The legacy of orphaned and abandoned mines—including environmental liability, human health concerns, and the social and financial cost of clean-up and long-term monitoring and maintenance—is a serious issue facing all Canadians.

Orphaned and abandoned mines are those mines for which the owner cannot be found or for which the owner is financially unable or unwilling to remediate the site. These mines can pose environmental, health, safety and economic problems for communities, the mining industry and governments in many countries, including Canada.

Mining has been central to the Canadian economy for over 100 years, and Canada is a supplier of mineral commodities worldwide. However, our long history of mining has left many abandoned mine sites that require varying degrees of rehabilitation. In the past, mines became “abandoned” because there was no legislation to make mine owners accountable for the entire mine life cycle, from initial site selection and design through to decommissioning, closure and post-closure. Few understood the potential physical and environmental hazards left behind when companies simply walked away from the site. Today, mining legislation in all Canadian jurisdictions requires mine developers to submit mine closure plans that describe how the site will be progressively rehabilitated throughout its lifecycle and how it will be decommissioned and closed when mining activities cease.

Neither the number of orphaned and abandoned mines in Canada or their physical, health and environmental impacts and liabilities has been well documented. Before we can develop sound policy, cost-efficient planning and sustainable rehabilitation, we must document the number and condition of these mines. Access to these details for all communities of interest—governments, civil society and industry—is essential to ensure collaborative and transparent decision-making.

Given adequate resources and resolve, we can build on our success and make further significant progress in the remediation of many orphaned and abandoned mine sites in Canada, as well as eliminating future abandonments.
IT IS MY PRIVILEGE TO SERVE AS CHAIR OF THE CANADIAN NATIONAL ORPHANED/ABANDONED MINES INITIATIVE (NOAMI).

Although NOAMI was formally established in 2002, the roots of this unique national initiative date to the late 1990s. At that time, both environmental and industry groups were raising concerns about orphaned and abandoned mines to mines ministers across Canada. In June 2001, a multi-stakeholder workshop was held to discuss issues, identify common ground and assess opportunities for action. From that first workshop emerged the guiding principles and mandate that are the cornerstones of NOAMI today.

NOAMI offers public servants, non-governmental organizations, Aboriginal organizations and the mining industry a forum to discuss issues and barriers associated with the prevention, clean-up and remediation of orphaned and abandoned mine sites. The convergence of interests and common commitment among participants has created a successful and unique approach to addressing these issues of global significance and potentially influencing public policy.

Over the past 12 years, NOAMI has worked diligently to influence policy and build capacity in Canada to address these issues. Through workshops, conferences and publications, we have increased knowledge, explored best practices and created an important national network that is moving this agenda forward. This report of NOAMI’s efforts and accomplishments from 2009 to 2015 describes our progress grappling with the orphaned and abandoned mines issue in jurisdictions across Canada. NOAMI’s evolving success is illustrated by stories that reflect many different approaches and partnerships.

While much work has been done, much more remains. Sustaining the momentum that has propelled NOAMI through the past 12 years is a challenge we cannot meet without ongoing support and endorsement by all key players. This is what NOAMI is all about—“partnering for change” to make Canada and the world a better place.

Cindi Blancher-Smith,
NOAMI Chair (2013–2015)

ABORIGINAL AFFAIRS AND NORTHERN DEVELOPMENT CANADA—NORTHERN CONTAMINATED SITES PROGRAM

Through its Northern Contaminated Sites Program (NCSP), created in 1991, Aboriginal Affairs and Northern Development Canada (AANDC) manages contaminated sites across the Yukon, the Northwest Territories and Nunavut. AANDC’s portfolio of contaminated sites originates primarily from mining, petroleum and military activities dating back over half a century.

Following the Canada-Yukon Devolution Transfer Agreement in 2003, AANDC retained the liability for the costs of the remediation of seven sites in the Yukon, should they be abandoned by their operators, while the responsibility for their implementation of ongoing care, maintenance, assessment and remediation remained with the Government of Yukon. Currently, three of these sites (Paco Mt. Nansen and Clinton Creek) have been abandoned. Their remediation is being funded by AANDC but managed by the Government of Yukon.

In the Northwest Territories, with the coming into force of the Northwest Territories Lands and Resources Devolution Agreement in April 2014, AANDC retained liability and responsibility for identified historic contaminated sites. In Nunavut, devolution has not yet occurred. AANDC’s future role with respect to contaminated sites will be negotiated as part of the devolution negotiations.

The Program objective is to reduce and eliminate risks to human and environmental health, as well as federal financial liabilities associated with these sites. Core activities of the Program are consistent with the 10-step process developed by the Federal Contaminated Sites Management Working Group and include care and maintenance, investigation and assessment of suspected sites, development and implementation of remediation or risk management plans, consultation, securing regulatory approvals, and ongoing monitoring.

As custodian of most federal lands in the North, the Program has the largest contaminated sites liability of all federal custodial departments—estimated at $2.4 billion as of March 2014. Between 2009 and 2014, Program expenditures on the management of contaminated sites in the North were just over $636 million, of which $559 million were funded through the Federal Contaminated Sites Action Plan. Since 2009, 24 sites have been completely remediated, including Roberts Bay and Ida Bay Silver Mine, an abandoned mine in Nunavut, which was completed in 2010, and Colomac Mine, an abandoned site in the Northwest Territories that commenced in 2000 and was completed in 2011.

