Federal contaminated sites annual report 2019-2020

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Executive summary

Scattered across Canada are thousands of contaminated sites: dumps, mines, abandoned industrial and military operations, stored or spilled fuel or toxic chemicals, among others. Many of these occurred because individuals, businesses, and sometimes even government did not understand the long-term effects of their presence on the environment or on the health of future generations. Some are the legacy of accidents.

Federal contaminated sites are located on land or in aquatic areas owned or leased by the federal government, or where the federal government has accepted responsibility for the contamination. Growing awareness of the need for long-term stewardship of the environment led to the establishment of the Federal Contaminated Sites Action Plan (FCSAP).

Established by the Government of Canada in 2005, FCSAP provides funding to federal departments, agencies and consolidated Crown corporations (referred to as custodians) to manage the contaminated sites they are responsible for. The first three phases of FCSAP ran for 15 years, from 2005 to 2019, with total federal funding of $4.54 billion. In 2019, FCSAP was renewed for another 15 years (2020 to 2034), with $1.16 billion announced in Budget 2019 for Phase IV (2020 to 2024).

This report describes the progress made in 2019–2020, the last year of Phase III of FCSAP.

Why have an action plan to address federal contaminated sites?

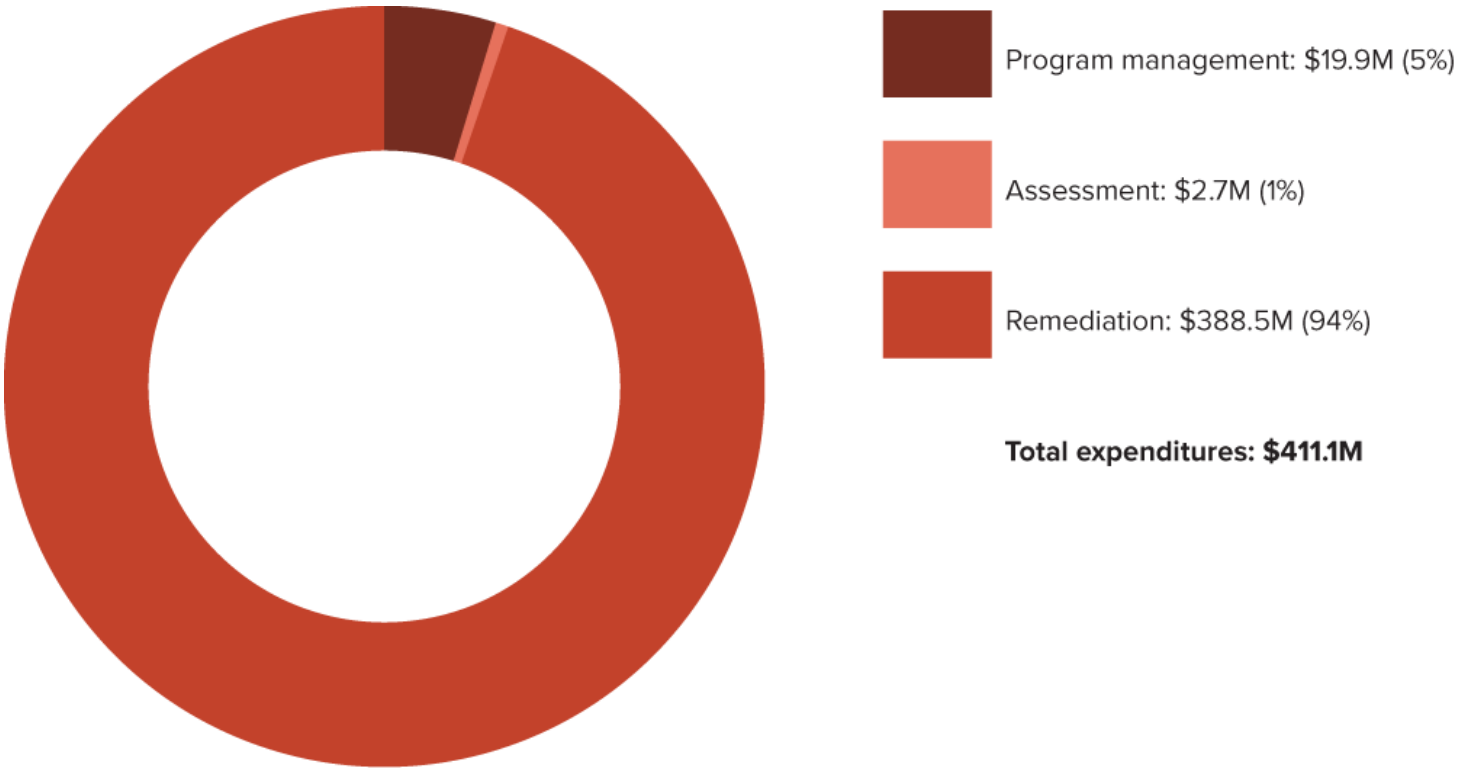
The main objective of FCSAP is to reduce environmental and human-health risks from known federal contaminated sites, along with the related financial liabilities. The program also helps Canadians, communities and businesses, as FCSAP funds projects that:

- redevelop contaminated lands, making them once again fit for inhabitation or business;
- provide industry a chance to develop innovative and sustainable remediation technologies; and
- create jobs and training opportunities in the remediation industry, particularly for Indigenous and rural Canadians.

FCSAP spending in 2019–2020

Nationally in 2019–2020, federal departments, agencies and consolidated Crown corporations involved in FCSAP reported total expenditures of $411.1 million, including the FCSAP funding and the custodian cost share. (Figure 1).

Figure 1: Distribution of expenditures in 2019–2020



Key results

- Program management costs amounted to $19.9 million, which represents 5% of total expenditures.
- Assessment activities took place on 97 sites and cost $2.7 million, which represents 1% of total expenditures. Of the 24 sites where assessment was completed, 12 sites will require remediation or risk management, while 12 sites will require no further action. The remaining 73 sites require further assessment.
- Risk-reduction activities took place on 388 sites and cost $388.5 million, which represents 94% of total expenditures. Custodians finalized remediation activities on 23 of these sites.

Reporting the results federally

Every year, the main results of the FCSAP program, including expenditures and site status, are reported in the Federal Contaminated Sites Inventory (FCSI), which is maintained by the Treasury Board of Canada Secretariat. At the end of 2019–2020, the FCSI listed 23,714 sites, of which 1,795 are suspected sites, 4,860 sites are being assessed or remediated and 17,059 sites are closed and require no further action.

FCSAP has been the main source of funding for federal contaminated site management, covering about 80% of all site expenditures reported in the FCSI since 2005–2006.

In 2019–2020, about 65% of expenditures reported to the FCSI were attributable to FCSAP sites, which included both FCSAP funding and the custodian cost share. The remaining 35% was for expenditures on non-FCSAP sites and federal organizations

that are not part of FCSAP.

Liability

Contamination of federal sites may translate into liability for the Government of Canada. In 2019–2020, contaminated sites that may be eligible for FCSAP funding accounted for $6.450 billion of the Government of Canada's total 2019–2020 liability for contaminated sites.

Liability is an estimate. The total amount can change because of economic forces such as inflation or changes in project costs. It can also change for specific sites – for example, when an assessment discovers unexpected contamination, or determines that the site does not pose a risk.

Remediation expenditures in 2019–2020 associated with FCSAP reduced the liability by $377 million, but this was offset by $1.396 billion of financial and project-cost adjustments.

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Abbreviations and acronyms

AAFC

Agriculture and Agri-Food Canada

CCME

Canadian Council of Ministers of the Environment

CIRNAC

Crown-Indigenous Relations and Northern Affairs Canada

CSC

Correctional Service of Canada

DFO

Fisheries and Oceans Canada

DND

Department of National Defence

ECCC

Environment and Climate Change Canada

FCSAP

Federal Contaminated Sites Action Plan

FCSI

Federal Contaminated Sites Inventory

ISC

Indigenous Services Canada

JCCBI

Jacques Cartier and Champlain Bridges Incorporated

NCC

National Capital Commission

NRC

National Research Council of Canada

NRCan

Natural Resources Canada

PCA

Parks Canada Agency

PSPC

Public Services and Procurement Canada

TBS

Treasury Board of Canada Secretariat

TC

Transport Canada

Glossary

Agencies

A government agency is a permanent or semi-permanent organization in the machinery of government that is responsible for the oversight and administration of specific functions, such as Parks Canada. There are a notable variety of types of agencies. Although usage differs, a government agency is normally distinct both from a Department or Ministry, and other types of public bodies established by government. The functions of an agency are normally executive in character, since different types of organizations (such as commissions) are normally used for advisory functions. The autonomy, independence and accountability of government agencies also vary widely. For a listing of Separate Agencies refer to Schedule V of the *Financial Administration Act*.

