEWORK

3.1 Institutional Control Registry

The Institutional Control Working Group conducted a detailed review of similar management frameworks from other national and international jurisdictions. Based on best management practices identified during that review and the combined expertise of the members, the Institutional Control Working Group proposes the Province establish an Institutional Control Registry to maintain a formal record of all properties for which the Province has accepted custodial responsibility and to document and report on any monitoring and maintenance undertaken on such properties.

Appendix A provides an example of the proposed format for an Institutional Control Registry.

The Appendix also includes a sample registration document that was prepared for a gold property for which Saskatchewan Environment issued a deed of custodial transfer in January 1997. That deed was in the form of a *Release From Decommissioning and Reclamation – Release Number IR-13*. The Appendix also includes a theoretical sample registration for a uranium property.

These two examples illustrate that maintaining the Registry will not be difficult. However, the Registry will require the physical retention, in a single location of certain documents that are critical to the effective institutional control of each property. These include the *Final Closure Plan* submitted by the operator to Saskatchewan Environment in support of an approval to decommission as specified in the *Mineral Industry Environmental Protection Regulations, 1996*, and the Application for Release submitted by the operator at the end of the transition phase monitoring period.

The retention in the Registry of other very specific information related to the long-term institutional control of the site is also important. Such information includes:

1. A clear, concise and documented location of the property;
2. A clear identification of the former operator (Surface Lessee) of the site;
3. A brief description of the property and historical activities undertaken;
4. Reference to the appropriate *Release From Decommissioning and Reclamation* document issued by Saskatchewan Environment;
5. Reference to and location of the documentation provided by the operator in making its application for a *Release From Decommissioning and Reclamation* including a full and complete set of 'as-built' reports;
6. A description of anticipated long-term care and maintenance requirements if any;
7. Reference to and location of the final Surface Lease Agreement provided to the operator by the Province;
8. Reference to and location of the documentation provided as notification to the operator of release from the Provincial Surface Lease Agreement;
9. In the case of uranium facilities, reference to and location of CNSC licensing documentation and CNSC decisions related to the site;
10. Notation of the specific physical location of all applicable documentation related to the site;
11. The future allowable land use(s) for the property;
12. Whether the property is registered in the Land Disposition Inventory System (LDIS) administered by Saskatchewan Environment;
13. The frequency, type and schedule of institutional control inspections that are required of the site;
14. Whether or not sample collection is required; and,

15. The results of past institutional control inspections of the site.

In a related context, Section 406 of the Saskatchewan *Mines Regulations, 2003* states:

406) Before a mine or any part of a mine is closed, abandoned or otherwise rendered inaccessible, the employer, contractor or owner must ensure that:

- (a) all plans required pursuant to subsection 7(2) are updated; and
- (b) copies of the plans mentioned in clause (a) are:
 - (i) certified as correct by the employer, contractor or owner; and
 - (ii) forwarded to the chief mines inspector.

It would seem logical to house the documentation required by the *Mines Regulations, 2003* for those properties recorded in the Registry at the same location as the documents required by the Registry and discussed above. In this way, all documents relevant to the institutional control management of a property for which the Province has accepted custodial responsibility will be permanently retained, and easily accessible to personnel conducting institutional control inspections, interested members of the public, and for CNSC audit.

The proposed Registry would consist of both hard copy and electronically formatted documentation. Supporting documents for each registered property would be permanently housed within the responsible authority and would include:

- The **Final Closure Plan** (prepared by the Operator and approved by Saskatchewan Environment);
- The **Application For Release From Decommissioning and Reclamation** (prepared by the Operator);
- **Final Mine Plans** (submitted by the Operator as per the requirement of the *Mines Regulations, 2003*);
- A Copy of the **Release From Decommissioning and Reclamation – Release Number IR-XX** (issued by Saskatchewan Environment);
- Final **Provincial Surface Lease Agreement** issued to the operator (approved by Saskatchewan Northern Affairs and Saskatchewan Environment); and,
- A copy of the notification of release from the **Provincial Surface Lease Agreement** provided to the operator (approved by Saskatchewan Northern Affairs and Saskatchewan Environment).

Based on a recent review, there are a limited number of properties that would initially be entered in the Registry. While it is difficult to estimate the number of additional properties that would require inclusion in the Registry during the next decade, the number of current mining activities on Crown Land is limited and current projections can be used to estimate when they may be ready for a transfer of custodial responsibility and therefore be included in the Registry. Possibly, an average of three additional properties might be added to the Registry during the next decade – the Contact Lake gold property currently under Surface Lease to Cameco Corporation, a portion of the Beaverlodge uranium property also under Surface Lease to Cameco and the Komis gold property under Surface Lease to the Jolu Development Corporation.

The Cluff Lake, Lorado and Gunnar uranium mine sites are currently in the early stages of decommissioning and reclamation. Once this activity is completed, all three sites will require a minimum ten-year transition phase monitoring period and will therefore not be considered for inclusion in the Registry until 2015 at the earliest.