Several other sites have advanced. For example, since 2008, some of the key accomplishments for the Giant Mine Remediation Project include the completion of the Freeze Optimization Study and the Environmental Assessment process.

At the Faro Mine site, a conceptual closure plan—developed collaboratively between Aboriginal Affairs and Northern Development Canada, the Government of Yukon and First Nations (Ross River, Liard, Kaska and Selkirk)—was completed in 2009. The project is currently in the project definition phase, which includes completing ongoing care and maintenance, undertaking work to address high risks and the development of a final closure plan.

The Program continues to promote social and economic opportunities in the North by engaging First Nations, Inuit and other Northerners in all aspects of the site management and remediation process and will continue to ensure that contaminated sites are managed to ensure the protection of human health, safety and the environment for all Northerners.

CHAIRS

2009–2011
Robert Holmes, Government of Yukon
2011–2013
Gregg Stewart, Province of British Columbia
2013–current
Cindy Blancher-Smith, Province of Ontario

MEMBERS

Aboriginal Affairs and Northern Development Canada
Claudia David, Nick Monteiro, Lou Spagnuolo

Environment Canada
Charles Dumaresq, Chris Doiron, Rosanna Massimi

Natural Resources Canada
Charlene Hogan (NOAMI Secretariat)
Gilles Tremblay (NOAMI Secretariat)
Lise-Aurore Lapalme, Nathalie Ross

Government of Yukon
Robert Holmes, Patricia Randall

Province of British Columbia
Gregg Stewart, Diane Hove

Province of Saskatchewan
Keith Cunningham

Province of Manitoba
Ernest Armit, Doina Priscu, Cal Liske

Province of Ontario
Cindi Blancher-Smith, Chris Hamblin

Gordon MacKay

Province of Quebec
Joanne Cucey

Province of Newfoundland and Labrador
Alex Smith, John Davis, Len Mandville

Mining Watch Canada
Ramy Hart, Jamie Kreen, Ugo Lapiombe

Northwatch
Brennan Lloyd

Ontario Mining Association
Adrianna Stech, Lesley Hymers

Prospectors & Developers Association of Canada
Bernard Elizalde, Karen Multinick
Ross Galloway

The Mining Association of Canada
Elizabeth Gardiner, Rick Meyers, Charles Dumaresq

Cameco Corporation
Mike Webster

Denensish Investments Inc.
Darrell Beaulieu

Glencore Canada Corp.
Rick Schwenker, Aaron MacDonnell

Inmet Mining Corporation—First Quantum Minerals Ltd.
Tracy Anderson

PROGRESS 2009—2015
NOAMI is an example of a unique multi-stakeholder partnership approach to a complex problem of national importance. Over the past twelve years, NOAMI has made significant contributions to the state of knowledge of orphaned and abandoned mines in Canada and approaches for addressing them. The successful remediation work that has occurred in jurisdictions across the country has been rooted in creative approaches involving diverse partnerships. NOAMI has garnered interest and accolades both domestically and internationally. To sustain this momentum into the future, we need to focus attention on both short- and long-term priorities.

One of NOAMI’s early key objectives was the development of a national inventory of orphaned and abandoned mines based on compatible inventories from each province and territory. This stylized “map” is meant to represent the concept of the national inventory in the abstract only.


Now, NOAMI is pleased to present its second performance report, covering the years from 2009 to 2015. This brochure describes the current state of orphaned and abandoned mines in Canada, and highlights NOAMI’s achievements and those of its member jurisdictions.

We welcome your feedback on this performance update. Please refer to the NOAMI website, www.abandoned-mines.org, for further information or contact the NOAMI Secretariat at abandoned_mines@nrcan.gc.ca with your questions and comments.
IN 2001, CANADIAN FEDERAL, PROVINCIAL AND TERRITORIAL MINES MINISTERS AGREED ON THE IMPORTANCE OF A NATIONAL PROGRAM FOR REHABILITATING ORPHANED/ABANDONED MINE SITES IN CANADA.

They asked that a multi-stakeholder advisory committee be established to study various issues and initiatives pertaining to the development of partnerships in the implementation of remediation programs across Canada. Ministers also agreed that, based on the results of this work, each jurisdiction would ultimately develop its own implementation strategy, adapted to its specific circumstances and needs.

The National Orphaned/Abandoned Mines Initiative (NOAMI) was created in 2002 following recommendations flowing from a multi-stakeholder workshop held in 2001. NOAMI is guided by an Advisory Committee that brings together representatives from the Canadian mining industry, federal, provincial and territorial governments, non-government organizations (NGOs) and Aboriginal Canadians. Together, they assess issues and make recommendations for collaborative implementation of remediation programs for orphaned and abandoned mines across Canada.

The NOAMI Advisory Committee takes direction from the mines ministers of federal, provincial and territorial jurisdictions in Canada, and reports progress to the annual Energy and Mines Ministers Conference (EMMC) via the Intergovernmental Working Group (IGWG). This conference is an opportunity for the federal, provincial and territorial mines ministers and other mining stakeholders to discuss and plan for the future of mining in Canada.