Contaminated Site

According to the Treasury Board *Policy on Management of Real Property*, a contaminated site is “a site at which substances occur at concentrations that: (1) are above background levels and pose, or are likely to pose, an immediate or long-term hazard to human health or the environment, or (2) exceed the levels specified in policies and regulations.”

Consolidated Crown Corporations

Corporations that rely on the Government for most of their financing and are controlled by the Government. Each consolidated Crown corporation is accountable to Parliament through a responsible minister. The number of consolidated Crown corporations can vary from year to year, however a listing can be found in the *Public Accounts of Canada*. For example refer to Volume 1, Section 4 – Consolidated Accounts of the 2019-2020 Public Accounts of Canada.

Cost Share

FCSAP funding is based on the “polluter pays” principle, which means that those who created the environmental liability are responsible for the costs of the clean-up. Specifically, custodians are responsible for paying 20% of assessment costs and 15% of remediation costs for their contaminated sites, unless the project’s value is $90 million or higher, in which case cost-share for remediation is waived.

Department

The legal definition of a department can be found in the *Financial Administration Act* (FAA), and includes departments named in Schedule I and I.1 of the FAA, and departmental corporations named in Schedule II of the FAA.

Enterprise Crown Corporation

A corporation that is not dependent on parliamentary appropriations and whose principal activity and source of revenues are the sale of goods and/or services to outside parties. Each enterprise Crown corporation is accountable to Parliament through the responsible minister.

Federal Contaminated Site

Contaminated sites that are located on land or in aquatic areas owned or leased by the federal government, or where the federal government has accepted responsibility for the contamination.

Federal Contaminated Sites Action Plan (FCSAP)

FCSAP is a program established by the Government of Canada that provides funding to federal departments, agencies and consolidated Crown corporations (referred to as custodians) to manage the contaminated sites they are responsible for. The primary objective is to reduce environmental and human-health risks from known federal contaminated sites and their related financial liabilities.

Federal Contaminated Sites Inventory

The Federal Contaminated Sites Inventory is a database with information on all known federal contaminated sites under the custodianship of departments, agencies and consolidated Crown corporations as well as those that are being or have been investigated to determine whether they have contamination arising from past use that could pose a risk to human health or the environment. The inventory also includes non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility.

Federal 10-Step Process

A risk-based approach to contaminated sites management that incorporates several components including site identification and characterization, detailed site investigations and risk assessment, evaluation of different risk management strategies, implementation of a selected management strategy, assessment and monitoring.

These components are realized through a 10-step process identified in the *Federal Approach to Contaminated Sites*, fully detailed in the *Federal Contaminated Sites Decision-making Framework*. These steps identify scientific tools and documents that are available for use in the management of federal contaminated sites.

Liability

Environmental liabilities are the estimated remaining costs related to the remediation/risk management of contaminated sites. Specifically, where the Government of Canada is obligated, or will likely be obligated, to incur such costs. Liabilities are recorded annually in the Public Accounts of Canada.

Long-Term Monitoring

Periodic inspections, which may include sampling and analyses, undertaken as part of a comprehensive site-specific risk management strategy to ensure that risk management objectives are maintained.

“Polluter Pays” Principle

In Canada, the federal government promotes the “polluter pays” principle: the party responsible for producing pollution should be responsible for paying for damage to the natural environment. Private companies are usually responsible for the costs to clean up (or remediate) the land they contaminate. The provinces, territories and federal government are generally responsible for the costs of dealing with contamination at the sites they own or lease.

Remediation

The improvement of a contaminated site to prevent, minimize or mitigate damage to human health or the environment. Remediation involves the development and application of a planned approach that reduces the exposure of receptors to contaminants of concern. Remediation typically involves removing, destroying or containing contaminants from a site through on-site treatment or off-site disposal.

Remediation Liability

Remediation liabilities are the estimated future costs associated with cleaning up (remediating) federal contaminated sites to ensure that the environment and human health are protected. Specifically, where the Government of Canada is obligated, or will likely be obligated, to incur such costs. Liabilities are recorded annually in the Public Accounts of Canada.

Risk Management

The selection and implementation of a risk-control strategy, followed by monitoring and evaluating the effectiveness of that strategy. Risk management includes strategies that reduce the probability, intensity, frequency or duration of the exposure to contamination. It typically involves managing contaminants in place, using covers and/or administrative controls to block the exposure pathways identified as causing a potential risk.

Site Assessment

A site assessment involves detailed scientific and/or engineering analysis to identify the nature and extent of the contamination. This helps determine the risks to human health and the environment. A full-scale assessment of the severity of contamination for a specific site is a lengthy and complex process (see the federal 10-step process). By assessing contaminated sites, the federal government is able to develop a more accurate estimate of the level of the financial liability it faces.

1. Introduction

Established by the Government of Canada in 2005, FCSAP provides funding to federal departments, agencies and consolidated Crown corporations (referred to as custodians) to manage the contaminated sites they are responsible for. The first three phases of FCSAP ran for 15 years, from 2005 to 2019, with total federal funding of $4.54 billion. In 2019, FCSAP was renewed for another 15 years (2020 to 2034), with $1.16 billion announced in Budget 2019 for Phase IV (2020 to 2024). This report describes the progress made in 2019–2020, the last year of Phase III of FCSAP.

Program objectives

The main objective of FCSAP is to reduce: 1) environmental and human-health risks from known federal contaminated sites and 2) their related financial liabilities. The program also provides socio-economic benefits by supporting brownfield redevelopment, promoting innovative and sustainable remediation technologies, and creating or maintaining jobs and training opportunities in the Canadian environmental remediation industry. These jobs and training opportunities extend to Indigenous people and those living in rural areas.

What is a contaminated site?

According to the Treasury Board *Policy on Management of Real Property*, a contaminated site is “a site at which substances occur at concentrations that: (1) are above background levels and pose, or are likely to pose, an immediate or long-term hazard to human health or the environment, or (2) exceed the levels specified in policies and regulations.”

Federal contaminated sites are located on land or in aquatic areas owned or leased by the federal government, or where the federal government has accepted responsibility for the contamination. The size and scope of federal contaminated sites vary greatly and include, for example, abandoned mines on Crown land in the north, airports, lighthouse stations, and military bases. Contamination is most often a result of past activities with environmental consequences that were not well understood at the time.

Cleaning up – for now and the future

The Government of Canada has taken action through FCSAP and remains committed to properly managing the contaminated sites for which it is responsible. Canada now has policies and legislation to prevent future contamination of sites. There is also a much better understanding of the effects of government, commercial, and industrial operations on the environment, and of the means to prevent and remediate contamination – as well as a better public appreciation of the need to respect the environment. Federal custodians are responsible for making their operations environmentally sustainable, to protect and safeguard the health of future generations and the environment.

FCSAP also contributes to a global effort to better respect the environment. As part of its Departmental Sustainable Development Strategy, Environment and Climate Change Canada has linked FCSAP to Target 12.4 of the United Nations’ Sustainable Development Goal 12: Responsible Consumption and Production: “By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment”.

In Canada, the federal government promotes the “polluter pays” principle: the party responsible for producing pollution should be responsible for paying for damage to the natural environment. Private companies are usually responsible for the costs to clean up (or remediate) the land they contaminate. The provinces, territories and federal government are generally responsible for the costs of dealing with contamination at the sites they own or lease.

2. FCSAP funding and activities

Six phases of the Federal Contaminated Sites Action Plan (FCSAP) have been approved so far. Each phase builds on the progress achieved in previous phases.

- In **Phase I (2005-2010)** federal departments, agencies and consolidated Crown corporations (also called custodians) made significant progress in addressing contaminated sites.
- The focus of **Phase II (2011-2015)** was to determine what federal sites were contaminated, prioritize them, and advance remediation on the highest-priority sites.
- **Phase III (2016-2019)** increased the focus on remediation, as well as on reducing the environmental and human-health risks and the related financial liabilities.
- **Phase IV (2020-2024)** approved in 2019, will continue the work of Phase III with expanded eligibility criteria.
- **Phase V (2025-2029),** eligibility and funding parameters will support progress towards FCSAP objectives.
- **Phase VI (2030-2034)**, eligibility and funding parameters will support progress towards FCSAP objectives.