It is also important to note that inclusion within the Registry of a specific property does not limit the re-development of the property (e.g. to re-mine the tailings) in the future. Should such a proposal be approved, the property would be released from the Registry and a new Surface Lease would be issued to the proponent. That proponent would then be subject to provincial (and

in the case of a former uranium property, federal) regulatory oversight and would have to decommission and reclaim the property to the satisfaction of all regulatory requirements.

3.1.1 Public Access to the Registry

As virtually all of the information to be contained within the Registry are currently accessible to the public, it would seem logical to also ensure the electronic format is also available for public access/review via the Internet.

However, the physical support documentation (i.e., primarily the *Final Closure Plan, Application for Release and Final Mine Plans* for each site, etc.) that is housed permanently with the responsible authority would be available only for supervised public review as that documentation cannot be compromised.

3.2 Enabling Legislation

By establishing the Registry file and associated framework, the Province is acknowledging that a formal process for the long-term monitoring and management of such properties is required and is reaffirming its position that once all decommissioning, reclamation and transition phase monitoring have been completed to the satisfaction of Saskatchewan Environment, the property will revert to the Crown.

The establishment of the institutional control management framework is also a demonstration of the Province's commitment to ensuring that future generations will not be burdened with unreasonable residual liabilities resulting from current mining activities. To accomplish these objectives, the Registry and its functions must be vested with as much 'permanence' as possible to ensure that its continuity is not interrupted in the long-term. This continuity can best be achieved by enshrining the Registry in separate, enabling legislation.

Implementing the institutional control management framework without legislative change may be possible as a number of existing Acts likely have sufficient authority to carry out all required passive and active activities. There could, however, be a benefit in enacting a specific *Act* governing institutional control.

A specific *Act* would give the responsible Department specific powers, and the responsibility, to address all aspects of the institutional control management framework. The legislation would also assist in satisfying Canada's international obligations as set out in the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*. The legislation could:

- Set out by regulation the condition required of a closed site before it can enter the institutional control management framework;
- Authorize the Minister, or the Lieutenant Governor in Council, to accept a closed site into the framework;
- Allow the Minister to require an "endowment" from the operator of the closed site to fund future monitoring and maintenance costs;
- Allow for the creation of a revolving fund to receive endowments to cover future monitoring and maintenance costs;
- Require the Minister to maintain a registry containing information prescribed by regulation, and authorizing the Minister to accept other information;
- Authorize the Minister to control access to the closed site; and,
- Require the Minister to file a report with the Legislative Assembly every five years setting out the condition of the closed sites.

In the case of uranium facilities, consultation with the CNSC will be undertaken, during the drafting of the proposed legislation to ensure that, to the extent possible, the legislation satisfies the requirements of the *Nuclear Safety and Control Act* and the regulations issued pursuant to that Act.

Appendix B provides a draft example of such an Act as prepared by Saskatchewan Justice.

3.3 Responsible Agency (“Office of Institutional Control Registry”)

Based on a review of the activities required under the proposed institutional control management framework, it is proposed to establish an Institutional Control Registry within the provincial government structure.

The Institutional Control Registry would be limited in size (i.e., < 1 FTE) and be mandated to maintain the Registry itself and to ensure that all inspections and monitoring required by the Registry are completed. These activities would include:

1. Entering each newly acquired property into the Registry (very infrequent, estimated at 1 property every 3-4 years);
2. Maintaining the electronic access to the registry;
3. Conducting an annual review of each registered property and scheduling the inspections/monitoring activities required by the Registry;
4. Reviewing and recording the results of each inspection/monitoring event in the Registry; and,
5. Scheduling any required property maintenance in the unlikely event that such activity is required.

Options for locating the Institutional Control Registry could include:

1. Saskatchewan Environment
2. Saskatchewan Industry and Resources
3. Information Services Corporation

3.4 Custodial Transfer (Operator to Registry)

After the operator has completed the approved decommissioning and reclamation activities, the site enters a period of ‘transition phase monitoring’. During the transition phase monitoring period, the operator is required to:

- Continue monitoring and maintaining the site, as per the requirements described in the decommissioning and reclamation plan, at their own expense; and,
- Maintain financial assurances sufficient to cover the cost of the remaining obligations outlined in the decommissioning and reclamation plan and any monitoring and maintenance requirements for the balance of the transitional period.

During and after this transition phase, which does not conclude until all regulatory obligations are met, the operator, if still in existence, remains fully liable for any impacts the site may have on the environment, surrounding communities and the public safety as per the requirements of the *Environmental Management and Protection Act, 2002 (EMPA)*.

If the site performs in accordance with the decommissioning and reclamation plan and achieves the predicted stability during the transition-monitoring period, the operator may make an application for a *Release from Decommissioning and Reclamation* in order to obtain a release, under EMPA from further monitoring and maintenance responsibilities and from the obligation to maintain financial assurances.