NOAMI’s activities are jointly funded by federal, provincial and territorial government departments and ministries and two national mining organizations, and administered by a secretariat at Natural Resources Canada.

Canada is well known for establishing multi-stakeholder initiatives to address issues of national importance. Our model of cooperation and common commitment among industry, various levels of government, NGOs and Aboriginal Canadians is used and respected nationally and internationally. NOAMI is a fine example of how partnering for change—a collaborative approach to addressing the legacy of past mining practices—can advance the objectives of sustainable development and create a better future.

Revegetated Yankee Girl Mine tailings in British Columbia

1 The term Aboriginal is defined in s.35 of the Constitution Act as including Indian, Inuit and Métis Peoples.
The first NOAMI Performance Report for 2002–2008 was published in 2009. Since then, NOAMI has made significant pan-Canadian progress in achieving its objectives, holding six annual general meetings and a multi-stakeholder workshop, publishing three major reports, establishing a new task group, and issuing a series of newsletters, the NOAMI Nugget. In addition, a new strategic plan was developed to guide the NOAMI Advisory Committee in establishing priorities. NOAMI is also gaining recognition and receiving accolades internationally.

The 2009 performance report highlights the activities of NOAMI from 2002 to 2008, the accomplishments of its jurisdictional partners, and plans for the future. That report is available in both official languages on NOAMI's website [http://www.abandoned-mines.org](http://www.abandoned-mines.org). It details progress in several key areas:

- Development of a web-based working model of a National Inventory;
- Information for regulatory improvement, including a Toolkit of Funding Options for abandoned mine rehabilitation, and a Jurisdictional Legislative Review of existing legislation and policies relating to orphaned and abandoned mines;
- Multi-stakeholder information-sharing via four workshops, newsletters, and the NOAMI website;
- Evaluating legislation, policies and funding practices through a series of major reports; and
- Capacity-building for communities.

During the first six years, the bulk of NOAMI's work was carried out by five task groups: the Information Gathering/Inventory Task Group, Community Involvement Task Group, Legislative and Institutional Barriers to Collaboration Task Group, Funding Approaches Task Group and Jurisdictional Legislative Reviews Task Group. Their mandates and activities are outlined in detail in the 2002–2008 NOAMI Performance Report.

Since then, the completion of projects and evolving priorities has resulted in the creation of just one new task group, the Return of Mining Lands to the Crown Task Group.

2009 HIGHLIGHTS

The year 2009 marked the release of the Performance Report at the Energy and Mines Ministers Conference in St. John’s NL as well as the inaugural Annual General Meeting (AGM) of the NOAMI Advisory Committee. Emerging issues, new projects, strategies and directions for the future were discussed at this meeting. In addition, the prevention of new abandoned sites was identified as a priority.

At this first AGM, Robert Holmes, Yukon Government became the new NOAMI Chair. Christine Kaszycki, Province of Ontario and NOAMI Chair (2002–2008), assumed the position of Past Chair and Gregg Stewart, Province of British Columbia, accepted the position of Vice Chair.

2010 HIGHLIGHTS

One of NOAMI’s guiding principles is that “work toward eliminating future abandonments must continue, including the tightening of regulatory approaches”. In 2010, the NOAMI Advisory Committee began to examine “the legislative tools and policy approaches across Canada to ensure that current operating mines can be closed properly so that they do not become abandoned mines in the future.” The Committee has long believed that there is a need for a clear policy framework governing mine closure, long-term liabilities, and the return of mining lands to the Crown. A 2010 NOAMI survey found that while processes of closure planning and the provision of financial assurance are relatively well developed and consistently applied across Canada, policy around long-term management of sites beyond closure, including methods of returning mining lands to the Crown, is almost non-existent.

The second NOAMI AGM, held in Vancouver in May 2010, featured a site visit to the Britannia Mine, which has been extensively remediated through a public-private partnership. This meeting focused on various project updates, including one of NOAMI’s key projects, the development of a web-based national inventory of orphaned and abandoned mines in Canada. The agenda also included presentations on Ontario’s Prioritization of Abandoned Mines, BC’s Crown Contaminated Sites Program, and Manitoba’s Orphaned/Abandoned Mine Site Rehabilitation Program.

### 2011 HIGHLIGHTS

Following publication of the report on long-term liabilities, NOAMI held an important multi-stakeholder workshop in the spring of 2011 in Ottawa entitled *Exploring the Management of Long-term Liabilities and the Return of Mining Lands to the Crown in Canada*. The objective was to obtain advice and guidance from representatives of various communities of interest that would assist NOAMI in developing a roadmap for managing long-term liabilities and issues relating to the return of lands to the Crown. The themes of risk management, funding and legislation, policy and regulations are discussed in the workshop Proceedings, which are available on the NOAMI website.

Following the workshop, the third AGM was held in Ottawa, during which Gregg Stewart from the Province of British Columbia assumed the two-year role of NOAMI Chair, taking over from Robert Holmes from the Yukon.

### 2012 HIGHLIGHTS

Early in 2012, the Return of Mining Lands (RML) Task Group designed a project that would result in a report detailing:

1. six case studies from different Canadian jurisdictions describing closed mine sites that have been returned to the Crown, are in various stages of making such an application, or that illustrate relevant information or “lessons learned”; and

2. a decision matrix or “tree” that identifies key issues and questions that could or should be addressed in determining whether a site should be brought under government jurisdiction, or remain the responsibility of the operator.