Who pays for the program?

The program is based on the “Polluter pays” principle and follows a cost-shared approach where FCSAP provides a portion of the funding and custodians provide the remainder of the funding (known as cost share).

- FCSAP provides funding for program management activities.
- FCSAP funds 80% of total assessment costs and custodians pay the remaining 20% of costs.
- FCSAP funds 85% of total remediation costs for projects of less than $90 million and custodians pay the remaining 15% of costs.
- FCSAP funds 100% of total remediation costs for projects of more than $90 million.

Eligibility

FCSAP provides funding for the assessment and remediation of contaminated sites that federal custodians are responsible for. The program covers only sites that were contaminated by historical activities – that is, the contamination had to occur before April 1, 1998.

In Phase III, FCSAP funded assessment to allow custodians to determine whether a suspected site is contaminated and whether remediation or risk-management activities are required.

Custodians used the CCME National Classification System for Contaminated Sites (PDF; 995.7 kB) and the Aquatic Sites Classification System developed by FCSAP, depending on whether they are on land or water, to classify and prioritize their contaminated sites activities.

In Phase III, FCSAP funded the remediation of two classes of sites:

- **Class 1 sites**, where there is a high priority for action or where action is required; and
- **Class 2 sites**, where there is a medium priority for action or where action is likely required. To be eligible for FCSAP remediation funding, Class 2 sites must have reported FCSAP remediation expenditures before April 1, 2011.

Treasury Board approves the allocation of FCSAP funding on the basis of federal custodians' planned assessment and remediation activities.

Federal custodians are accountable for the FCSAP funding they receive. They must ensure that their sites meet funding-eligibility requirements and are managed in accordance to the Treasury Board *Policy on Management of Real Property*. Custodians must have grounds to suspect that a site is contaminated (normally because of past activities at the site) before environmental site-assessment activities can be funded. Custodians must prioritize which sites they will work on each year, because funds and resources might not be available to assess or remediate all their sites. The FCSAP Secretariat has developed guidance to ensure that custodians spend their funding on eligible assessment and remediation activities.

Key roles

The main players in the program are custodians, FCSAP Secretariat, Treasury Board of Canada Secretariat, and expert support departments:

Custodians

Federal departments, agencies and consolidated Crown corporations responsible for the assessment and remediation of federal contaminated sites

FCSAP Secretariat and Treasury Board of Canada Secretariat

Provide administration, oversight, guidance and support to custodians

Expert support departments

Provide expert advice and technical assistance to custodians, develop guidance documents, deliver training, and promote innovative and sustainable remediation technologies

Several other players have unique roles in the program:

- The **Federal Contaminated Sites Assistant Deputy Ministers Steering Committee**, provides strategic direction for FCSAP in areas such as program design and funding parameters.
- The **Federal Contaminated Sites Director Generals Committee**, on the advice of the FCSAP Secretariat and the Treasury Board of Canada Secretariat, provides general oversight and direction to the program and approves priority sites for remediation.
- The **Contaminated Sites Management Working Group**, a group of representatives from custodians and program partners of federal departments, agencies and consolidated Crown corporations, also meets regularly throughout the year to discuss and share guidance on the management of federal contaminated sites.
- **Interdepartmental Regional Working Groups**, which provide forums for regional networking, collaboration and information sharing between expert support departments and regional custodians.

A common approach

To ensure that custodians take a common approach to managing federal contaminated sites, FCSAP has embraced the 10-step process identified in the *Federal Approach to Contaminated Sites*, fully detailed in the *Federal Contaminated Sites Decision-making Framework*:

Step 1: Identify suspected sites – Identify potentially contaminated sites on the basis of past or current activities on or near the site.

Step 2: Historical review – Assemble and review all historical information pertaining to the site

Step 3: Initial testing program – Provide a preliminary characterization of contamination and site conditions.

Step 4: Classify contaminated site, using the Canadian Council of Ministers of the Environment (CCME) National Classification System – Prioritize the site for future investigations and remediation or risk-management actions.

Step 5: Detailed testing program – Focus on specific areas of concern identified in step 3 and provide further in-depth investigations and analysis.

Step 6: Reclassify the site, using the CCME National Classification System – Update the ranking in response to the results of the detailed investigations.

Step 7: Develop remediation and risk-management strategy – Develop a site-specific plan to address contamination issues.

Step 8: Implement remediation and risk-management strategy – Implement the site-specific plan that addresses contamination issues.

Step 9: Confirmatory sampling and final reporting – Verify and document the success of the remediation and risk-management strategy.

Step 10: Long-term monitoring – If required, conduct long-term monitoring to ensure that remediation and long-term risk-management goals are achieved.

3. Program results (2019–2020)

Thirteen custodians conducted assessment and remediation activities in the 2019–2020 fiscal year [1] and reported on the progress they made at their contaminated sites throughout the year. Their results are brought together in this report to determine how the Federal Contaminated Sites Action Plan (FCSAP) as a whole is performing. Results from these activities were compared against performance measurement targets established for Phase III of FCSAP.

The activities fell into four key program areas:

1. program management
2. assessment,
3. risk reduction, and
4. liability reduction.

Key results

Each of the following program results for 2019–2020 is further detailed in this section:

- **Program management:** Custodians, FCSAP Secretariat, Treasury Board of Canada Secretariat and Expert Support Departments spent $19.9 million on program management activities.
- **Assessment:** In 2019–2020, FCSAP funded assessment activities on 97 sites at a cost of $2.7 million. Of the 24 sites where assessment was completed, 12 sites will require remediation or risk management; 12 sites required no further action and 73 sites required further assessment.
- **Risk reduction:** In 2019–2020, FCSAP funded risk-reduction activities at 388 sites at a cost of $388.5 million. Custodians finalized remediation activities on 23 of these sites.
- **Liability:** In 2019–2020, sites that may be eligible for FCSAP funding accounted for $6.450 billion of the total 2019–2020 liability of the Government of Canada for all of its contaminated sites, as reported in the Public Accounts of Canada. Remediation expenditures in 2019–2020 at FCSAP funded sites reduced federal liability by $377 million, but this was offset by $1.396 billion of financial and project-cost adjustments.
- **Jobs:** In 2019–2020, FCSAP activities led to the creation or maintenance of about 2,000 jobs.
- **Progress of sites:** In 2019–2020, the number of suspected sites decreased by 3% (47 sites), active sites decreased by 2% (120 sites), and closed sites

increased by 1% (214 sites).

3.1 Program management

Program management funding is used to pay for employee salaries and for activities such as program administration, procurement and contract management, and activities related to program planning and reporting. It also allows four expert support departments (Environment and Climate Change Canada, Fisheries and Oceans Canada, Health Canada and Public Services and Procurement Canada) to provide expert advice and technical assistance to custodians in support of the program. See Appendix A for more information on program management activities conducted in 2019–2020.

