

Northern Contaminated Sites Program





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www.aandc.gc.ca English Version (Format: PDF)
1-800-567-9604 QS-6315-010-EE-A1

TTY: 1-866-553-0554 Catalogue: R71-67/2013E-PDF

ISSN:2291-8086

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Cette publication est également disponible en français sous le titre: Programme des sites contaminés de Nord – Rapport de rendement 2012-2013

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Purpose

As part of its commitment to public reporting, Aboriginal Affairs and Northern Development Canada's (AANDC) Northern Contaminated Sites Program (NCSP) issues an annual performance report on its progress in managing northern federal contaminated sites.

This is the 12th annual performance report published by the program. It reports on the NCSP's performance from April 2012 to March 2013 against the objectives established in its 2010-2015 Performance Measurement Strategy.

Further information on the NCSP, its activities and previous annual performance reports can be found at Northern Contaminated Sites Program.



Figure 1 Wanagon on the Canol Trail (Photo by Anthony DeLorenzo)

Acronyms

AANDC Aboriginal Affairs and Northern Development Canada

Canadian Council of Ministers of the Environment CCME

DIAND Act Department of Indian Affairs and Northern Development Act

Department of National Defence DND

DTA Canada – Yukon Northern Affairs Program Devolution Transfer Agreement

Detailed Work Plan DWP

EC **Environment Canada**

ESA **Environmental Site Assessment**

FCSAP Federal Contaminated Sites Action Plan

GNWT Government of the Northwest Territories

GoC Government of Canada

HQ Headquarters

INAC Indian and Northern Affairs Canada

NAO Northern Affairs Organization

NCSCS National Classification System for Contaminated Sites

NCSP Northern Contaminated Sites Program

NWT **Northwest Territories**

PHC Petroleum Hydrocarbon

PWGSC Public Works and Government Services Canada

TBS **Treasury Board Secretariat**

TCA Tailings Containment Area

YESAA Yukon Environmental and Socio-economic Assessment Act

YG The Government of Yukon

Executive Summary

Through its Northern Contaminated Sites Program (NCSP), Aboriginal Affairs and Northern Development Canada (AANDC) manages contaminated sites across the Yukon, the Northwest Territories (NWT) and Nunavut. Liabilities associated with these sites, which include some of the largest and most complex contaminated sites in the country, are currently estimated at \$2.3 billion.

The purpose of the program is to reduce and eliminate risks to human and environmental health, as well as federal financial liabilities associated with these sites. This report presents NCSP's performance against the objectives outlined in the Program's 2010-2015 Performance Measurement Strategy. The program has also moved a number of sites beyond site assessment and remediation planning to the active remediation stage. In 2012-13, 12 sites were under active remediation with seven of these sites being fully remediated.

As of March 2013, the program liability estimate was \$2.3 billion which represents an overall increase of \$166 million from 2011-2012. The increase in liability is mainly due to inflation, changes in cost estimates for the larger sites and the addition of newly identified sites. Two of the largest and most complex sites, the Faro and Giant Mines, represent approximately \$1.6 billion of this liability. Giant Mine shows a slight decrease in liability due to the 2013 exclusion of a risk contingency whereas Faro Mine's liability increased as a result of higher remediation costs. Even though the overall environmental liability has increased, many sites have significant decreases in liability as remediation plans are being implemented. For example, NCSP Remediation activities conducted in 2012-2013 at 12 sites contributed to a decrease in liability of \$105.7 million. The liability for all sites without Faro and Giant is \$712 million, an \$11 million reduction in liability from March 31, 2012.

The NCSP 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. To that end, the program has established an overall target of ensuring that 60% of all project employment, training and contracts (by value) are provided to Northerners and Aboriginals. The program has made steady progress in reaching this objective, however additional work is required to meet the targets for Aboriginal employment.

Program expenditures in 2012-13 were approximately \$111 million with \$101 million funded by the Federal Contaminated Sites Action Plan (FCSAP) and \$10 million funded by AANDC.

1.0 Program Overview

To meet the challenges and opportunities of a changing North, the Government of Canada has established a comprehensive Northern Strategy and is taking concrete action in four priority areas:

- exercising our Arctic sovereignty
- protecting our environmental heritage
- promoting social and economic development
- improving and devolving northern governance

The NCSP is part of the Government of Canada's priorities under the protection of Canada's environmental heritage pillar of the Northern Strategy. Protecting our environmental heritage involves taking a comprehensive approach to the protection of environmentally sensitive lands and water in the North; ensuring conservation keeps pace with development and that development decisions are based on sound science and careful assessment.

AANDC is the principal federal department responsible for meeting the Government of Canada's constitutional, political, and legal responsibilities in the North. In order to achieve the mandate of AANDC with respect to the management of the North, the Department has developed a strategic outcome to ensure that the people of the North are self-reliant, healthy, skilled, and live in prosperous communities.

Within AANDC, the Northern Affairs Organization's (NAO) is mandated with the vast majority of the Department's activities related to the Northern Strategy. In addition, pursuant to the Department of Indian Affairs and Northern Development (DIAND) Act (1985), AANDC is responsible for the management of contaminated sites in the Northwest Territories and Nunavut. In the Yukon, the responsibility for contaminated sites is outlined in Chapter six of the Devolution Transfer Agreement (2003).

Contaminated sites in the North have not resulted from departmental operations. Rather, AANDC's portfolio of northern contaminated sites originate primarily from mining, petroleum and military activities dating back over half a century, long before the environmental impacts of these activities were adequately understood.

The NCSP was created within NAO in 1991. The scale and complexity of AANDC's liability grew rapidly in the late 1990s as a result of a sudden increase in private sector bankruptcies associated with falling mineral prices. The Department has since developed and implemented a mine reclamation policy which limits its liability in current and future mining projects.

The NCSP's goal is to 'reduce and eliminate, where possible, risk to human and environmental health and liability associated with contaminated sites'. Priority is placed on sites that have been classified according to the Canadian Council of Ministers of the Environment (CCME), National Contaminated Sites Classification System (NCSCS) as Class 1 (high priority for action) or Class 2 (medium priority for action).