Cowan Minerals Ltd. was awarded the contract for this work, and the draft report, *Case Studies and Decision-Making Process for the Relinquishment of Closed Mine Sites* was under review in late 2012.
The fourth AGM was held in May in Cranbrook, British Columbia, and included a site visit to the Sullivan Mine. A significant portion of the meeting focused on the National Inventory—more specifically on the Feature-Based Classification and Portal for the web-based inventory. Since that time, jurisdictions across the country have been reviewing the information related to their specific inventories.

2013 HIGHLIGHTS

The final report, *Case Studies and Decision-Making Process for the Relinquishment of Closed Mine Sites* was released in July 2013. The report laid out a five-step approach for regulators and industry to determine whether a site could or should ultimately be returned to the Crown. The report concludes that mining projects should be designed with the objective of reclaiming the site for future beneficial use and/or possible relinquishment. The report is clear that relinquishment will not be possible where the environmental, social, political or financial risks/costs are too great. Please see the Publications section of the NoAMI web site for the full report.

The NOAMI National Inventory

The level of details and completeness of orphaned and abandoned mines inventories varies from jurisdiction to jurisdiction. A primary NOAMI objective is the development of an integrated national inventory that will provide a single, web-based window to standardized and comparable information, and accommodate the addition of more detailed information in the future.

A feature-based inventory has been developed and Cal Data Ltd. completed the databases for all jurisdictions across Canada, with the exception of Quebec. The NOAMI Secretariat is working with Quebec provincial staff to determine how to incorporate the Quebec database into the web portal. The inventory website is scheduled for completion by 2015.

The fifth AGM of the NOAMI Advisory Committee was held in New Liskeard, Ontario, in June 2013. The Canadian Land Reclamation Association invited NOAMI to join their annual symposium, and members of the NOAMI Advisory Committee participated in a tour of abandoned mine sites in Cobalt Ontario. At the AGM, the Cowan Minerals team reported on the return of Mining Lands project, and Ward Kilby (Cal Data Ltd.) reported on the status of the National Inventory. He identified several decisions to be made in order to finalize the site, and recommended site enhancements to improve its accessibility and functionality. Mike Webster (Cameco) provided an overview of Cameco’s decision-making process for the return of mining lands in Saskatchewan.

Cindy Blancher-Smith, Assistant Deputy Minister from the Province of Ontario assumed the two-year role of NOAMI Chair, taking over from Gregg Stewart of British Columbia.

The newsletter, the *NOAMI Nugget*, was re-introduced in December 2012, with the first in a series of newsletters designed to showcase recent activities of NOAMI member jurisdictions. This issue focused on British Columbia, followed by a second issue on Newfoundland and Labrador in August of 2013.

2014–15 HIGHLIGHTS

The 2014 Energy and Mines Ministers Conference was hosted by Ontario and held in Sudbury in August. The activities of NOAMI and its jurisdictional partners were showcased at a small trade show accompanying the conference. Many delegates visited the NOAMI booth, which generated considerable interest among industrial and federal, provincial and territorial representatives.

The sixth AGM was held immediately following the EMMC. Members focused on developing the workplan for 2014–15, which includes the delivery of the National Inventory and the NOAMI Performance Update 2009–2015. New projects were discussed, as well as committee decision-making processes and the possible building of linkages with other provincial, national and international organizations.
Following the meeting, committee members participated in two tours: Vale’s Whistle Mine and the Long Lake Gold Mine Tailings area, both near Sudbury Ontario.

The National Inventory website was almost ready for its official launch at the 2014 EMMC; however, the sudden and sad passing of the project’s principal contractor, Ward Kilby, in June 2014, placed the project on hold. The project was transferred to Mozaika Geomatics in Nova Scotia and the database system was migrated and set up in December 2014. Extensive beta-testing by jurisdictional database experts and members of the NOAMI Advisory Committee is ongoing, and it is NOAMI’s intention to launch this important piece of work in 2015.

An effective long-term monitoring and maintenance program at closed/post closure, orphaned/abandoned and mineral exploration sites, presents many challenges. In 2014, NOAMI commissioned a study that would outline site aspects involved in identifying, analyzing and evaluating potential site hazards, including those that may pose a risk to public health and safety, to the environment, to ecosystem services, and to future land use.

Kingsmere Resource Services Inc. undertook this study for NOAMI, and the final report, *Key Criteria for the Effective Long-term Stewardship of Closed, Orphaned/Abandoned Mine and Mineral Exploration Sites* was published in early 2015 and posted on the NOAMI website.

NOAMI recognizes the need for tools to help communities understand the legacy issues associated with orphaned and abandoned mines, and to build their capacity to deal with these sites in an effective and meaningful way. NOAMI therefore helped to sponsor two training workshops on the rehabilitation of abandoned mines in Quebec, organized by the First Nations of Quebec and Labrador Sustainable Development Institute (FNQLSDI). The workshops were held in December 2014 and in March 2015. The workshops have provided an opportunity to evaluate NOAMI findings at the First Nations community level, and in turn, for NOAMI to share the results of the workshops with other communities across Canada. Workshop speakers’ presentations will be available on the FNQLSDI website.