The *Application for Release from Decommissioning and Reclamation* must, at a minimum:

- Summarize the decommissioning and reclamation activities completed by the operator;
- Describe the performance of the site during the transition phase monitoring period;
- Predict, based on the documented performance of the site over the transition phase, the likely ongoing performance of the site and the likely ongoing expenditures the Province may be expected to take on in order to adequately maintain and monitor the site if it assumes custodial responsibility for the property;
- Assess the risk of unforeseen contingencies based on performance of the site over the transitional period; and,
- Provide for the Province an estimate of the potential costs to address such contingencies, should it assume custodial responsibility.

Upon receiving the application for release from decommissioning and reclamation, the Province will initiate a review of the application. That review will include opportunities for public input on any conditions that might be applied before the *Release from Decommissioning and Reclamation* is issued and the type of institutional controls that will apply to the site.

Only after these steps are completed to the satisfaction of the Province would a *Release From Decommissioning and Reclamation* be issued to the operator and the custodial responsibility for the property transferred from the operator to the Institutional Control Registry.

3.5 Acceptance Criteria

Certain fundamental criteria must be met before a *Release from Decommissioning and Reclamation* will be issued to the operator and custodial responsibility for the property assumed by the Institutional Control Registry. These criteria are established by Saskatchewan Environment and are subject to periodic review.

3.5.1 Decommissioning Objectives

The detailed decommissioning and reclamation plan submitted by the operator, as required by the *Mineral Industry Environmental Protection Regulations, 1996* will specify the objectives/criteria for decommissioning and reclamation activities for the property. The plan must receive regulatory approval before the operator implements decommissioning and reclamation.

3.5.2 Transition Phase Monitoring

After the operator has completed the approved decommissioning and reclamation activities, the site enters a period of 'transition phase monitoring'.

Only after this monitoring has demonstrated that the site is chemically and physically stable to the satisfaction of the Province, would a *Release from Decommissioning and Reclamation*, be issued to the operator and the custodial responsibility for the property be transferred from the operator to the Institutional Control Registry.

3.5.3 Federal Licensing

In the case of a decommissioned and reclaimed uranium mine and/or mill property, if the Canadian Nuclear Safety Commission is unwilling to release the operator from a license issued pursuant to the *Nuclear Safety and Control Act* and associated regulations; the Institutional Control Registry would not accept custodial responsibility for the property.

4 FINANCIAL CONSIDERATIONS

4.1 Administering the Registry

The anticipated cost to establish the Institutional Control Registry would include:

1. The one-time cost to design and establish the electronic format of the Institutional Control Registry
2. The one-time cost to enter the existing properties for which the Province has accepted custodial responsibility and the limited number of orphaned sites that pose minimal if any environment or safety risk; and,
3. The one-time cost to assemble the necessary documents in support of each of the registered properties.

The annual operational cost for the Institutional Control Registry would include:

1. Staffing the Registry;
2. Costs associated with entering each newly acquired property into the Registry;
3. Maintaining the electronic access to the registry;
4. Housing the documents in support of each of the registered properties;
5. Reviewing each registered property and retaining the required inspections/monitoring reports.

4.2 Institutional Control Properties Monitoring

Some have suggested that there will be excessive costs associated with the monitoring and maintenance of properties for which the Province has accepted custodial responsibility under the Institutional Control Registry. If Saskatchewan Environment, after reviewing the operator's "Application for Release", judges that the risks are too great or that the potential monitoring/maintenance costs are potentially too high for the Province to accept custodial responsibility for the property, that Department retains the authority to refuse to release the operator from its custodial responsibility for the property (Figure 1, Item 9).

Each property included in the Institutional Control Registry would be inspected on a frequency prescribed by the site-specific schedule recorded in the Registry. As this level of activity does not necessarily warrant the retention of a full time inspector by the Registry, it is possible that the inspection activity could be sub-contracted by the Registry to a line department or qualified private sector firm.

Inspection reports, once completed by the Registrar's agent would be forwarded to Saskatchewan Environment, for review and approval. Once such approval is received, an inspection report would be entered in the Institutional Control Registry and maintained appropriately by that agency. In the unlikely event follow up is recommended at a particular site, any proposed action would be reviewed and approved by Saskatchewan Environment prior to being implemented.

4.3 Institutional Control Properties Maintenance

The cost of maintenance of properties for which the province has accepted custodial responsibility is predictable and can be calculated on a site-specific basis.

For example, the concrete bulkhead used to permanently seal a mineshaft during decommissioning must be designed and constructed to last 100 years. Therefore, the cost of maintaining that aspect of the site will be the replacement cost in one hundred years. Such a calculation will be required in the *Application for Release from Decommissioning and Reclamation* provided by the operator. The Province could charge a "release payment" from the

operator or, alternatively, withhold a portion of the existing financial assurance to cover such predictable maintenance costs.

Suggestions that there could be excessive costs associated with the maintenance of those properties for which the Province has accepted custodial responsibility is not supported by consideration of current mine decommissioning and reclamation strategies.