Implementation of the program is guided by the AANDC Contaminated Sites Management Policy (2002), which outlines the following six objectives:

- to meet federal and departmental policy requirements and legal obligations regarding the management of contaminated sites;
- to require that, where a suspected contaminated site has been identified, the site be assessed in a timely, consistent and cost-effective manner;

- to provide a scientifically valid, risk management based framework for setting priorities, planning, implementation and reporting on the management of contaminated sites;
- to remediate, based on approved resource levels, all NCSCS Class 1 contaminated sites in the North, on a priority basis, unless it can be demonstrated that for a specific site an alternative form of management is appropriate;
- to promote the social and economic benefits that may accrue to First Nations, Inuit and Northerners when carrying out activities required by this policy; and
- to promote the federal "polluter pay" principle.

In 2009, a Performance Measurement Strategy covering 2010 through 2015 was developed for the program, based on these objectives as well as the guidance provided by the Treasury Board Secretariat (TBS). This Performance Report is designed to report on our progress against this strategy.

2.0 Program Scope

2.1 Program Liability

Liability is defined as the obligation the Crown has to remediate and/or risk-manage these contaminated sites. The determination of the liability for the Crown is governed by the '<u>Treasury Board Secretariat</u> (TBS) Guidance on Remediation Liabilities Related to Contaminated Sites - Dec 2010'.

The NCSP has the largest liability of all federal departments. Liabilities associated with NCSP sites are found in Table 1 and are currently estimated (March 31, 2013) at \$2.3 billion, which represents an increase of \$166 million over the previous fiscal year. These liabilities include some of the largest and most complex contaminated sites in the country. For example, the Faro Mine, in the south-central Yukon, and the Giant Mine, within Yellowknife City limits in the NWT, together represent liabilities of approximately \$1.6 billion. Giant mine had a slight decrease in liability, resulting from the 2013 exclusion of a risk contingency previously included in the 2012 liability. The exclusion was applied to ensure consistency of the liability measurement with other northern contaminated sites and is based on guidance from the Public Sector Accounting Board. The liability at the Faro Mine has increased as a result of a substantial increase in the projected obligation for remediation costs not reflected in previous estimates. The liability for all sites without Faro and Giant is \$712 million, an \$11 million reduction in liability from March 31, 2012.

The program completed the initial assessment of all of the suspected contaminated sites located in Nunavut and the NWT. More detailed assessment is required at some sites, however, it is not anticipated that major new liabilities will emerge.

Table 1 - Northern Contaminated Sites Program Liability Estimates by Region

Region	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
Yukon (not including Faro)	\$85.0M	\$82.9M	\$82.2M	\$111.6M	\$151.6M	\$177.3M
NWT (not including Giant)	\$159.6M	\$163.0M	\$237.3M	\$187.6M	\$216.6M	\$208.7M
Nunavut	\$163.9M	\$192.3M	\$212.9M	\$191.1M	\$341.7M	\$324.5M
Giant & Faro	\$990.7M	\$990.5M	\$1.057B	\$1.251B	\$1.395B	\$1.57B
Total Liability	\$1.399B	\$1.429B	\$1.590B	\$1.742B	\$2.105B	\$2.281B

2.2 Contaminated Sites Inventory

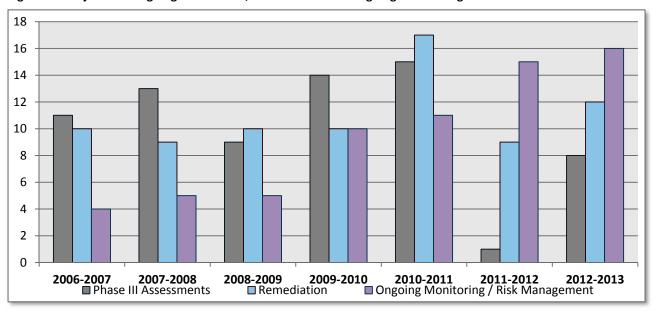
The NCSP maintains a comprehensive, regularly updated, electronic inventory of contaminated sites in the North. Following an initial assessment, each site is classified using the National Classification System for Contaminated Sites (NCSCS). This system is designed to rank and prioritize the sites according to the risk to human health and the environment. As a result, 154 of our sites are classified as Class 1 (a high priority for action) or Class 2 (a medium priority for action). As indicated below, the number of priority NCSP sites has increased in the last year as a result of assessment activities in Nunavut and the NWT.

Table 2 - Sites based on NC	S Classifications, 2007-2013 ¹

CLASS	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
1	50	45	47	54	66	86
2	26	33	32	55	74	68
3	0	7	7	5	13	12
TOTAL	76	85	86	114	153	166

The NCSP has made progress in 2012-2013 towards the overall goal of addressing contaminated sites (Figure 1) with twelve sites under remediation, two moving from remediation into long-term monitoring (Colomac, PIN-D) and five being closed (PIN-E, Husky Creek, Willow Creek, South Cabins and Chalco Lake). There were three more sites in remediation in 2012-2013 compared to 2011-2012 and it is anticipated that more sites will be addressed in future years as additional projects work through assessment, planning and into remediation. Figure 2 shows the distribution of NCSP projects undergoing assessment, remediation or ongoing risk management.

Figure 1 - Projects Undergoing Assessment, Remediation and Ongoing Risk Management



2.3 Program Expenditures

The majority of funding for the NCSP comes from the FCSAP. FCSAP was created in 2005 and is administered jointly by Environment Canada (EC) and the TBS. With a commitment of \$3.5 billion over

¹ Sites under risk management and monitoring maintain their NCS designation and are included in this table.

15 years, FCSAP's overall goal is to protect the environment and human health from the impacts of federal contaminated sites and to effectively eliminate federal financial liability associated with these sites.

FCSAP provides resources on a cost-shared basis for remediation of most federal sites classified as Class 1 (high priority for action) or for certain Class 2 (medium priority for action) as prioritized using the NCSCS. FCSAP covers 100% of the costs associated with the largest and most complex sites, with a total cost of over \$90 million, in the federal inventory, such as the Faro Mine (Yukon), Colomac Mine (NWT) and Giant Mine (NWT). The NCSP participates actively in all aspects of the FCSAP program, including program oversight and the development of relevant procedures and tools.