On the communications front, two additional issues of the *NOAMI Nugget* have been produced to date in 2014–15: one on Saskatchewan’s Institutional Control Program and another on Manitoba’s Orphan/Abandoned Mine Site Program. In addition, a NOAMI paper entitled *Managing Long-term Orphaned Mine Liabilities: Exploring the Relinquishment of Closed Sites* was presented at the Mine Closure 2015 conference in Vancouver, in June 2015.
Today, while the potential for new orphaned mines is very low, NOAMI continues to work toward eliminating any future abandonments, and Canadian jurisdictions are constantly striving to improve the management and rehabilitation of existing properties, through new and innovative approaches.

Ongoing work across Canada on orphaned and abandoned mines has created social, environmental and economic benefits, including job creation, local cultural engagement and preservation, and the reduction of environmental hazards and safety risks. Jurisdictional activities have also provided NOAMI and other national and international organizations with invaluable information on the management of orphaned and abandoned sites through significant contributions to workshop presentations and case studies. Between 2002 and 2008, Canadian jurisdictions have spent close to $1 billion in addressing this issue, and this amount has risen dramatically since that time.

NOAMI’s 2002–2008 Performance Report highlighted success stories from several Canadian jurisdictions that made important contributions to NOAMI during those six years. Since that time, further advances have been made, and some of these are described briefly in this publication. For more details, please refer to the NOAMI website or to individual provincial and territorial websites.

NOAMI’S unique multi-stakeholder partnership approach to a complex problem of national importance is a model for collaborative action. Over the past 12 years, NOAMI has made significant contributions to our knowledge of orphaned and abandoned mines in Canada and approaches for addressing them. The successful remediation work that has occurred in jurisdictions across the country has been rooted in creative approaches involving diverse partnerships. NOAMI has garnered interest and accolades both domestically and internationally. To sustain this momentum into the future, we need to focus attention on both short- and long-term priorities.
JURISDICTIONAL HIGHLIGHTS

BRITISH COLUMBIA MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS,
CROWN CONTAMINATED SITES PROGRAM

Crown lands comprise 94 percent of the total land mass in British Columbia. Through its Crown Lands Contaminated Sites Program (CCSP), the government of British Columbia has been working to clean up contaminated sites since 2003. The program’s 2014 Biennial Report describes the province’s efforts and the results achieved. It is available at http://www.agf.gov.bc.ca/clad/ccs/.

To date, British Columbia has committed more than $277 million to the program, investigated 84 contaminated sites and identified and managed risks to human health and the environment on 34 sites. Sites addressed by the CCSP fall into one of four categories: Remediated, Priority, Candidate and Other. A Risk Ranking Methodology (RRM), developed in 2007, is used to prioritize Crown contaminated sites based on risk, and allows for scientifically-based management decisions. Both ecological and human health risks at a site are assessed by experts. Using the detailed information provided by the ranking tool and the experts, a plan of action is developed for each site under consideration, which can range from immediate action through to lower priority. As of March 31, 2014, of the 84 sites investigated, 48 were low priority sites not requiring immediate attention, 17 sites were remediated and 17 priority sites are undergoing investigation and remediation. The Crown Contaminated Sites Database records and documents progress on the remediation of sites.

The CCSP also monitors program sites to ensure that remediation work in previous years continues to protect human health and the environment. Three key monitoring sites in 2012 and 2013 were:

- **Mount Copeland**, a molybdenum mine and processing facility that operated near Revelstoke, BC, from 1970 until 1974. An evaluation of the tailings containment facility led to work in 2008 to improve water management and reduce the risk of dam failure, which could release tailings to a fish-bearing creek below the site.

- **The Yankee Girl Mine**, which operated near Nelson, BC, from the late 1800s until the 1950s. Tailings from the mine contained elevated concentrations of heavy metals including lead, zinc, cadmium and arsenic. In 2009, the CCSP consolidated the tailings into a single area, treated them with lime and added an impermeable cover, among other improvements. Since then, long-term monitoring and maintenance show that the remedial works are performing as designed, resulting in environmental improvements.

- **The Cork Province Mine**, which produced zinc, cadmium, gold and silver from 1900 to 1966 north of Nelson, BC. The tailings were deposited near Keen Creek, a secondary potable water source for the town of Kaslo and because the impoundment was at risk of failing, the tailings were moved away from the creek in 2008–2009. The impoundment was covered with a metre of soil and the entire site replanted. Long-term monitoring and maintenance has shown that there is no risk of tailings release.

Yankee Girl old side channel
In Saskatchewan, mine/mill operations are governed by environmental regulations throughout their life—from site selection through construction, operation, decommissioning and closure. In establishing and implementing the Institutional Control Program (ICP), the Saskatchewan government has acknowledged that a formal regulatory process is required for long-term monitoring and management of provincial lands when mining/milling activities are concluded.

It is the province’s position that once remediation of a site on Crown land has been successfully completed, and conditions are considered acceptable by relevant regulatory agencies, the long-term stewardship will revert to the Crown.