The principle that undue burdens should not be placed on future generations leads to the conclusion that a passive approach to designing a site for closure is preferable to a design that requires significant ongoing maintenance. As a result, modern mine decommissioning and rehabilitation strategies are based on the implementation of passive control principles wherever possible. For example, disposing of tailings in mined out open pits as opposed to above ground engineered tailings management facilities, is the preferred option for long-term management. Above ground facilities require the construction of engineered dykes that require long-term surveillance and eventually will require some type of maintenance to maintain their integrity. Similarly, filling an underground shaft with waste rock is a passive decommissioning strategy when compared with permanently closing the same shaft with an engineered concrete bulkhead. Eventually the concrete bulkhead will require maintenance or have to be replaced.

The implementation of passive decommissioning and rehabilitation strategies to close a site will significantly reduce the need for maintenance on site in the long-term and therefore any potential costs that may have to be assumed by the Province in order to undertake such activities.

If Saskatchewan Environment, after reviewing the operator's "*Application for Release*", judges that the potential risk to the Province of maintaining a particular property is too high, that Department retains the authority and ability to refuse to release the operator from their responsibility for the site.

4.4 Summary of Annual Costs to Operate

Tables 1 and 2 provide a summary of the ongoing cost associated with the Institutional Control Registry, its operations, monitoring requirements and ongoing maintenance costs for properties that could be included in the Registry.

Table 1
Initial Estimated 2005-2006 Operating Costs

Activity	Resource Requirement	Cost
Infrastructure Requirements Facilities to support Registrar Facilities to house the documents in support of each of the properties registered. Facilities to maintain outside electronic access to the Registry.		\$10,000.00
Human Resource Requirements <ul style="list-style-type: none"> • Maintain the electronic access to the Registry • Reviewing each registered property and retaining the required inspections/monitoring reports 14 FTE days to conduct inspections • Travel time and costs for the inspecting officer 	0.5 FTE	\$35,000.00 \$14,000.00
Total Estimated Annual Cost to Operate		\$59,000.00

Table 2
Potential Costs Associated
With the Institutional Control Management of Properties*

Estimated Cost to Administer the Institutional Control Registry		
Activity	Frequency	
Administration	Annual	Costs have been estimated (Table 1)
Staffing	Annual	Costs have been estimated (Table 1)
Inspections	Annual	Costs have been estimated (Table 1)
Cost of Maintenance of Properties Contained within the Registry		
Activity	Frequency	
Restore concrete bulkhead shaft closure	100 + years	Cost can be calculated and amortized (site specific)
Restore tailings containment dyke	100 + years	Cost can be calculated and amortized (site specific)
Restore tailing area cover	100 + years	Cost can be calculated and amortized (site specific)

*** Site Maintenance costs will be calculated with Industry**

One option for implementation and operation of the Institutional Control Registry might be that it be funded from the Province's General Revenue Fund.

Another option would be for the Province to charge a 'release payment' to the operator or, alternatively, withhold a portion of the existing financial assurance to cover the predictable monitoring and maintenance costs of properties contained within the Registry.

5 FUNDING UNANTICIPATED FUTURE COSTS

5.1 Unanticipated Future Costs

It is not possible to forecast or estimate the extent of unanticipated future costs at any individual decommissioned property. However, modern mine decommissioning and rehabilitation strategies are based on the implementation of passive control methods wherever possible. These methods significantly reduce the potential for such costs to arise.

The implementation of passive control principles during decommissioning and rehabilitation significantly reduces the potential for the development of circumstances that would lead to unanticipated future costs at properties for which the province has assumed custodial responsibility. Coupled with this is the fact that any likely scenario that would require the expenditure of funds would not occur instantaneously but would develop over a relatively long period of time (i.e. years as opposed to days). The institutional control management framework and the required monitoring associated with the framework are specifically designed for early detection of such occurrences to minimize the cost of rehabilitation should it be required.

Table 3 provides a summary of the most significant unanticipated events that could arise at a decommissioned property in the medium and long-term. The *Environmental Management and Protection Act, 2002*) provides for absolute liability for a person responsible for a discharge to continue indefinitely. In addition, the Act makes no provision for the waiver of such liability. For this reason, the Minister of Environment cannot, and does not issue a deed of custodial transfer that states that the operator is completely absolved from responsibility for environmental contamination at a particular site or property.

The proposed institutional control management framework will not limit the Province's ability to require a company to be held responsible for any and all future clean up costs should the environmental conditions at a property decline below those identified in the 'Application for Release' approved by Saskatchewan Environment when custodial transfer of the property took place. Therefore, if the original operator is still in existence, they will be responsible for all future unanticipated costs.