Expenditures in the NCSP during fiscal year 2012-2013 increased by \$4.2 million (Table 3) due to an increase in the number of sites in active remediation. In 2011-2012 there were only nine sites in active remediation and in 2012-2013 there were twelve. It is expected that in 2013-2014 only eight sites will be in active remediation, however, many sites are currently in the planning stages so it is predicted that sites in active remediation will increase to 24 by 2014-2015 and to 32 by 2015-2016.

Table 3 – NCSP Funding, 2007 to 2013

Source of Funds	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
AANDC	\$11,111,486	\$10,400,418	\$6,747,740	\$5,624,723	\$11,984,824	\$9,833,803
FCSAP	\$79,334,197	\$75,074,391	\$111,072,691	\$141,110,905	\$94,896,711	\$101,277,136
TOTAL	\$90,445,682	\$85,474,809	\$117,820,431	\$146,735,628	\$106,881,535	\$111,110,939

2.4 Human Resources

Although the number of people required to deliver the program has increased significantly since its inception, there was a reduction in the number of employees during this fiscal year. This was a result of several staff departures in the regions and their positions have yet to be filled. It is anticipated that the Program will grow its employee base at headquarters to coincide with the increases in activity at major projects and the increase in funding and policy requirements required to deliver the program and projects. Table 4 outlines trends in total program employment since 2007-2008. The staff that delivers the program is made up of scientists, engineers, project managers, financial officers, communication officers and support staff.

Table 4 – Total NCSP Employment

	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
Headquarters	10.50	9.50	12.00	19.50	22.00	21.50
Nunavut	4.75	8.00	9.00	8.50	9.00	7.50
NWT	42.50	37.00	40.00	34.50	36.00	22.00
Yukon	7.50	11.00	11.00	10.00	11.00	13.50
Total	65.25	65.50	72.00	72.50	78.00	64.50

3.0 Changing Environment

3.1 Yukon & NWT Devolution

In 2003, AANDC completed the devolution of NAO's roles and responsibilities in the Yukon region. Due to commitments outlined in the DTA, AANDC continues to be financially responsible for a total of seven contaminated sites in the Yukon while the Government of Yukon (YG) is responsible for managing these projects. The Department is currently in the process of negotiating a DTA covering the NWT and the program may need to adjust the management approach based on the outcome of the final agreement.

4.0 Challenges in 2012-13

Working on these very large, labour-intensive and costly projects means that the Program faces significant challenges, including the continuity of staff and developing or finding the level of talent and experience required to manage these large scale projects. Working in the North adds its own unique set of challenges that affect the manner and speed with which these sites can be assessed and remediated. The short field season of two to four months limits the amount of work that can be completed in a given year. The remoteness of these sites means that people and resources need to get to the site often either by air, winter roads or sealift.

5.0 Performance Measurement Results

In 2009-2010, a new Performance Measurement Strategy was developed for the program in conjunction with the policy and guidance provided by the TBS and the requirements outlined in the <u>INAC Guidance on Performance Measurement Strategies</u>. The purpose of these strategies is to support program planning, monitoring and reporting through the identification of a suite of performance indicators that can inform decision making and support evaluation activities over time. The list of indicators developed for the Performance Measurement Strategy reflects a mix of quantitative and qualitative indicators, and includes both indicators currently in use by the program, as well as, new indicators that reflect emerging priorities and needs.

The progress towards each indicator outlined in the Performance Measurement Strategy can be found in subsequent sections. The indicators are grouped together as they are found in the logic model, an overall dashboard is present indicating where the targets were met in terms of, "achieved", "partially achieved" and "not achieved".

Several Tier 2 indicators were also identified and will be refined in future years in order to measure trends in environmental risks associated with sites managed by the program. Tier 2 indicators require further refinement and/or analysis and will be phased in over the life of this Performance Measurement Strategy. The suite of indicators also includes several sub-indicators pertaining only to the Faro and Giant mine sites. These sub-indicators have been included because of the significance of these two sites to the program as a whole, as well as, the overall proportion of program responsibility and risk they represent.

5.1 Outputs

The Logic Model contains activities which represent stages that are conducted on all federal contaminated sites; as such, they correspond with the broad categories of work outlined in the FCSAP program. These indicators are designed to show our progress towards the various outputs.

Table 5 – Performance Measurement Results for the Indicators Reporting on Outputs

Output	Indicator	Target	Overall Result
5.1.1 Classification of sites	Percentage of suspected sites that have been assessed	100%	100%
5.1.2 Consultation Reports	Number of consultation / engagement activities	30/year	65
5.1.3 Training Program	5.1.3.1 Percentage of persons hours of training provided to Northerners / Aboriginals	60%	61%
	5.1.3.2 Training for women (sub-indicator)	5%	16%

Not achieved Partially achieved Achieved

5.1.1 Classification of sites - Percentage of suspected sites that have been assessed

The assessment refers to Phase I, or Historical Review, and is a useful indicator because it determines if sites have possible contamination. In 2012-2013, the initial assessment of all suspect sites was completed, achieving our target. Details regarding the results of these assessments will be available in 2013-2014.

5.1.2 Consultation Reports - Number of consultation / engagement activities

Consultation and community engagement activities (community meetings, site visits, workshops) are important and an opportunity to invite the participation of First Nations, Inuit and other Northerners in program activities. These typically take place at the beginning of the project once the remediation plan is developed and once the project is complete. However, some of our larger sites, such as the Giant Mine, have ongoing community involvement throughout the year. The target of 30 consultation activities per year was achieved with 65 consultation activities taking place with an audience of 400 people in attendance. The higher amount of community tours and meetings took place in 2009-2010 and 2010-2011 due to the fact that several projects were at the beginning stages of the project and required more consultations [i.e. Faro Mine (YK), Canol Trail (NWT) and Great Bear Lakes Project (NWT)].

Table 6 - Consultation Performance Measures 2007 to 2013

		2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
	Number	87	86	130	122	45	65
Community tours & meetings, Workshops and Site Tours	Audience (Number of persons)	1,488	1,238	1,612	2,505	644	400
Media (TV, radio) events and Press reports	Number	26	39	23	40	9	9

5.1.3 Training Program

Training is an important prerequisite for Northerners (including Aboriginals) to benefit from program activities. As such, the NCSP continues to place priority on developing and delivering workforce training programs across the North.