In 2005, Saskatchewan initiated the formal development of an institutional control framework for the long-term management of decommissioned mine and mill sites on provincial Crown land. In developing the framework and the program itself, government departments consulted extensively with industry, Aboriginal traditional users and other stakeholders. This entire process culminated in 2007 with the implementation of the Reclaimed Industrial Sites Act and regulations.

The ICP addresses all aspects of conventional closed mines, as well as uranium-specific issues of radioactive waste management, the requirements of the Canadian Nuclear Safety Commission, and applicable provincial Acts and regulations. The Ministry of the Economy is responsible for the management of the ICP, two primary components of which are the Institutional Control Registry and the Institutional Control Funds, which include the Monitoring and Maintenance Fund and the Unforeseen Events Fund. The Registry maintains a record of closed sites, manages the funding and performs any monitoring and maintenance work. The Monitoring and Maintenance Fund provides funding for long-term monitoring and maintenance; the Unforeseen Events Fund provides funding to cover potential costs associated with unforeseen future events, such as floods, tornadoes or earthquakes. Dedicated site-specific funding is provided by the site holder. The Funds are managed by the province but are legislated and stand alone from provincial revenue.

In 2009, Cameco Corporation was the first company to have a site accepted into the ICP—the decommissioned Contact Lake gold operation. Subsequently, five additional former uranium sites were accepted into the program. In 2014 the first scheduled inspections of the sites were completed with no significant environmental or public safety concerns identified. In 2015 the ministry is initiating a review of the legislation to identify whether the ICP continues to meet regulator and stakeholder requirements. More detailed information on the ICP, Registry and legislation is available on Saskatchewan’s Ministry of the Economy website at: http://www.economy.gov.sk.ca/Institutional_Control-Decommissioned_Mines/Mills
Manitoba introduced mine closure regulations in 1999—regulations requiring that environmental liabilities incurred during mining operations must be financially secured to cover future remediation costs. Mine closure plans and financial security must now be filed and approved prior to a permit being granted for a new mine operation.

In 2000, Manitoba established the Orphaned/Abandoned Mine Site Rehabilitation Program to address the public safety and environmental health concerns associated with orphaned and abandoned mines. The program was initiated by the Manitoba Mines Branch in 2001–2002 and a hazard-based framework model was developed from 2005–2007, to rank sites and prioritize work.

Under the program, 149 former mine sites were identified as orphaned or abandoned, for which ownership had reverted back to the Crown, as former mining companies no longer existed or did not have the financial capacity to carry out rehabilitation work. Long-term rehabilitation plans were completed for all 149 sites, which were inspected for safety and environmental hazards and prioritized for rehabilitation. Out of the 149 sites, five were high priority sites (Lynn Lake, Sherridon, Gods Lake, Snow Lake and Baker Patton), 31 were high hazard sites, and the remaining were low-to-moderate risk sites. In 2006, Manitoba established an Environmental Liability Account with a dedicated budget earmarked for the rehabilitation of orphaned/abandoned mine sites, and an aggressive schedule was developed for the remediation of the high-priority and high-hazard sites by the end of 2012.

As of December 31, 2014, Manitoba has spent over $200 million on orphaned and abandoned mine site rehabilitation through this program. Total expenditures for 2013/14 were $45.8 million. The rehabilitation work focused on large projects—Ruttan, Sherridon, Lynn Lake and Gods Lake. Total expenditures for 2014/15 were $18.5 million. To date, 30 of the 31 high-hazard sites have been rehabilitated, with the one remaining site to be completed in 2015/16. Remediation activities on 10 low/moderate sites in the Whiteshell Provincial Park have been completed in 2014/15. Planned expenditures for 2015/16 rehabilitation are estimated at $34 million. First Nations communities have been participants in the majority of mine rehabilitation projects and in many cases have been awarded sole source contracts or have formed joint ventures with established construction firms.

Manitoba supports the rehabilitation of orphaned and abandoned mines through its programs, partnerships, community involvement and funding initiatives. Further information may be found at: [http://www.manitoba.ca/iem/mines/oa_rehab_history.html](http://www.manitoba.ca/iem/mines/oa_rehab_history.html)
Ontario’s Abandoned Mine Rehabilitation Program (AMRP) was established in 1999 as a four-year, $27 million fund to rehabilitate Crown-held abandoned mine sites. Since that time, the AMRP has been funded continuously for a total amount of $138.4 million up to March 31, 2015, with funding during fiscal year 2014/15 of $7.8 million.

To date, the AMRP has conducted rehabilitation projects on more than 80 of the highest priority abandoned mine sites located throughout Ontario. The largest of these sites is the Kam Kotia Mine (KKM) near Timmins, where more than $75 million has been spent to date to conduct extensive work on what was known as one of the worst abandoned mine sites in Canada. The rehabilitation of the KKM site is now more than 75% complete and Ontario expects to have completed all rehabilitation measures on the site before 2020.

The determination and design of the appropriate rehabilitation measures for several other major abandoned mine sites has now begun, including the South Bay Mine site, the Long Lake Mine site and the Timminco Mine site. The AMRP will begin to implement those measures as soon as the designs have been completed.