Table 3
Potential Unanticipated Future Cost Associated
With Institutional Control Registry Properties

Unanticipated Future Costs			
	Likelihood of Occurrence	Environmental Risk	Public Safety Risk
<i>Failure of containment dyke</i>	<i>Low – engineered structures</i>	<i>Limited localized risk</i>	<i>Limited localized risk</i>
<i>Degradation of pit wall stability</i>	<i>Moderate – erosion</i>	<i>No risk to environment</i>	<i>Limited localized risk</i>
<i>Failure of shaft closure</i>	<i>Low – engineered structures</i>	<i>No risk to environment</i>	<i>Limited localized risk</i>
<i>Increased release of contaminants from tailings area</i>	<i>Low – engineered structures & will develop over long time period</i>	<i>Limited localized risk</i>	<i>Limited localized risk</i>
<i>Human Intrusion (Vandalism, Accidental, Terrorism)</i>	<i>Low – remote locations, limited resource value</i>	<i>Limited localized risk</i>	<i>Limited localized risk</i>
<i>Change in Federal Regulatory Regime (uranium only)</i>	<i>Unknown – potential financial implications</i>	<i>No risk</i>	<i>No risk</i>
Catastrophic Events ('Acts of God')			
	Likelihood of Occurrence	Significance of Risk	
<i>Earthquake</i>	<i>Extremely Low</i>	<i>Inconsequential risk in light of event</i>	
<i>Flood</i>	<i>Extremely Low</i>	<i>Inconsequential risk due to dilution</i>	
<i>Meteorite</i>	<i>Extremely Low</i>	<i>Inconsequential risk in light of event</i>	

If the original operator were no longer in existence, such costs if they were to arise, would have to be addressed by public means. However, evidence accumulated to date in northern Saskatchewan demonstrates that, after forty years, mine and tailings management areas at former mine sites (including former uranium sites) that were not decommissioned or reclaimed in any way, currently pose only a limited and localized environmental and public safety risk, therefore the cost would not be excessive.

The fact the application of current decommissioning and reclamation standards of all sites will be contained within the Institutional Control Registry will reduce the likelihood of an event of this nature occurring, the level of risk posed of such an event and the potential costs to future generations. In addition, the institutional control framework and the required monitoring associated with the framework are specifically designed for early detection of such occurrences in order to minimize the cost of rehabilitation should it be required.

Catastrophic events caused by acts of God and/or natural phenomena of an exceptional, inevitable and irresistible character would be the responsibility of the Crown.

5.2 Industry Responsibility under The Environmental Management and Protection Act, 2002

The Environmental Management and Protection Act, 2002 provides for absolute liability for a person responsible for a discharge to continue indefinitely. The authority to waive this liability does not rest with the Minister of Environment as no such authority is provided in the Act. It is for this reason that the Minister of Environment does not issue a deed of custodial transfer that states that the operator is completely absolved from responsibility for environmental contamination at a particular site or property.

The institutional control framework as proposed will not limit the Province's ability to require a company to be held responsible for any and all future clean up costs should the environmental and/or safety conditions at the property decline below those identified in the '*Application for Release*' approved by Saskatchewan Environment and upon which the basis of the custodial transfer was undertaken.

5.3 Provincial Responsibility

As per *The Environmental Management and Protection Act, 2002*, costs associated with catastrophic events caused by acts of God and/or natural phenomena of an exceptional, inevitable and irresistible character through no fault of the company, would be the responsibility of the Crown.

5.4 Federal Responsibility

Given Canada's past involvement in uranium mining and milling in the Province, there may be some responsibility for the federal government to contribute to the long-term monitoring and maintenance of orphaned uranium sites and to cover all future unanticipated costs.

Ontario Example

Ontario's 1996 Memorandum of Understanding (MOU) with the Government of Canada, among other things, addresses the costs resulting from "extraordinary events". That MOU states:

In accordance with a plan agreed to by the parties pursuant to Article 6.2 (c) to remedy the damage at a uranium site caused by an extraordinary event, Canada and Ontario agree to equally pay cost incurred for remedial activities.

Article 6.2 states:

6.2 The Management Committee is a forum for the parties to cooperate and shall:

- (a) Ensure that a competent organization carries out activities in accordance with decommissioning and perpetual care plans agreed to by the parties, subject to any requirement of the appropriate regulatory authorities;*
- (b) monitor perpetual care activities and agree to remedial plans which may be necessary;*
- (c) agree to plans for remedial activities due to an extraordinary event;*
- (d) ensure that a mechanism is in place to resolve disputes that may arise between parties pursuant to this Agreement;*
- (e) address any other matter that may arise pertaining to this Agreement.*

5.5 Consideration of Unanticipated Future Costs

The implementation of an institutional control management framework at this time is a demonstration of the Province's commitment to ensuring that future generations will not be burdened with unreasonable residual liabilities resulting from current mining activities. In order for this principle to be fully addressed, some consideration must be given to ensuring that the future taxpayers of Saskatchewan have sufficient resources at their disposal to address any unanticipated future costs resulting from those properties for which the Province has assumed custodial responsibility.

Modern mine decommissioning and rehabilitation strategies are based on the implementation of passive control principles wherever possible. For example, disposing of tailings in mined out open pits as opposed to above ground engineered tailings management facilities is the preferred option for long-term management. Above ground facilities require the construction of engineered dykes that necessitate long-term surveillance and eventually will entail some type of maintenance to maintain their integrity. Similarly, filling an underground shaft with waste rock is a passive decommissioning strategy when compared with permanently closing the same shaft with an engineered concrete bulkhead. Eventually the concrete bulkhead will require maintenance or have to be replaced.