5.1.3.1 Percentage of persons hours of training provided to northern Aboriginals

The training efforts in 2012-2013 met the target of ensuring that 60% of all person hours of training be provided to Northerners and Aboriginals. Northerners, including Aboriginals, received 61% with Aboriginals receiving 36% of all the training provided (Figure 2). There was reduction of 35.5% in person hours of training provided to northern Aboriginals from the previous fiscal year. This is due, in the large part, to a 2011-2012 training program that was in place at the Tundra Mine, NWT that had accounted for a significant increase in aboriginal training.

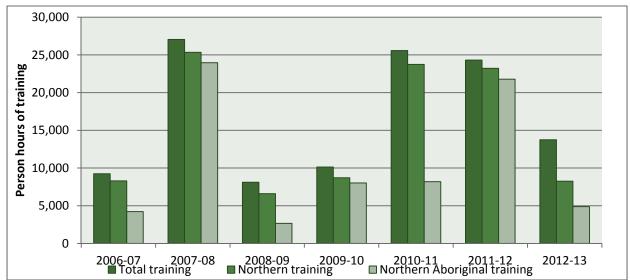


Figure 2 – Training Implemented by the Northern Contaminated Sites Program

5.1.3.2 Percentage of persons hours of training provided to Women

This training sub-indicator speaks to the program's desire to increase opportunity for women within its activities. This sub-indicator was not being tracked by our contractors in previous fiscal years and, as a result, it cannot be reported prior to 2012-2013. The target established in the 2010-2015 Performance Measurement Strategy is that 5% of person hours of training be provided to women. In 2012-2013, the NCSP surpassed this target with 16% of person hours of training provided to women.

5.2 Immediate outcomes

Four immediate outcomes underpin the intermediate outcomes. It is anticipated that most of these immediate outcomes will be achieved over the next two to three years (Table 7).

Table 7 - Performance Measurement Results for the Indicators Reporting on Immediate Outcome

Immediate Outcome	Indicator	Target	Overall Result
5.2.1 Immediate environmental risks are contained	5.2.1.1 Number of high and very high risks to the environment for sites under care and maintenance	No net increase	-4
	5.2.1.2 Number of non-compliant releases	0	0
E 2.2 Driority sites for	5.2.2.1 Number of Phase III assessments completed	4 / year	8
5.2.2 Priority sites for remediation are identified	5.2.2.2 Regulatory approvals secured (Sub-indicator	Giant All approvals	2
	for Giant and Faro)	Faro 2013/2014	0 (Tier II)
	5.2.3.1 Number of sites under active remediation or risk management	10 / year	12
5.2.3 Plans for priority sites are developed and implemented	5.2.3.2 Number of remediation contracts established	3 / year	3
F	5.2.3.3 Number of sites for which further action is required	0	0
5.2.4 Employment opportunities are	5.2.4.1 Percentage of Aboriginals and Northerners employed	60%	45%
created for Northerners and Aboriginals	5.2.4.2 Percentage of women employed	5%	36%

Not achieved
Partially achieved
Achieved

5.2.1 Immediate environmental risks are contained

Care and Maintenance refers to efforts to control, stabilize or avoid any potential risks or contaminant releases that could arise from sites under care and maintenance activities. Only two sites are under care and maintenance, the Giant and Faro Mines. Two indicators were developed for this outcome.

5.2.1.1 Number of high and very high risks to the environment for sites under care and maintenance

All contaminated sites under care and maintenance or remediation have a risk register developed for them. Site risk registers are based on extensive analysis of the types and level of risks at individual sites and as such, provide the best measure of whether this outcome is being achieved. Although it was originally intended to include moderately high risks in reporting, it has not been incorporated here. According to the AANDC Northern Affairs Contaminated Sites Project-Level Risk Management Background and Guidance Document (2010), risks have action levels based on their risk rating. Very high and high risks must be mitigated immediately and mitigated within two years respectively. Moderately high risks should be reduced to as low as reasonably practicable by having a mitigation plan in place that is implemented within two years or as soon as possible. The lack of immediacy for action for moderately high risks makes the inclusion of them unsuitable in measuring whether this performance indicator is being achieved. Only two sites are under care and maintenance, the Giant and Faro Mines. In 2011-2012, the Faro Mine had zero very high and eleven high risks to the environment while the

Giant Mine had one very high and 12 high risks to the environment for a total of 24. In 2012-2013, the Faro Mine had zero very high and seven high risks to the environment while the Giant Mine had one very high and 12 high risks to the environment for a total of 20. This equates to a decrease in four very high/high risks when comparing 2011-2012 to 2012-2013, achieving our target of no net increase.

5.2.1.2 Number of non-compliant releases

This refers to efforts to control, stabilize or avoid any potential risks or contaminant releases that could arise from sites under care and maintenance activities. This objective is only for sites currently under care and maintenance; as a result, it only reflects non-compliant releases that occurred at the Giant and Faro Mines. In 2012-13, the target was achieved as there were no non-compliant releases.

5.2.2 Priority sites for remediation are identified

This outcome refers to the process by which sites are assessed and then classified under the CCME NCSCS. At the end of this process, project managers have enough relevant information upon which to base decisions on appropriate remediation and/or risk management actions. Two indicators were developed for this immediate outcome.

5.2.2.1 Number of Phase III assessments completed

A Phase III or detailed site assessment needs to be conducted at each site in order to fully understand the level and extent of contamination present at the site and important site characteristics that are required in order to develop a comprehensive and successful remediation action plan. This year, eight phase III site assessments were undertaken, five of which were completed in the NWT and three in Nunavut. The results of these assessments are scheduled for release in 2013-2014. Having done eight phase III site assessments in 2012-2013, the NCSP surpassed the target of four per year. It is anticipated that 12 sites will undertake a Phase III site assessment in 2013-2014.

5.2.2.2 Regulatory approvals secured (Sub-indicator for Giant and Faro Mines)

Regulatory approvals (i.e. environmental assessments, water licences and TB submission approvals) for remediation/risk management activities at Faro and Giant mine sites are needed prior to the start of remediation occurring at these sites.