The AMRP will be rehabilitating a number of smaller sites across Ontario in the near future, including the Silver Mountain Mine site, which is a hibernaculum for a large population of currently endangered Little Brown Bats. The design of bat-friendly “cupolas” is currently underway so that this site can be made safe without affecting the bats’ usage of the mine workings.
Orphaned and abandoned mines in Newfoundland and Labrador mostly predate the province joining Confederation in 1949. All the sites predate the Mining Act of 2000. These properties, ranging from exploration sites to large-scale former producing mines, may pose safety risks to the public and cause environmental problems. Detailed evaluations for all the sites have not yet been completed and the estimated cost (liability to address all the safety and environmental issues) is not known.

The Department of Natural Resources has recently spent over $30 million on orphaned and abandoned mines. In 2002, the Hope Brook site returned to the province after Royal Oak Mines declared bankruptcy. The government rehabilitated the site to address environmental and safety issues at a cost of $21 million and is monitoring annually. Between 2007 and 2010, $6.4 million was spent removing unsafe mine infrastructure at the Baie Verte Mines and Consolidated Rambler sites in northeastern Newfoundland. In 2010/11, the government committed $2.0 million to ensure tailings dam stability and $3.6 million for the tailings spill area to address elevated levels of heavy metal in soils near the town of Buchans. In addition to these major projects, the department has an annual budget to deal with immediate safety issues and orphaned mines sites.

The issue of dam stability is a particular concern. In 2010/2011, the department conducted dam safety inspections at three former mine sites:

- **Consolidated Rambler Copper Mine** near Baie Verte, Newfoundland
- **Whaleback Copper Mine**, near Springdale, Newfoundland
- **Gullbridge Copper Mine** near South Brook, Newfoundland

Significant deficiencies were identified at these sites and work began on rehabilitation measures. In December 2012, a major failure of the Gullbridge tailings dam occurred while repairs were underway. Emergency repairs were completed in March 2013. A review of long-term closure solutions for the tailings management area and Phase 1 of the recommended work (including flattening the slopes of the dam and widening and lowering of the dam crest), were completed in 2013.

There are 6,327 mineral occurrences in the province, of which 4,785 have undergone exploration and a further 412 reached some stage of development. Some rehabilitation work has been done at 122 of these 412 sites. The department has a database of known orphaned and abandoned mines in the province and plans to systematically evaluate all the sites as resources become available. The goal is to estimate the total rehabilitation liability for all orphaned and abandoned sites and prioritize the sites for permanent rehabilitation.
STATEMENT FROM THE CHAIR

IT IS MY PRIVILEGE TO SERVE AS CHAIR OF THE CANADIAN NATIONAL ORPHANED/ABANDONED MINES INITIATIVE (NOAMI).

Although NOAMI was formally established in 2002, the roots of this unique national initiative date to the late 1990s. At that time, both environmental and industry groups were raising concerns about orphaned and abandoned mines to mines ministers across Canada. In June 2001, a multi-stakeholder workshop was held to discuss issues, identify common ground and assess opportunities for action. From that first workshop emerged the guiding principles and mandate that are the cornerstones of NOAMI today.

NOAMI offers public servants, non-governmental organizations, Aboriginal organizations and the mining industry a forum to discuss issues and barriers associated with the prevention, clean-up and remediation of orphaned and abandoned mine sites. The convergence of interests and common commitment among participants has created a successful and unique approach to addressing these issues of global significance and potentially influencing public policy.

Over the past 12 years, NOAMI has worked diligently to influence policy and build capacity in Canada to address these issues. Through workshops, conferences and publications, we have increased knowledge, explored best practices and created an important national network that is moving this agenda forward.

This report of NOAMI’s efforts and accomplishments from 2009 to 2015 describes our progress grappling with the orphaned and abandoned mines issue in jurisdictions across Canada. NOAMI’s evolving success is illustrated by stories that reflect many different approaches and partnerships.

While much work has been done, much more remains. Sustaining the momentum that has propelled NOAMI throughout the past 12 years is a challenge we cannot meet without ongoing support and endorsement by all key players. This is what NOAMI is all about—"partnering for change" to make Canada and the world a better place.

C. Blancher-Smith

Cindy Blancher-Smith, NOAMI Chair (2013–2015)

ABORIGINAL AFFAIRS AND NORTHERN DEVELOPMENT CANADA—NORTHERN CONTAMINATED SITES PROGRAM

Through its Northern Contaminated Sites Program (NCSP), created in 1991, Aboriginal Affairs and Northern Development Canada (AANDC) manages contaminated sites across the Yukon, the Northwest Territories and Nunavut. AANDC’s portfolio of contaminated sites originates primarily from mining, petroleum and military activities dating back over half a century.

Following the Canada-Yukon Devolution Transfer Agreement in 2003, AANDC retained the liability for the costs of the remediation of seven sites in the Yukon, should they be abandoned by their operators, while retaining responsibility for their implementation of ongoing care, maintenance, assessment and remediation remained with the Government of Yukon. Currently, three of these sites (Rat River, Mt. Nansen and Clinton Creek) have been abandoned. Their remediation is being funded by AANDC but managed by the Government of Yukon.

In the Northwest Territories, with the coming into force of the Northwest Territories Lands and Resources Devolution Agreement in April 2014, AANDC retained liability and responsibility for identified historic contaminated sites. In Nunavut, devolution has not yet occurred. AANDC’s future role with respect to contaminated sites will be negotiated as part of the devolution negotiations.