The implementation of passive control principles during decommissioning and rehabilitation significantly reduces the potential for the development of circumstances that would lead to unanticipated future costs at properties for which the province has assumed custodial responsibility. Coupled with this is the fact that any likely scenario that would require the expenditure of funds would not occur instantaneously but would develop over a relatively long period of time (i.e. years as opposed to days). The institutional control framework and the required monitoring associated with the framework are specifically designed for early detection of such occurrences in order to minimize the cost of rehabilitation should it be required.

This, combined with the fact that Saskatchewan Environment retains the authority and ability to refuse to release the operator from their custodial responsibility if it judges the future risks to be unreasonably high, both reduce the risk of unanticipated future costs at properties for which the Province has accepted custodial responsibility.

5.6 Funding Options:

Table 4 provides a matrix of options available to address the costs of the:

- Administration of the Institutional Control Registry;
- The monitoring and maintenance costs of properties contained within the Registry;

- Maintenance of properties contained within the Registry (i.e. properties for which the Province has accepted custodial responsibility);
- Unanticipated future costs at such properties; and,
- Catastrophic events or 'Acts of God' that could potentially impact such properties.

One option is to hold the funds collected in a dedicated fund like the Oil and Gas Environmental Fund. This Fund was established by *The Oil and Gas Conservation Act* to provide the government with a means to address unique oil and gas related environmental related issues. The Fund guarantees the proper drilling, completion and abandonment of wells, including surface restoration. The Fund also allows for the government to respond to a major spill or environmental problem when liability for the problem cannot be initially determined.

The expenditure of moneys from the Fund does not relieve the owner or operator of the responsibility to maintain the well, well site, structure test hole, structure test site, oil shale core hole, oil shale core hole site or related facility in compliance with the Act and regulations and orders made pursuant to the Act. The Minister of Industry and Resources may recover from the owner or operator any moneys expended for any work or activity that the owner or operator would be responsible to perform. The Minister may also take possession and dispose of any equipment or material left by the owner or operator at the well, structure test hole or oil shale core hole.

Other options include management of the dedicated funds through the General Revenue Fund or creation of an arms length agency to collect and manage the funds.

6.0 Conclusion

This precedent-setting management framework will make Saskatchewan a world leader in further advancing responsible, effective, long-term management of decommissioned mine sites by protecting the health, safety and well being of future generations and the environment. It also responds to what we heard from the mining industry and, in particular, the uranium industry that a prescribed process is needed for the long term monitoring and management of these sites.

Lastly, the institutional control framework addresses concerns raised by the public and neighbouring communities who want to know that a former mine site will be adequately monitored to ensure long-term environmental and public safety. In the case of uranium, for the past two decades the Province has publicly and consistently stated that, once a mining company has fulfilled its obligations and demonstrated, through transition phase monitoring, that the site is chemically and physically stable, it would accept custodial responsibility.

The institutional control framework is a delicate balancing act that properly and effectively embraces the challenges of a green and prosperous economy and a future that is wide open.

Various forums, commencing in fall of 2005, will be held with the mining industry, the public, Aboriginal people and stakeholders on the costs of implementing the framework, maintaining the Registry and ongoing monitoring and maintenance costs as well as those costs associated with unanticipated future events.

**Table 4
Potential Options**

Options	Costs	Cost to Administer the Institutional Control Registry	Cost of Monitoring Properties Contained within the Registry.	Cost of Maintenance of Properties Contained within the Registry	Unanticipated Future Costs	Catastrophic Events ('Acts of God')
		<i>Estimated Cost (2005-2015) – \$59,000/yr</i>	<i>Cost can be calculated and amortized</i>	<i>Cost can be calculated and amortized</i>		<i>(Earthquake, flood, meteorite)</i>
Gold/Base Metal Etc. Properties						
<i>Provincial (General Revenue Fund)</i>						
<i>Industry Funded</i>						
<i>Federal/Provincial Cost Share</i>						
<i>Industry/Province Cost Share</i>						
<i>Industry/Federal/Provincial Cost Share</i>						
<i>Legacy Fund (Provincial)</i>						
<i>Insurance</i>						
<i>Trust Fund (Publicly administered)</i>						
Uranium Properties						
<i>Provincial (General Revenue Fund)</i>						
<i>Industry Funded</i>						
<i>Federal/Provincial Cost Share</i>						
<i>Industry/Provincial Cost Share</i>						
<i>Industry/Federal/Provincial Cost Share</i>						
<i>Legacy Fund (Provincial)</i>						
<i>Insurance</i>						
<i>Trust Fund (Publicly administered)</i>						

REFERENCES

- CLBI, 1978. ***Final Report, Cluff Lake Board of Inquiry***, Regina, Saskatchewan, May 31, 1978
- IAEA, 2002 ***Management of Radioactive Waste from the Mining and Milling of Ores, Draft Safety Guide***, Safety Standards Series No. WS-G-1.2, International Atomic Energy Agency, March 2002
- Ontario, 2005 Communication - J. Robertson, Ontario Ministry of Northern Development and Mining to L. Sinclair Saskatchewan Northern Affairs
- SASK. 1998 ***The Government's Position on Proposed Uranium Mining Developments in Northern Saskatchewan (Midwest Project and Cigar Lake Project)***
Government of Saskatchewan, April 1998