The Faro Mine

Looking forward, AANDC will be submitting its multi-year agreement with the YG in 2014-2015. Human resources (YG) and



Faro Mine Vangorda Plateau looking south

financial resources (GoC) will need to be directed to interim stabilization efforts (e.g., water treatment plant design and construction) as part of the implementation of the Medium-Term Plan. Consequently, the final closure plan and regulatory approvals will be delayed to 2020.

The Giant Mine

Although regulatory approvals were not complete for the entire project by 2012-2013, as targeted, the project did obtain a water licence for the two largest components of the Site Stabilization Plan - the deconstruction of the Roaster Complex and the stabilization of the underground. This extensive process concluded in the issuance of the water license and determination to proceed under section 119 of the *Mackenzie Valley Resource Management Act (1998)* on March 28, 2013. The project team is currently forecasting the completion of the regulatory



Baker Creek at Giant Mine

approvals phase of the project between 2015 and 2017 - although this timeline will be dependent upon the final outcome of the project's environmental assessment which is in progress.

5.2.3 Plans for priority sites are developed and implemented

Following site assessment and prioritization, the program works to plan and then conduct specific remediation and/or risk management activities for individual sites. Three indicators were developed for this outcome.

5.2.3.1 Number of sites under active remediation or risk management

Due to the limited field season and the difficulty mobilizing and demobilizing to each of our sites, remediation can take anywhere from a few months to a number of years. In 2012-2013, 12 sites were under active remediation. These sites were:

- Colomac, NWT;
- Tundra, NWT;
- Chalco Lake, NWT;
- Resolution, NU;
- PIN-D Ross Point, NU;
- PIN-E Cape Peel, NU;
- FOX-E Durban Island, NU;
- Padloping Island, NU; and
- all four sites of the Hope Lake Remediation Project, NU.

5.2.3.2 Number of remediation contracts established

The establishment of a remediation contract is normally one of the last steps before active remediation takes place on the ground. There can be a considerable amount of time between the site undergoing its detailed assessment and when remediation starts. During this time, important steps are achieved such as the development of the remediation action plan, applying for and receiving approvals, permits and licences and the tendering of contracts. In 2012-2013, three remediation contracts were established,

one for FOX-E-Durban Island/Padloping, NU, and two for the Giant Mine, NWT. The Giant Mine contracts were awarded to address urgent on-site risks in order to protect human health and safety as well as the environment. They included contracts to Parsons Canada Ltd. for the demolition of the Roaster Complex and Clark Builders for construction management. A significant amount of work is underway to establish six remediation contracts in the 2013-14 fiscal year for:

- CAM-A-Sturt Point;
- Ennadai Lake;
- Giant Mine;
- Contwoyto Lake;
- Nottingham Island; and
- Great Slave Lake.

5.2.3.3 Number of sites for which further action is required

Once a site undergoes remediation, a long-term monitoring plan is often developed. These plans typically outline the when, what and where monitoring must take place to ensure that the remediation was successful and any tailings caps or landfills are performing as designed. This target was designed to give AANDC an indication of the long-term success of our program. During the fiscal year of 2012-2013, no sites were under long-term monitoring for which further maintenance and/or action was required.

5.2.4 Employment opportunities are created for Northerners and Aboriginals

This immediate outcome reflects the fact that for economic benefits to accrue in the longer term, particular efforts may be required to ensure that northern and Aboriginal communities have the knowledge, capacity and opportunity to participate effectively in program activities and employment opportunities that emerge as a result of those activities.

5.2.4.1 Percentage of Aboriginals and Northerners employed

Direct employment is a key direct measure of the socio-economic benefits provided by the program. This target is measured by the number of people employed for the program and in 2012-2013 the NCSP provided 1,943 individuals with employment. Of these, 868 (45%) were Northerners (including Aboriginals) and 297 were Aboriginals (15%). Figure 3 demonstrates employment on northern contaminated sites through time. It should be noted that although we didn't achieve our target (60%) of number of Northerners/Aboriginals employed in 2012-2013, the number of person-hours accrued by these groups represents 60% of our total. In addition, the program has achieved an overall average of 60% since tracking of this target commenced in 2005-2006.

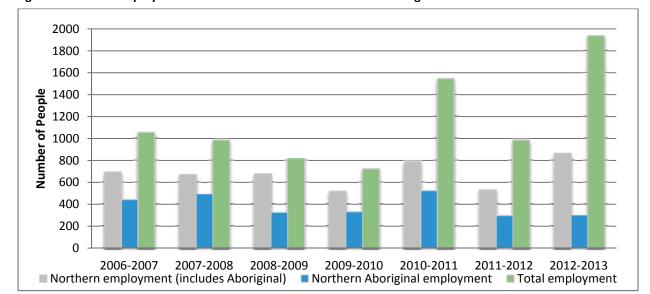


Figure 3 - Overall employment for the Northern Contaminated Sites Program

5.2.4.2 Percentage of Women employed

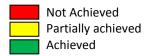
This sub-indicator speaks to the program's desire to increase opportunities for women within its activities. In 2012-2013, the NCSP exceeded the 5% target, with 36% of people employed by contractors being women.

5.3 Intermediate Outcome

This long-term outcome is supported by two intermediate outcomes, each of which contributes to its achievement. The anticipated timeline for achieving these outcomes for the program as a whole is five-ten years, although specific sites will progress towards these outcomes at different places throughout the life of the logic model.

Table 8 - Performance Measurement Results for the Indicators Reporting on Intermediate Outcome

Intermediate Outcome	Indicator	Target	Overall Result
5.3.1 Priority Sites are remediated and/or risk managed	Percentage of Class 1 & 2 Sites not yet addressed	TBD	n/a
5.3.2 Economic Benefits accrue for Northerners and Aboriginals	Percentage of contract value for northern /Aboriginal suppliers	60%	65%



5.3.1 Priority sites are remediated and/or risk managed

This outcome refers to completion of all required remediation and/or risk management activities at a given Class 1 or 2 site, recognizing that for larger sites (such as the Faro Mine), the emphasis over the next five years will be on remediating or risk managing the highest risks associated with these sites. The indicator of percentage of Class 1 and 2 sites not yet addressed will be reported on in 2013-2014 following confirmation of baseline and establishment of the target in 2012-2013.