3.2 Assessment

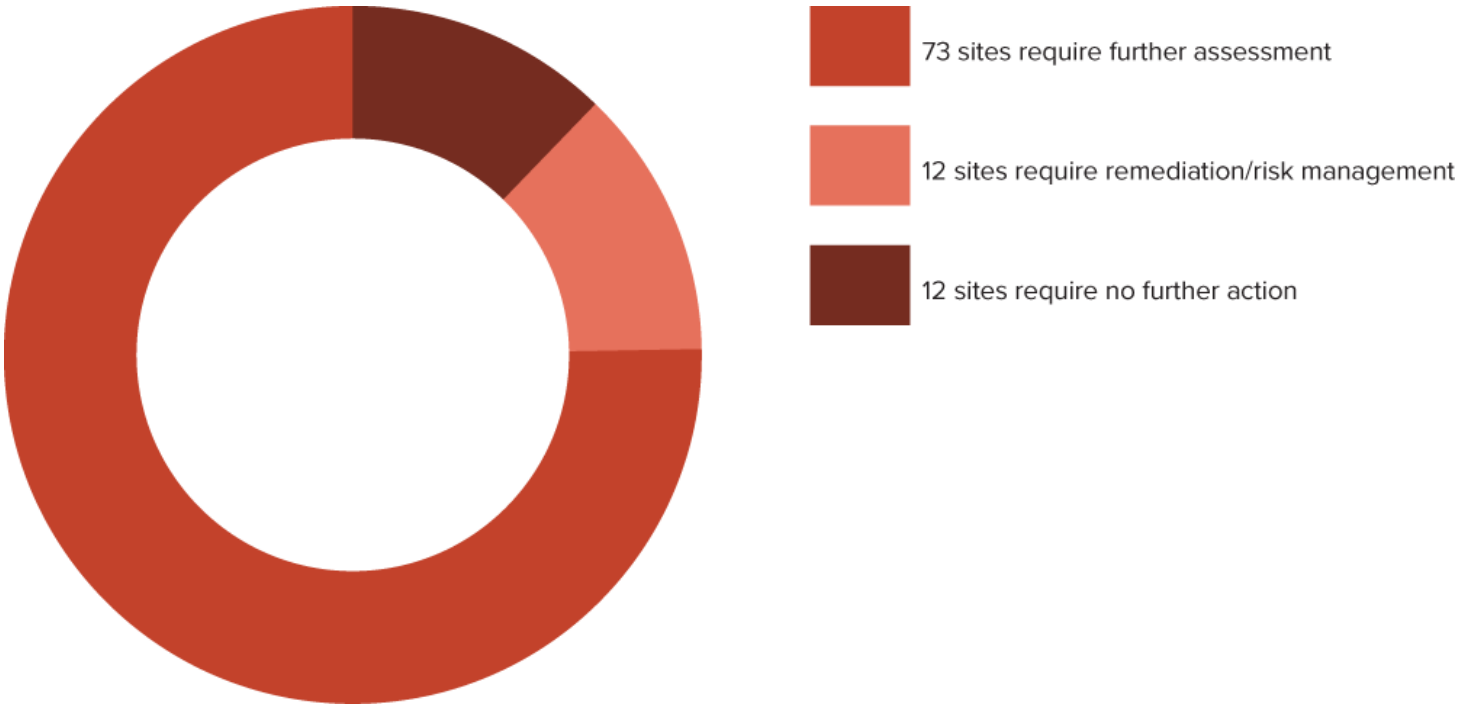
Custodians may suspect a site of being contaminated as a result of past activities – for example, in places where fuel-storage tanks may have leaked. In such cases, custodians would conduct an environmental site assessment to determine the nature and extent of contamination. An assessment determines whether remediation or risk-management activities would be needed.

An environmental site assessment may involve the collection and analysis of samples to determine levels of contamination. These levels are compared with environmental quality guidelines on the management of contaminants in soils, sediments, freshwater and marine water, as published by the Canadian Council of Ministers of the Environment (CCME). Federal contaminated sites are classified and prioritized in accordance with the CCME National Classification System for Contaminated Sites (PDF; 995.7 kB) and the Aquatic Sites Classification System developed by FCSAP, depending on whether they are on land or water.

In 2019–2020, FCSAP funded assessment activities on 97 sites at a program cost of $2.1 million. An additional $0.6 million was spent as part of the custodian cost-share requirement.

Of the 97 sites where assessments took place in 2019–2020, 12 sites will require remediation or risk management, 12 sites required no further action and 73 sites required further assessment (Figure 2). Assessing a site can take a few months or even a few years – depending on the type and extent of the contamination, scientific knowledge of the contamination, location of the site, and weather conditions.

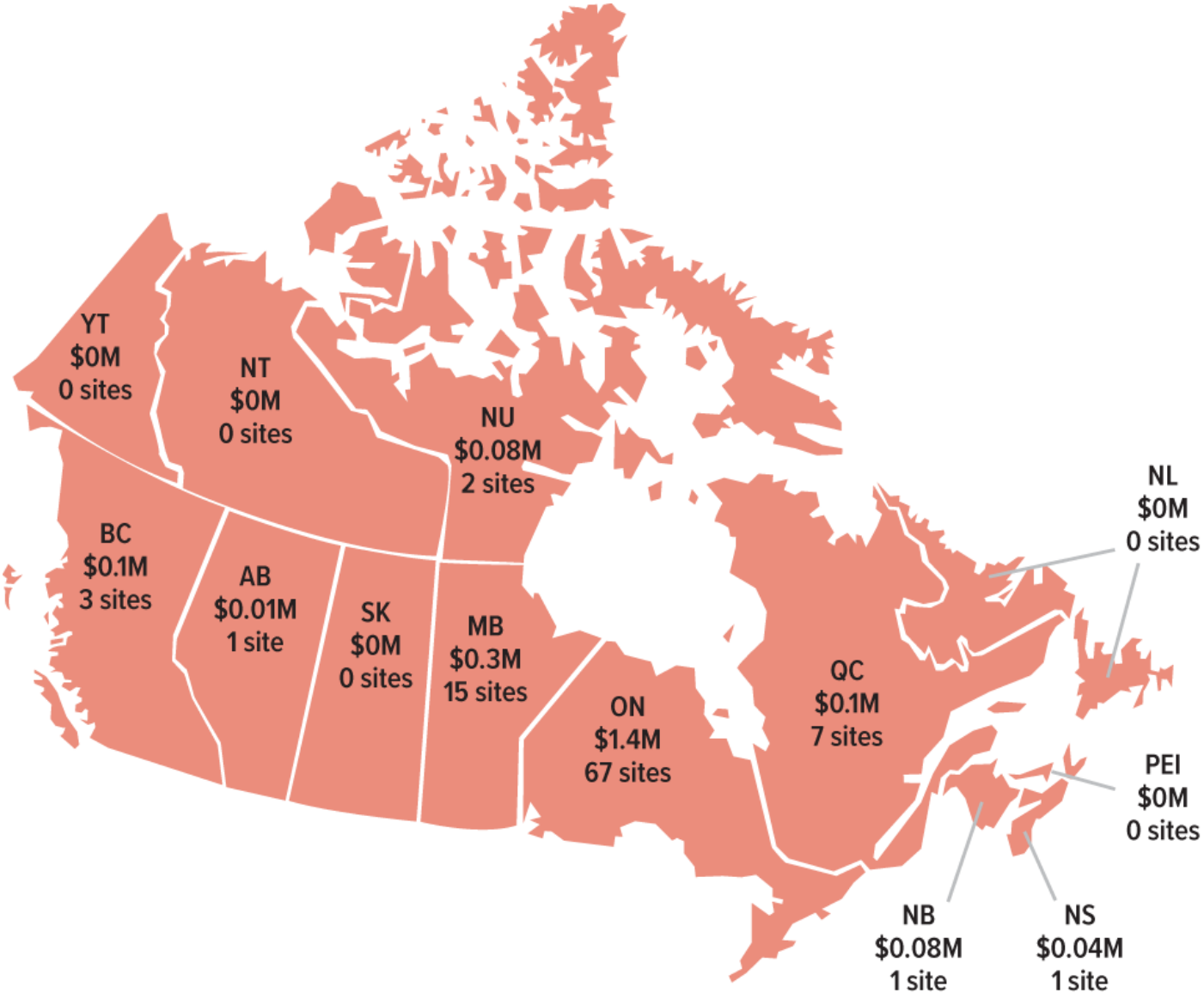
Figure 2: Results of assessments in 2019–2020



Indigenous Services Canada (ISC) and the National Capital Commission (NCC) conducted 80% (78 of 97) of all FCSAP-funded site assessments in 2019–2020. The custodians that spent the most on assessments were ISC and the Department of National Defence (DND). These two custodians spent 62% ($1.3 million of $2.1 million) of the FCSAP assessment expenditures reported in 2019–2020. Table B.1 in Appendix B provides a detailed breakdown of the number of sites with assessment activity, assessment funding available and assessment expenditures for each custodian.

Regionally, the largest FCSAP assessment expenditures were in Ontario and Manitoba, accounting for 81% of the total (Figure 3). The provinces with the largest numbers of sites with assessment activity were also Ontario and Manitoba, with 85% of the total.

Figure 3: Distribution of FCSAP assessment expenditures and sites, by province and territory, 2019–2020



3.3 Reduction of risks to human health and the environment

Completed site-assessment activities determine whether the risks to human health or the environment are within established limits for contaminants. If not, custodians may then conduct risk-reduction activities (remediation and risk management) at these sites. The methods used to address the contamination at each site depend on their efficacy, cost and the unique circumstances of the site.

In 2019–2020, FCSAP funded risk-reduction activities at 388 sites, at a program cost of $358.2 million. An additional $30.3 million was spent as part of the custodian cost-share requirement. Risk-reduction activities were completed at 23 sites.