The Program objective is to reduce and eliminate risks to human and environmental health, as well as federal financial liabilities associated with these sites. Core activities of the Program are consistent with the 10-step process developed by the Federal Contaminated Sites Management Working Group and include care and maintenance, investigation and assessment of suspected sites, development and implementation of remediation or risk management plans, consultation, securing regulatory approvals and, ongoing monitoring.

As custodian of most federal lands in the North, the Program has the largest contaminated sites liability of all federal custodial departments—estimated at $2.4 billion as of March 2014. Between 2009 and 2014, Program expenditures on the management of contaminated sites in the North were just over $636 million, of which $592 million were funded through the Federal Contaminated Sites Action Plan. Since 2009, 24 sites have been completely remediated, including Roberts Bay and Ida Bay Silver Mine, an abandoned mine in Nunavut, which was completed in 2010, and Colomac Mine, an abandoned site in the Northwest Territories that commenced in 2000 and was completed in 2011.

Several other sites have advanced. For example, since 2008, some of the most significant accomplishments include:

- The initiative to build the Giant Mine Remediation Project include the completion of the Freeze Optimization Study and the Environmental Assessment process.
- At the Faro Mine site, a conceptual closure plan—developed collaboratively between Aboriginal Affairs and Northern Development Canada, the Government of Yukon and First Nations (Ross River, Liard, Kaska and Selkirk)—was completed in 2009. The project is currently in the project definition phase, which includes completing ongoing care and maintenance, undertaking work to address high risks and the development of a final closure plan.

The Program continues to promote social and economic opportunities in the North by engaging First Nations, Inuit and other Northerners in all aspects of the site management and remediation process and will continue to ensure that contaminated sites are managed to protect the environment, human health, safety and the environment for all Northerners.

CHAIRS

2009–2011

Robert Holmes, Government of Yukon

2011–2013

Gregg Stewart, Province of British Columbia

2013–current

Cindy Blancher-Smith, Province of Ontario

MEMBERS

Aboriginal Affairs and Northern Development Canada

Claudia David, Nick Montieroe, Lou Spagnuolo

Environment Canada

Charles Dumaresq, Chris Doiron, Rosanna Massimi

Natural Resources Canada

Charlene Hogan (NOAMI Secretariat)

Gilles Tremblay (NOAMI Secretariat)

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Robert Holmes, Patricia Randell

Province of British Columbia

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Province of Saskatchewan

Keith Cunningham

Province of Manitoba

Ernest Armitt, Doina Prisuc, Cal Leske

Province of Ontario

Cindy Blancher-Smith, Chris Hamblin

Gordon MacKay

Province of Quebec

Johanne Cyr

Province of Newfoundland and Labrador

Alex Smith, John Davis, Len Mandville

Mining Watch Canada

Ramsey Hart, Jamie Kneer, Ugo Lapointe

Northwatch

Brennain Lloyd

Ontario Mining Association

Adrianna Stech, Lesley Hymers

Prospectors & Developers Association of Canada

Bernarda Elizalde, Karen Muirnichok

Ross Gallinger

The Mining Association of Canada

Elizabeth Gardiner, Rick Meyers, Charles Dumaresq

Cameco Corporation

Mike Webster

Denesh Investments Inc.

Darrell Beaulieu

Glencore Canada Corp.

Rick Schweiger, Aaron MacDonald

Inmet Mining Corporation—First Quantum Minerals Ltd.

Tracy Anderson
THE LEGACY OF ORPHANED AND ABANDONED MINES—INCLUDING ENVIRONMENTAL LIABILITY, HUMAN HEALTH CONCERNS, AND THE SOCIAL AND FINANCIAL COST OF CLEAN-UP AND LONG-TERM MONITORING AND MAINTENANCE—IS A SERIOUS ISSUE FACING ALL CANADIANS.

Orphaned and abandoned mines are those mines for which the owner cannot be found or for which the owner is financially unable or unwilling to remediate the site. These mines can pose environmental, health, safety and economic problems for communities, the mining industry and governments in many countries, including Canada.

Mining has been central to the Canadian economy for over 100 years, and Canada is a supplier of mineral commodities worldwide. However, our long history of mining has left many abandoned mine sites that require varying degrees of rehabilitation. In the past, mines became “abandoned” because there was no legislation to make mine owners accountable for the entire mine life cycle, from initial site selection and design through to decommissioning, closure and post-closure. Few understood the potential physical and environmental hazards left behind when companies simply walked away from the site. Today, mining legislation in all Canadian jurisdictions requires mine developers to submit mine closure plans that describe how the site will be progressively rehabilitated throughout its lifecycle and how it will be decommissioned and closed when mining activities cease.

Neither the number of orphaned and abandoned mines in Canada or their physical, health and environmental impacts and liabilities has been well documented. Before we can develop sound policy, cost-efficient planning and sustainable rehabilitation, we must document the number and condition of these mines. Access to these details for all communities of interest—governments, civil society and industry—is essential to ensure collaborative and transparent decision-making.

Given adequate resources and resolve, we can build on our success and make further significant progress in the remediation of many orphaned and abandoned mine sites in Canada, as well as eliminating future abandonments.