5.3.2 Economic Benefits accrue for Northerners and Aboriginals - % of contract value for northern /Aboriginal suppliers

This outcome reflects the program's desire to ensure that Northerners and Aboriginals are both involved in and benefit from NCSP activities and resources throughout the contaminated sites management process. In particular, it seeks to ensure that northern and Aboriginal companies and individuals derive tangible economic benefits, one of which is the total value of program business with northern/Aboriginal suppliers. The program spent \$71,637,375 on suppliers in 2012-2013, with 65% or \$46,637,413 going to northern suppliers and 37% or \$26,376,688 going to Aboriginal suppliers. We exceeded our target of 60% with 65% of contract value going to northern / Aboriginal suppliers.

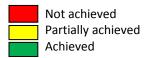
5.4 Ultimate Outcome

Consistent with the program goal articulated in the Contaminated Sites Management Policy, the ultimate outcome of the program is to ensure that human health and environmental risks, as well as associated federal liabilities, are reduced from contaminated sites under program management, while promoting the social and economic benefits that may accrue to First Nations, Inuit and northerners when carrying out activities required by this policy.

Accomplishing this goal will help the Department achieve its Strategic Outcome for the North, by contributing to the Program Activity Architecture for Northern Land and Resources.

Table 9 - Performance Measurement Results for the Indicators Reporting on the Ultimate Outcome

Ultimate Outcome	Indicator	Target	Overall Result
	5.4.1 Liability	5% Reduction	n/a
Human health/environmental risks	5.4.2 Liability (Sub-Indicator)	Reduction	n/a (Tier II)
and associated federal liabilities are reduced while bringing economic	5.4.3 Number of high and very high risks to the environment	No net increase	+8
benefits to the North	5.4.4 Number of Class 1 and 2 sites fully remediated or risk managed	2 sites/year	7



5.4.1 Liability

This indicator refers to the total financial liability for the program (including adjustments related to existing sites) with the exception of Faro and Giant Mines. Due to the size and long-term management required for the Giant and Faro Mines, they will be reported separately (see 5.4.2 below). This will enable the program to measure meaningful changes in total liability and progress towards our ultimate outcome. The goal is to reduce overall liability, and as the initial assessment of all suspect contaminated sites has been completed the target was revisited in 2012-2013. It was decided that the target should remain an annual reduction of 5%. A liability baseline was established in 2012-2013 (\$710,482,775) and reporting will begin in 2013-2014.

5.4.2 Liability (Sub-Indicator)

The Giant and Faro Mines are the two largest contaminated sites in the country and represent a disproportionate amount of the program's financial liability. Even minor annual fluctuations in liability

estimates for these sites can overshadow liability reductions achieved in the rest of the program. As such, liability for these sites will be reported separately. Reporting against this indicator will commence once the sites have undergone regulatory approvals and the final remediation option for each has been confirmed and fully designed, as these stages must be complete in order for the baseline to be confirmed. The Giant Mine Project team is currently forecasting the completion of the regulatory approvals phase of the project between 2015 and 2017 - although this timeline is dependent upon the final outcome of the project's environmental assessment. The Faro Mine team expects that the final closure plan and regulatory approvals will be delayed until 2020 because resources have been directed to interim stabilization efforts (e.g., water treatment plant design and construction) as part of the implementation of the Medium-Term Plan.

5.4.3 Number of high and very high risks to the environment

Risks to the environment are regularly identified and prioritized in site risk registers, which are completed every fall and are included in the Detailed Work Plan (DWP) for the site. Measuring trends in this information will provide an indication of the extent to which the program is reducing environmental risks. Although it was originally intended to include moderately high risks in reporting it has not been incorporated here. According to the AANDC Northern Affairs Contaminated Sites Project-Level Risk Management Background and Guidance Document (2010), risks have action levels based on their risk rating. Very high and high risks must be mitigated immediately and mitigated within two years respectively. Moderately high risks should be reduced to as low as reasonably practicable by having a mitigation plan in place that is implemented within two years or as soon as possible. The lack of immediacy for action for moderately high risks makes the inclusion of them unsuitable in measuring whether this performance indicator is being achieved.

In 2011-2012, for sites not under care and maintenance, there were 30 very high/high risks identified in the sites risk registers, whereas, 2012-2013 had 38 very high/high risks. This increase of 8 very high/high risks does not meet the NCSP target of downgrading 5 very high/high risks to the environment by one or more categories. The increase of 8 very high/high risks is a result of risk registers being completed for all assessment sites in the NWT. These risks will be addressed, in priority, based on their current or potential adverse impact on human health and/or the environment. It should be noted that although the overall number of very high/high risks have increased by 8, NCSP remediation efforts in 2012-2013 reduced the number pre-existing very high/high risks by 4.

5.4.4 Number of Class 1 and 2 sites fully remediated or risk managed

Class 1 and 2 sites are those sites representing the highest priority for action according to the NCSCS. This represents the best indicator of whether or not the program's long-term outcome is being achieved. Annex A contains all of the sites to date that have been remediated by the Program. In 2012-2013 the program completed remediation at seven sites (PIN-E, PIN-D, Husky Creek, Willow Creek, South Cabins, Chalco Lake and Colomac). The details of the sites remediated in 2012-2013 can be found in Section 6.3.

6.0 Major Accomplishments in 2012-2013

6.1 Giant Mine, NWT

The Giant Mine covers 949 hectares within the city limits of the City of Yellowknife, NWT. The site lies along the western shore of Yellowknife Bay, an arm of Great Slave Lake. This gold mine operated nearly continuously from 1948 until its closure in July 1999. This operation left 237,000 tonnes of arsenic trioxide stored underground, as well as various buildings and surface areas contaminated with arsenic.

A remediation plan for the site was completed following extensive site characterization and community consultations. The plan has now entered the environmental assessment process. The remediation plan focuses on the mimicking of permafrost conditions and creating frozen chambers underground to prevent water from entering the chambers and mixing with the arsenic trioxide.

In 2012-2013, significant progress was made on the Giant Mine Remediation Project in a number of areas. This included completing significant and visible components of the Site Stabilization Plan such as the deconstruction of the Mill Conveyor. The Environmental Assessment Public Hearing was completed in September 2012 which is a major milestone in the regulatory process. The Project Team successfully concluded the 2012 Value for Money Audit and the majority of the recommendations were completed with the remainder expected to be completed by the end of 2013-2014. While the project does face a series of potential risks, steps are being taken to proactively manage and mitigate these issues.