Three custodians (DND, the Department of Fisheries and Oceans and ISC) worked on approximately 60% of the FCSAP-funded remediation sites (228 of 388) in 2019–2020. Table B.2 in Appendix B provides a detailed breakdown of the number of sites with remediation activity, remediation funding available and remediation expenditures for each custodian.

Two custodians accounted for 71% of the FCSAP remediation expenditures ($253 million of $358 million) reported in 2019–2020: Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) spent $176 million and DND spent $77 million.

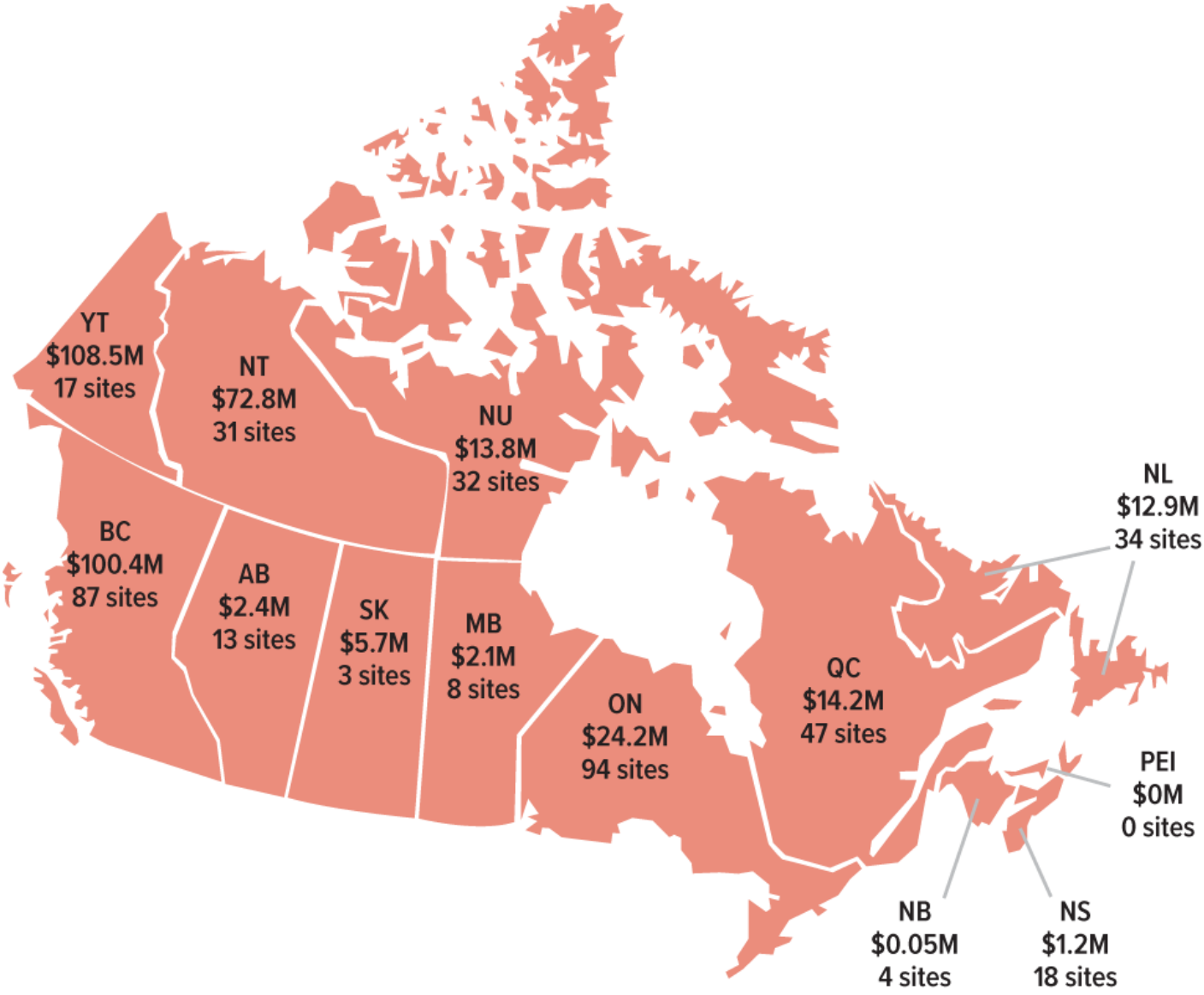
Both of these custodians worked on the remediation of large, complex and remote sites. These two custodians spent 54% of the total of $358 million in 2019–2020 FCSAP remediation expenditures at three projects:

- Giant Mine in the Northwest Territories (CIRNAC),
- Faro Mine in Yukon (CIRNAC) and
- Esquimalt Harbour in British Columbia (DND).

Table B.5 in Appendix B provides a complete list of sites with FCSAP remediation expenditures in 2019–2020. Updates on all three projects are provided in Section 8 along with other priority projects.

Regionally, the largest FCSAP remediation expenditures were in British Columbia, Northwest Territories and Yukon, accounting for 79% of the total (Figure 4). The provinces with the largest numbers of sites with remediation activity were Ontario, British Columbia and Quebec (59% of the total).

Figure 4: Distribution of FCSAP remediation expenditures and sites, by province and territory, 2019–2020



3.4 Liability reduction

Remediation liabilities are the estimated future costs associated with cleaning up (remediating) federal contaminated sites to ensure that the environment and human health are protected. Liabilities are recorded annually in the Public Accounts of Canada.

Liability increases and decreases

Liabilities for a given site are usually first reported once an assessment determines that remediation work will be needed. As custodians remediate contaminated sites, the liabilities generally go down, as the remaining risks to people and the environment are reduced or eliminated. However, other factors can change the liability amounts:

- once started, remediation work may unearth previously undetected contamination, leading to an increase in liability;

- changes to the estimated remediation costs can also occur because of outside factors such as bad weather, difficult or blocked transportation, or unexpected costs of equipment and services;
- variability in the Consumer Price Index (through inflation) and in the discount rate (through calculation of net present value) can affect the liabilities, especially for large projects.

Liability reduction is not linear: a decrease in liability in one year may be followed by an increase in the next year.

Total liability vs. liability for FCSAP-funded sites

FCSAP provides funding for only part of the sites that make up the total remediation liability reported in the Public Accounts of Canada. Custodians and other federal organizations also conduct work at contaminated sites that are not eligible for FCSAP funding. Regardless of the funding source, organizations are required to report all remediation expenditures and liabilities to the Public Accounts of Canada. Examples of sites that are not eligible for FCSAP funding in Phase III included:

- lower-risk sites and sites where the contamination occurred after April 1, 1998;
- sites, such as the low-level radioactive waste sites of the Port Hope Area Initiative, that have their own funding sources.

From March 31, 2019 to March 31, 2020, the total liability for the remediation of contaminated sites, as reported in the Public Accounts of Canada (by twenty-one federal organizations, including FCSAP custodians), increased by $894 million, from $6.455 billion to $7.349 billion. Sites that may be eligible for FCSAP funding accounted for $6.450 billion of the total 2019–2020 liability reported.

The Public Accounts of Canada showed that remediation expenditures reduced the environmental liability by $585 million, of which $377 million was FCSAP.

However, these reductions were offset by $1.428 billion in changes to estimated remediation costs and $54 million in new liability for sites not previously recorded.

A $2.5 million adjustment in expected recoveries was also reported in 2019–2020. An expected recovery is reported when it is likely that a recovery will be received by the Crown and a reasonable estimate of the amount of the recovery can be made. As detailed in Table C.1 in Appendix C, these were factors in the $894 million net increase in liability.

FCSAP funded sites

There were 15 custodians responsible for the portion of remediation liability associated with federal contaminated sites that may be eligible for FCSAP. Two custodians (NRC and VIA Rail) did not report any FCSAP expenditures in 2019–2020, but their liabilities were included in the amount associated with FCSAP-eligible sites. The overall increase in liability by $1.082 billion from $5.368 billion to $6.450 billion during the

2019–2020 fiscal year was mainly due to revised cost estimates, new liability for sites not previously recorded and adjustments for inflation. A more accurate estimate of the impact of FCSAP on the Government of Canada's total liability can be found in Table C.2 and C.3 in Appendix C, which indicate that the remediation liability associated with federal contaminated sites that may be eligible for FCSAP funding is estimated to be $6.450 billion.