APPENDIX A
Sample
Institutional Control Registry



Province of Saskatchewan

Institutional Control Registry



Institutional Control Registry

Table of Contents

Responsible Authority to Maintain Registry

Responsible Authority to Conduct Prescribed Institutional Control Registry Inspections

The Registry

Former Gold and/or Base Metal Sites – Subject to Surface Lease

1. *Jasper Mine*
2. *Star Lake Mine*
3. *etc.*

Orphaned Gold and/or Base Metal Sites

1. *Box Mine*
2. *Rottenstone*
3. *Anglo-Rouyn*
4. *etc.*

Former Uranium Sites – Subject to Surface Lease

1. *etc.*

Orphaned Uranium Sites

1. *Gulch Mine*
2. *Baska Uranium Mine Ltd.*
3. *etc.*

Risk Assessment Criteria for Institutional Control Registry Inspections



Institutional Control Registry

GOLD BASE METAL SITE 97-01

Region: *La Ronge Area*

Property Reference Name: *Jasper Mine*

Property Lease Number: *-*

DNS Property Number: *200091*

Property Location: *136199700 N*
(see attached map) *545600E*
NTS Map Sheet 73P/16

Mineral: *Gold (Ag)*

Mine Operator: *Cameco Corporation*

Last Surface Lease Holder: *Cameco Corporation*

Description of Previous Use: *Under ground adit, 2 raises*

Milling Location: *Same Location*

Property Description:

- 42 ha area located near Broeder Lake, Saskatchewan. The site consisted of 1 decline, 2 raises to surface, a mill and tailings management area.

Description of Conditions at Release:

- Adit filled to first corner with waste rock.
- Tailings management area decommissioned by a combination of flooding and re-vegetation.
- Waste rock contoured with no re-vegetation.
- Mill dismantled and hauled off site.

Site Accessibility:

- Approximately 27 km from Highway 22.
- Seldom used vehicular trail.
- Swale and berm closure of trail near site.

Released from Decommissioning and Reclamation

<i>Date</i>	Yes	No
<i>Release Number</i>	January 23, 1997	
<i>Release Issued To</i>	IR-13	
<i>Application Documentation Location</i>	Cameco Corporation	
	Sask. Environment	



Institutional Control Registry

GOLD BASE METAL SITE 97-01

Allowable Land Use

- Unrestricted temporary use.
- No allowable permanent use.
- No mineral material removal.

**Register in Land Disposition
Inventory System (LDIS)**

Yes No

Institutional Inspection Required:

Yes No

Recommended dates/frequency:

2000, 2004, 2008

Recommended type:

General

Yes 2000, 2004, 2008

Engineering

Yes (2004)

Institutional Monitoring Required:

Yes No

Recommended dates/frequency:

2000

Recommended types:

Water quality

2000

Other

**Last Institutional Control
Inspection Date:**

None to date

Inspection Report Attached:

Yes No

Recommended Future Inspection Date:

2005

Additional Comments:



Institutional Control Registry

URANIUM SITE 05-01

Region:	Uranium City Area
Property Reference Name:	12 Zone Pit & 12 Zone Extension
Property Lease Number:	MSL 253
DNS Property Number:	200073
Property Location: (see attached map)	N 59^o 34.763' W 108^o 30.917'
Mineral:	Uranium (U)
Mine Operator:	Eldorado Resources Inc.
Last Surface Lease Holder:	Cameco Corporation
Description of Previous Use:	2 small open pit mines
Milling Location:	Beaverlodge Mill

Property Description:

- **The 12 Zone and 12 Zone extension are approximately 75 m apart and separated by an access road. The total area disturbed by mining was approximately 1.7 ha. 12 Zone pit has a 0.26 ha surface area and the 12 Zone extension pit covers an area of approximately 0.33 ha.**

Description of Conditions at Release:

12 Zone Pit

- Decommissioned by partially filling with waste rock and allowed to flood. Water level in the flooded pit is stable with no discharge to surrounding environment.
- Gamma survey - average for the entire waste rock area is 0.73 µSv/hr.

12 Zone Extension

- Decommissioned by filling with waste rock.
- Gamma survey - average for the entire waste rock area is 0.74 µSv/hr.

Site Accessibility:

- Approximately 7 km from Uranium City Airport road.
- Seldom used vehicular trail.



Institutional Control Registry

URANIUM SITE 05-01

**Released from Decommissioning
and Reclamation**

Yes No

Date _____
Release Number _____
Release Issued To _____
Application Documentation Location _____

Allowable Land Use

- Unrestricted temporary use.
- No allowable permanent use.
- No mineral material removal.