Giant Mine Mill Conveyor

6.2 Faro Mine, Yukon

Located in south-central Yukon close to the Town of Faro, the Faro Mine was an open-pit lead-zinc mine from 1969 until it went into interim receivership in 1998. The site covers approximately 2,500 hectares and includes 70 million tonnes of tailings and 320 million tonnes of waste rock. Both the tailings and waste rock contain high levels of heavy metals that could leach into the environment in the absence of remediation. As such, there are significant long-term environmental risks associated with the site. A care and maintenance regime, including collection and treatment of contaminated and water general maintenance and site security, currently in place.



Faro Mine settling pond downstream from the Grum Sulphide cell (south)

The Faro Mine is one of seven Type II sites identified under the Canada–Yukon Northern Affairs Program Devolution Transfer Agreement (2003). The Government of Canada and the Government of Yukon, along with the Ross River Dena Council (on behalf of the Kaska Dena Council) and Selkirk First Nation have worked cooperatively through a joint Oversight Committee to develop a site closure and remediation plan. Development of this plan was led by a multi-disciplinary team of engineers, scientists and First Nations, and informed by hundreds of technical studies, as well as consultations with community members of affected First Nations and the Town of Faro. An Independent Peer Review Panel also

performed a comprehensive review of remediation options. The project reached a major milestone in early 2009 when the closure plan was agreed upon by the Oversight Committee. In 2011-2012, the project design team was contracted through a competitive process and will start the design work. In 2012-2013, the project design team supported the drafting of a five-year work plan to ensure the protection of the environment and human health and safety on site.

6.3 Remediation Projects Completed in 2012-2013

This past year the program made significant progress in the remediation of contaminated sites, with seven sites being remediated. A detailed explanation of each of the remediation projects is found below. Annex A contains a listing of all sites remediated by the NCSP.

6.3.1 Colomac

Colomac is an abandoned gold mine located 220 km north of Yellowknife and 45 km west of the nearest Tlicho community of Wek'weeti. Mineral exploration in the area dates back to the 1930s, but advanced gold exploration didn't occur until the 1940s. Limited exploration resumed in the 1970s, with intensive 1986, exploration in leading to mine development in 1988-1989. Production commenced in 1990 with sporadic mining between 1994 and 1997. In 1998, Royal Oak Mines Inc. removed much of the mine's mobile equipment fleet and power generators and placed the mine in Care and Maintenance. In April of 1999, Royal Oak was placed in receivership and AANDC became the custodian of the abandoned site.



Aerial Photo of the Colomac Remediation Project

The Colomac milling process included cyanide leaching and typical mill reagent chemicals associated with gold processing. Poor mine management resulted in a number of tailings spills around the mill, Tailings Containment Area (TCA) haul road and in a local lake. A poorly constructed bulk fuel storage facility and sloppy fuel handling practices resulted in extensive hydrocarbon soil, groundwater and sediment contamination. Poorly managed mill chemical, petroleum and waste oil laydown areas resulted in extensive soil contamination.

Remediation of the Colomac Site commenced in 2000 with general site cleanup and water management within the TCA. Hydrocarbon remediation commenced in 2004 with the decommissioning of the bulk fuel tank farm and impacted soil treatment. The Major Civil Works Program commenced in 2006 and included capping of exposed tailings within the TCA, construction of Dam 1B and discharge channel at Dam 2. Mill assets salvage commenced in 2008. Final remediation commenced in 2009 and included: major decontamination/demolition of the mill, shop and camp facilities residual mill waste placement into Spruce Lake Disposal Cell, major civil works including construction of Steeves Lake Shoreline cap, Truck Lake Channel, and non-hazardous landfill in Zone 2.5 Pit, site restoration and re-vegetation. Remediation was completed in 2011. The Post Reclamation Monitoring and Residual Hydrocarbon Management Program commenced in 2012-2013 and consists of environmental monitoring and management of residual free product trapped in bedrock around former tank farm and shop/mill areas.

Hydrocarbon monitoring will continue until steady state conditions and remedial endpoints have been achieved.

The site requires long-term monitoring and the total cost for the project to date is \$149,706,866. A small inventory of Crown equipment has been retained on site for ground transportation to support monitoring programs. Nighthawk Gold Corporation (Nighthawk; formerly Merc international Minerals) staked the area surrounding Colomac in 2011 and through an agreement with AANDC, has taken possession of mineral claims in and around the mine property.

6.3.2 PIN-E Cape Peel

PIN-E was an Intermediate Distant Early Warning (DEW) Line Site located on the north shore of the Dease Strait approximately three kilometers from the coast of Victoria Island, Nunavut. This DEW line site station was constructed in 1959 by the Department of National Defence, and was deactivated in 1963 at which point it was abandoned. The nearest community is Cambridge Bay, approximately 80 kilometers to the east. The site is situated on a raised beach approximately 55 meters above sea-level and consisted of a module train, warehouse, garage, Inuit house, POL tanks, and a Doppler antenna. A beach landing area was constructed along with gravel roads linking the various facilities. Two airstrips



PIN-E Packaged debris ready for transport off site

were constructed at the site, one of which was abandoned.

In 1985, some of the surface contaminants were cleaned up under a program conducted by the Department of National Defence (DND), EC, and AANDC. None of the main buildings at the site remained standing during the 1994 site investigation completed by the Environmental Sciences Group of Royal Roads Military College.

A Phase III Environmental Site Assessment (ESA) was completed by AANDC during the summer of 2009. The contaminants identified at the site include debris, PCBs, heavy metals, asbestos and petroleum hydrocarbons (PHCs). Remediation of the site was completed in 2012-2013 and included the production of granular fill, setup and operation of waste processing areas, removal of hazardous materials from buildings and structures, debris collection and disposal and contaminated soil excavation. The final demobilization included the removal of equipment via sealift/barge, the transport of non-hazardous waste to PIN-D Ross Point and the southern disposal of hazardous materials. The total cost for this project is \$6,573,148. No long-term monitoring is required at the site.