Of the 15 custodians responsible for the portion of remediation liability associated with federal contaminated sites that may be eligible for FCSAP, 11 custodians reported increases in liability in 2019–2020, totalling $1.095 billion. The custodian with the largest increase in liability was CIRNAC, which reported an increase in liability of $589 million. This increase was mainly due to revised cost estimates, adjustments for inflation and net present value calculations. ISC also reported an increase in liability of $379 million. These two custodians accounted for 88% of the $1.095 billion increase in liability. Five other custodians (DFO, DND, PCA, PSPC, TC) reported increases in liability greater than $10 million, accounting for 10% of the overall increase. The remaining four custodians reported increases of less than $10 million each and accounted for less than 2% of the overall increase (Figure 5). Four custodians reported a total decrease in liability of $10.7 million in 2019–2020 (Figure 6).

Figure 5: FCSAP custodians with liability increases

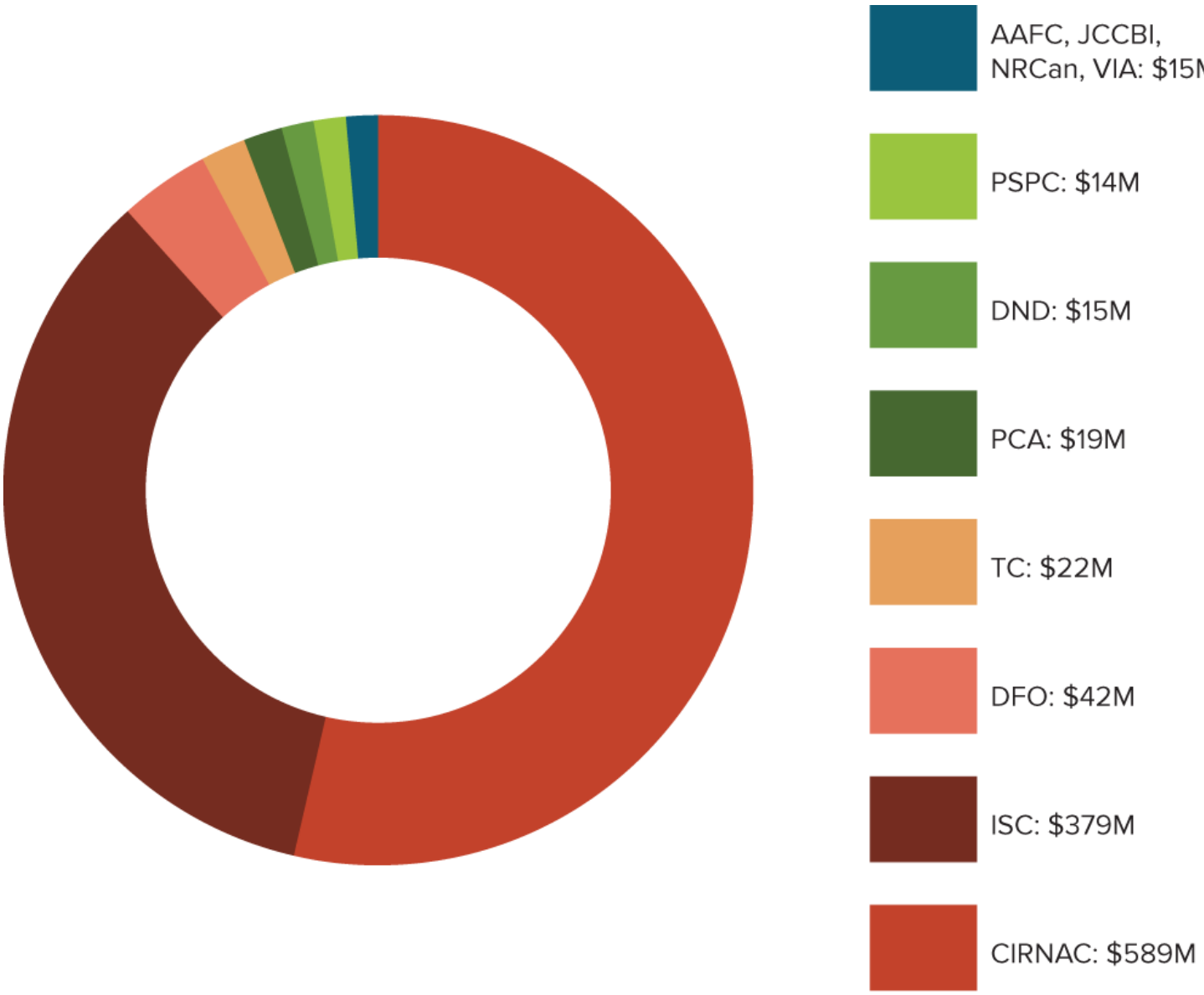


Figure 6: FCSAP custodians with liability decreases

3.5 Socio-economic benefits

Many FCSAP projects have socio-economic benefits, especially in Indigenous communities and in northern or rural areas. Through joint ventures between custodians and local communities, work conducted on contaminated sites offers opportunities for local residents and contractors to learn and develop skills, and to build careers and businesses. The partnerships forged among workers and businesses, especially at the local level, help foster a sense of ownership of project results.

During the 2019–2020 fiscal year, FCSAP activities led to the creation or maintenance of approximately 2,000 jobs. These jobs provide income and fuel economic growth. FCSAP activities help workers develop skills, which can then be applied at other contaminated sites or other types of construction and engineering projects. For example, FCSAP remediation projects regularly employ northerners and Indigenous people as welders, heavy-duty mechanics, electricians and millwrights.

Through FCSAP, the Canadian remediation industry gains opportunities to advance new solutions when cleaning up federal contaminated sites. The program builds awareness of innovative and sustainable technologies by sharing success stories within the federal community and with the private sector. Case studies are profiled on the federal contaminated sites web portal, as well as in reports and at workshops for

federal contaminated-site managers and industry representatives. For example, a case study describing the collaboration between ISC and the Wasauksing First Nation is found in Section 7 of this report.

3.6 Impact on the Federal Contaminated Sites Inventory

The Federal Contaminated Sites Inventory (FCSI), managed by the Treasury Board of Canada Secretariat, includes information on federal contaminated sites under the custodianship of departments, agencies and consolidated Crown corporations, and on non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility.

Sites registered in the FCSI move from “suspected” to “active” status once the contamination has been confirmed. Suspected sites may be closed if a desktop review or a Phase I environmental site assessment determines that historical activities would not likely have caused contamination. Sites undergoing assessment are usually closed if the assessment determines that contaminants are not present or do not pose an unacceptable risk to human health or the environment. Sites can also be closed when risks have been reduced to acceptable levels through remediation, risk-management or long-term monitoring.