**Register in Land Disposition
Inventory System (LDIS)**

Yes No

Institutional Inspection Required:

Yes No

Recommended dates/frequency: _____
Recommended type: _____
General _____
Engineering _____

Institutional Monitoring Required:

Yes No

Recommended dates/frequency: _____
Recommended types: _____
Water quality _____
Other _____

**Last Institutional Control
Inspection Date:**

Inspection Report Attached:

Yes No

Recommended Future Inspection Date:

Additional Comments:

APPENDIX B

Draft Example of
Institutional Control Act

The Institutional Control Act

- 1 This Act may be cited as *The Institutional Control Act*.
- 2 In this Act:
 - (a) “closed site” means a site at which all decommission, remediation and reclamation measures have been carried out, and the transitional phase monitoring has been completed;
 - (b) “institutional control” means those actions, mechanisms and arrangements implemented to maintain control or knowledge of a closed site including:
 - (i) registering the closed site in the registry;
 - (ii) controlling access to or use of the closed site;
 - (iii) monitoring conditions at the closed site;
 - (iv) maintaining any structure at the closed site; and
 - (v) providing reports on the closed site.
 - (c) “minister” means the member of the Executive Council to whom for the time being the administration of this Act is assigned;
- 3 The Lieutenant Governor in Council may prescribe conditions for acceptance of a closed site into institutional control.
- 4 The minister may accept a closed site into institutional control where:
 - (a) the minister is satisfied the closed site has met the conditions prescribed by the Lieutenant Governor in Council;
 - (b) the minister considers it to be in the public interest to accept the closed site into institutional control; and
 - (c) the operator has paid to the minister the amount the minister considers necessary to cover:
 - (i) future monitoring and maintenance costs at the closed site; or
 - (ii) future maintenance costs at the closed site where the minister has entered into agreement with another person to have monitoring costs paid by that person.
- 5 (1) When the minister accepts a closed site into institutional control, the minister shall enter the site in the registry.
(2) The registry shall contain:
 - (i) the prescribed information; and
 - (ii) such other information as permitted by the minister.
(3) Where the minister considers it to be in the public interest, the minister may register prescribed material respecting a closed site on a prescribed registry.
- 6 The minister may control or restrict access to a closed site where the minister considers it to be in the public interest.

- 7 The minister shall monitor a closed site at such times and in such manner as the minister considers necessary and appropriate to the closed site.
- 8 The minister shall undertake such maintenance at a closed site as the minister considers necessary and appropriate to the closed site.
- 9(1) The revolving fund called the Institutional Control Revolving Fund is established and the minister shall administer the fund.
- (2) The fiscal year of the fund is the period commencing on April 1 in one year and ending on March 31 in the following year.
- (3) Notwithstanding any other Act, the following are to be credited to the fund:
- (a) the amount the minister requires to be paid in accordance with subsection 4(c);
 - (b) prescribed amounts;
 - (c) all interest and dividends received on investments of the fund; and
 - (d) any gains on disposal of investments.
- (4) The minister may:
- (a) invest any part of the moneys in the fund, not presently required for expenditure, in any security or class of securities authorized for investment of moneys in the consolidated fund pursuant to *The Financial Administration Act, 1993*; and
 - (b) dispose of any securities in which any part of the fund has been invested pursuant to clause (a), subject to the terms of the investment, in any manner and on any terms that the minister considers advisable.
- (5) The minister may use the assets of the fund for:
- (a) monitoring costs for those closed sites accepted into institutional control where the minister does not recover such costs from another person;
 - (b) maintenance costs for those closed sites accepted into institutional control;
 - (c) the acquisition, by purchase, lease or otherwise, of any equipment or materials or the retention of any services that the minister considers necessary to carry out the activities described in clauses (a) and (b).
- (6) The accounts and transactions of the fund are to be audited annually by the Provincial Auditor or by any other auditor appointed by the Lieutenant Governor in Council for the purpose.
- 10(1) The minister shall prepare a report every five years, to be known as the Institutional Control Report concerning the current condition of all closed sites accepted into institutional control.
- (2) Notwithstanding *The Tabling of Documents Act, 1991*, the minister shall lay the report before the Legislative Assembly on or before the April 1 following the end of the five-year period to which the report relates.
- (3) The first report shall be filed by April 1, 2011.
- (4) Where the Legislature is not in session when the minister intends to lay the report before the Legislative Assembly, the minister shall submit the report to the Clerk of the Legislative Assembly.
- (5) When the Clerk of the Legislative Assembly receives the report the Clerk shall:

- (a) ensure that copies of the report are delivered to all members of the Legislative Assembly; and
 - (b) make the report available for public inspection during normal business hours of the Clerk.
- (6) Where the minister submits the report to the Clerk pursuant to subsection (2), the minister is deemed to have tabled the report in accordance with this Act.

11 The Lieutenant Governor in Council may make regulations:

- (a) defining, enlarging or restricting the meaning of any term used in this Act;
- (b) for the purpose of section 3, prescribing the conditions by which a closed site will be accepted into institutional control;
- (c) for the purpose of section 5, prescribing material that can be registered in a prescribed registry;
- (d) prescribing amounts to be paid to the Institutional Control Revolving Fund;
- (e) prescribing the information and documents required to be filed in the registry;
- (f) respecting any other matter or thing that the Lieutenant Governor in Council considers necessary to carry out the intent of this Act.