6.3.3 PIN-D Ross Point

PIN-D is a former DEW Line Site located on the north shore of Johansen Bay, overlooking Coronation Gulf, approximately 500 meters from the coast in Nunavut. This DEW line site station was constructed in 1959 by the DND, and was deactivated in 1963 at which point it was abandoned. The nearest communities are Kugluktuk, located approximately 185 kilometers to the southwest, and Cambridge Bay

located approximately 250 kilometers to the east. The site is situated on a mesa 150 meters above sea-level and consisted of a module train, warehouse, garage, Inuit house, POL tanks, and a Doppler antenna. A beach landing area was constructed along with gravel roads linking the various facilities. Two airstrips were also constructed at the site.

In 1985 some of the surface contaminants at PIN-D were cleaned up under a program conducted by DND, EC, and AANDC. During a 1994 site investigation by the Environmental Sciences Group of Royal Roads Military College, the module train and garage were still intact, however, they had



Waste debris at PIN-D

suffered damage from prolonged weathering. The warehouse had been dismantled down to the concrete base. The four POL tanks had been removed but the station pumphouse was intact, although, the pump had been removed. The pipeline connecting the beach and station tanks was mostly intact and was marked with barrels. The refueling pipeline at the beach was removed but some pieces still remained. A Phase III ESA was conducted in 2009-2010. The contaminants identified at the site include debris, PCBs, heavy metals, asbestos and hydrocarbons. Remedial work was completed in 2012-2013 and included the production of granular fill, setup and operation of waste processing areas, construction of non-hazardous waste landfill, removal of hazardous materials from buildings and structures, building and structure demolition, debris collection and disposal, contaminated soil excavation, PHC contaminated soil treatment, and the final demobilization with includes the removal of equipment via Sealift/Barge, and the southern disposal of hazardous materials. The final cost (without long-term monitoring) was \$7,787,303. Long-term monitoring is required at the site. Its estimated cost is \$350,000 for 25 years and seven events.

6.3.4 Husky Creek, Willow Creek and South Cabins

Hope Lake is located about 75 km southwest of Kugluktuk, Nunavut. The Hope Lake Remediation Project includes five individual sites that have been grouped together for efficiency and cost effectiveness. The largest of the five sites is Hope Lake; the others are satellite sites that are connected via a trail network and include Husky Creek, Willow Creek, South Cabins and Southwest Cabin. There is no evidence of ground staining or stressed vegetation at the Southwest Cabin site and based on the materials present the risk of contamination is low. In 2012-2013, remediation was completed at Husky Creek, Willow Creek and South Cabins.

Husky Creek is located approximately 16 kilometres from Hope Lake. Willow Creek is located approximately 20 kilometres from Hope Lake and includes the South Cabins site. Contamination at the Hope Lake sites is a result of exploration activity. Exploration was carried out by Coppermine River Limited (CRL) and a second company called Hearne Coppermine Limited (Hearne), and culminated in the production of a detailed plan for a mine and an associated community, which was written in 1968. However, no mining activity, other than exploratory drilling and geological surveys, ever occurred at Hope Lake.

Contaminants of concern included metals, petroleum hydrocarbons, benzene, toluene, ethylbenzene, xylene, pesticides, polychlorinated biphenyls, polycyclic aromatic hydrocarbons and asbestos. There were elevated levels of metals in ponded surface water in the Main Camp Area and in stained soil in the burn pits. In 2012-2013 the following remedial activities commenced and were completed leading to the closing of the Husky Creek, Willow Creek, and South Cabins sites:

- building and structure demolition
- debris collection and consolidation
- collection and packaging of non-hazardous waste
- collection and packaging of hazardous waste
- contaminated soil excavation and packaging
- project testing

It is estimated that the last remaining site within the Hope Lake Remediation Project, Hope Lake, will be fully remediated by 2014-2015.

6.3.5 Chalco Lake

The Chalco Lake exploration site is located approximately 210 km north of Yellowknife near the Diversified/Indigo Mine site. It consists of two former camps, one dating back to the 1940s and another built as a mineral exploration camp in the 1970s. Concerns at the site included structures and materials left behind and two small areas of hydrocarbon contamination. The estimated volume of the contaminated material was 209 cubic meters (m³). Debris removal from the site took place in the fall of 2009. This work included demolition of a building on the site, burning clean, combustible materials, and removal of all waste materials. In 2011, a *Conveyance and Reclamation Agreement (2011)* between the Department and Nighthawk Gold Corporation (Nighthawk; formerly Merc international Minerals) stipulated that Nighthawk will remediate three sites (Spider Lake, Chalco Lake, Damoti Lake) up to a maximum liability of \$5 million. The Chalco Lake site remediation was completed in 2012-2013. Nighthawk excavated, transported and disposed of, at an approved off-site facility, 17,800 kg of hydrocarbon contaminated soil, 1,000 kg of metal contaminated soil and 100 kg of plastic and building debris.

Annex A - AANDC Contaminated Sites Remediated

Pre-2006

- PIN-A Pearce Point, NWT
- BAR-E Horton River, NWT
- Kittigazuit Mine, NWT
- Rayrock Mine, NWT
- Iqaluit Upper Base, Nunavut
- North Rankin Inlet Nickel Mine, Nunavut

2006-2007

• Resolution Island, Nunavut

2007-2008

- Axe Point, NWT
- Radio Island, Nunavut

2008-2009

- BAR-D Atkinson Point, NWT
- Port Radium, NWT
- Discovery Mine, NWT
- CAM-F Sarcpa Lake, Nunavut
- FOX-C Ekalugad Fiord, Nunavut

2009-2010

North Inca Mine, NWT

2010-2011

- Johnson Point, NWT
- Hidden Lake Mine, NWT
- Victoria Island (six sites), NWT
- PIN-B Clifton Point, Nunavut
- Cape Christian , Nunavut
- Roberts Bay Mine, Nunavut

2011-2012

- Frobisher Sour Gas Wells, NWT
- Jean Marie River, NWT
- CAM-D Simpson Lake, Nunavut
- Bear Island, Nunavut

2012-2013

- PIN-E Cape Peel, Nunavut
- PIN-D Ross Point, Nunavut
- Husky Creek, Willow Creek and South Cabins (satellite sites of Hope Lake), Nunavut
- Colomac, NWT
- Chalco Lake, NWT