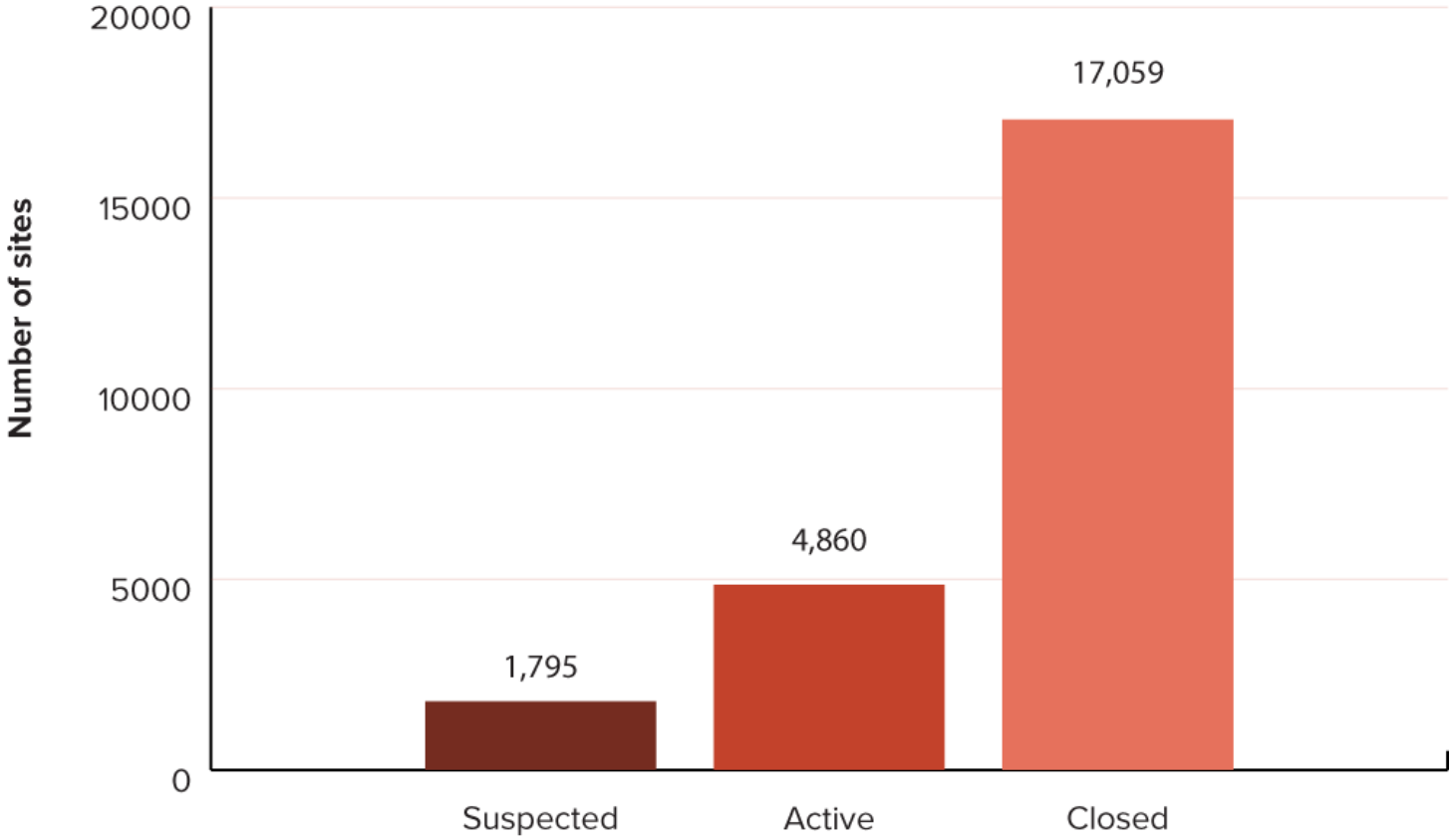
Suspected: Further assessment work is required to confirm whether the site is considered a federal contaminated site.

Active: Active sites are confirmed as contaminated sites where remedial action is or may be required.

Closed: No further action is required.

As of March 31, 2020, the FCSI contained 23,714 sites, of which 17,059 (72%) have been closed. There are 4,860 active sites (20%), where contamination has been confirmed and remedial action is or may be required. A total of 1,795 sites (8%) may be contaminated but have not yet been assessed (Figure 7).

Figure 7: Status of sites in the FCSI, as of March 31, 2020

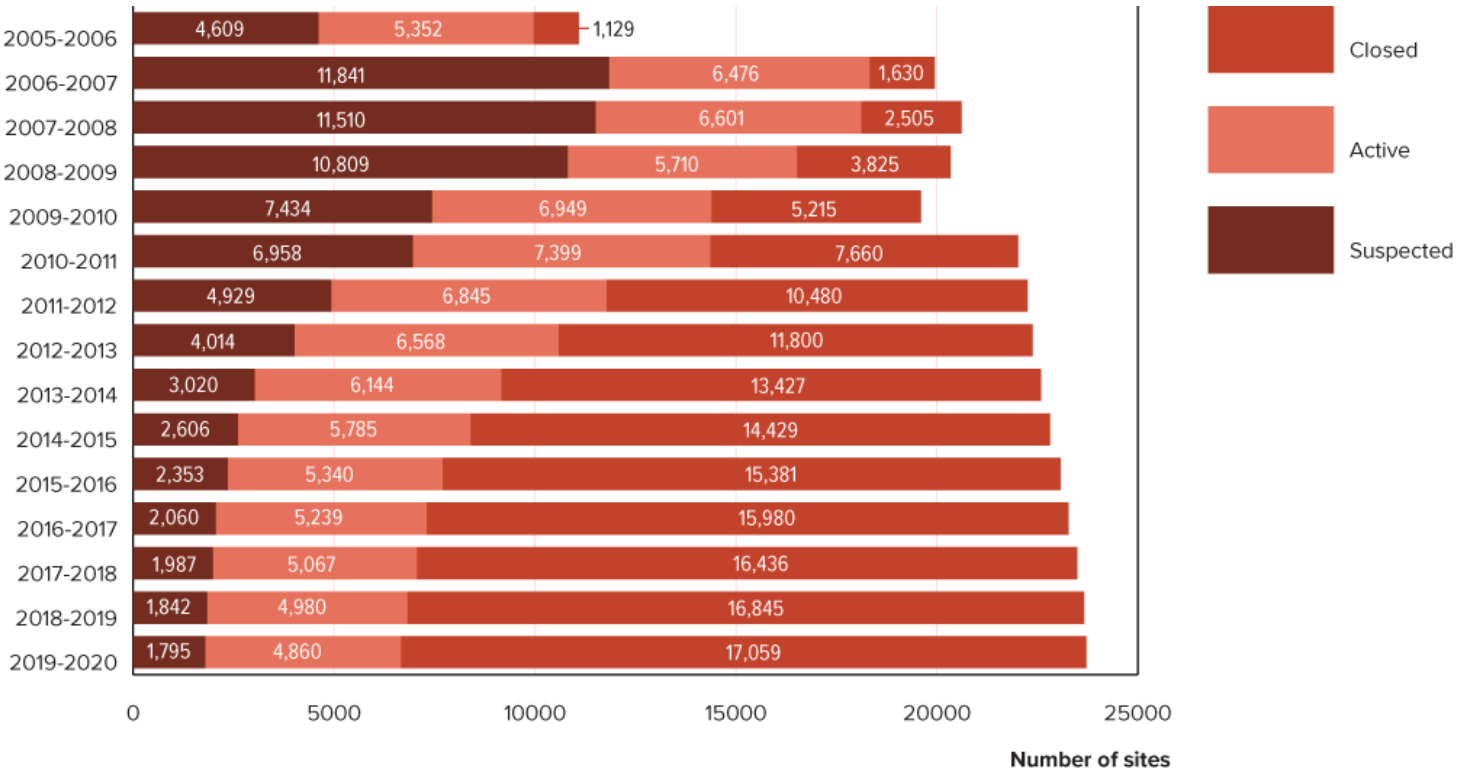


Progress of sites through the FCSI

Before FCSAP was established in 2005–2006, the FCSI contained approximately 2,000 suspected and 4,200 active federal contaminated sites. Since then, custodians have added sites to the FCSI when they suspected contamination and have conducted assessment and remediation activities at these sites, if required. As of March 31, 2020, the FCSI contained 23,714 sites, of which 47% (11,060 sites) received FCSAP funding to advance their contaminated sites activities since the onset of FCSAP in 2005-2006.

In 2019–2020, about 65% of expenditures reported to the FCSI were attributable to FCSAP sites, which included both FCSAP funding and the custodian cost share. The remaining 35% was for expenditures on non-FCSAP sites and federal organizations that are not part of FCSAP. Over the 2019-2020 fiscal year, this combined investment resulted in a decrease in suspected sites by 3% from 1,842 to 1,795, a decrease in active sites by 2% from 4,980 to 4,860 and an increase in closed sites by 1%, from 16,845 sites to 17,059 sites, as shown in Figure 8.

Figure 8: Status of sites in the FCSI from 2005 to 2020



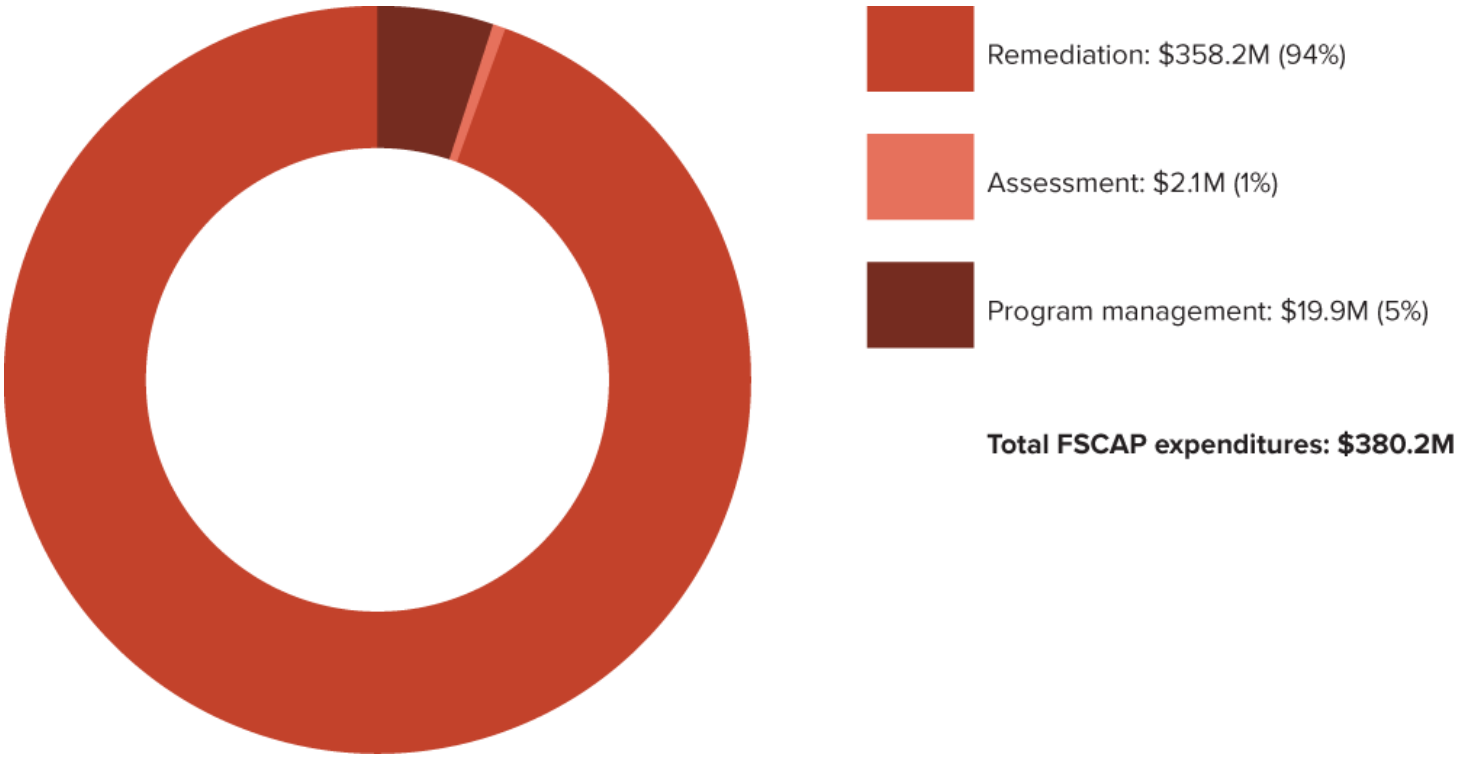
4. FCSAP funding, expenditures and variances

FCSAP expenditures in the 2019–2020 fiscal year were $380.2 million. This represents 83% of the FCSAP funding available for the year. Custodians also spent $31.0 million of their own funding to meet the cost-share requirements.

Types of expenditures

In the 2019–2020 fiscal year, 94% of total FCSAP expenditures were for remediation and risk management of contaminated sites, 1% was for assessment of sites, and 5% was for program management (Figure 9). Table B.3 in Appendix B details the allocations for the three types of FCSAP funding.

Figure 9: Distribution of FCSAP expenditures in 2019–2020



What happens to unspent funds?

Custodians did not spend all of the FCSAP funding available to them in 2019–2020. This is mostly because of contracting and project delays. For example, weather conditions might either prevent access to the sites or limit the types of work that could be carried out. The tendering of some projects was also delayed, which led to postponement of the remediation and risk-management work to the next fiscal year. In some cases, rescheduling of planned work into the next fiscal year can lower current year project costs.

Unspent funds can be brought forward for FCSAP activities in future years through three methods:

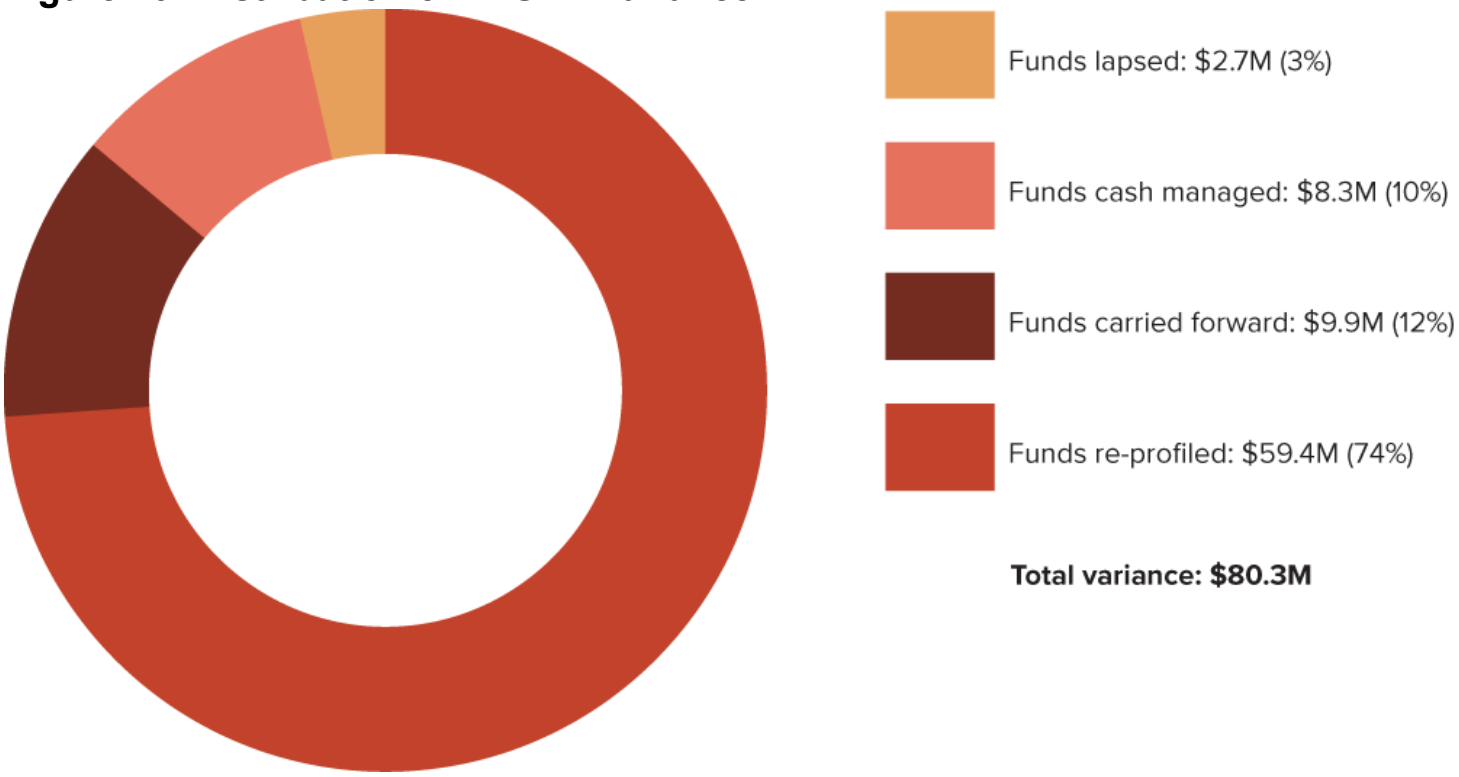
- **Government re-profiling** means changing the funding profile of a multi-year project by moving funds to later years within the project. This must be approved by the Department of Finance.
- **Carry-forward processes** involve moving funds planned for one year into the next. These require internal approval from the custodian's Chief Finance Officer.
- **Cash-management processes** involve the custodian lending the unspent funds to another part of the organization, with the commitment that the funds be returned in the next fiscal year.

These processes allow custodians flexibility in their response to unpredictable situations, such as weather. The FCSAP Secretariat promotes and facilitates the transfer of funds among custodians.

Funding that is not brought forward or transferred between custodians is lapsed. This means that the funds will not be available for FCSAP activities in the future.

In 2019–2020, 74% of the FCSAP funding variance was re-profiled, 12% was carried forward, 10% was internally cash-managed and 3% was lapsed (Figure 10). This means that $77.6M (97%) of the $80.3 million of unspent funding in 2019–2020 will be available to custodians in future years. Table B.4 in Appendix B provides a breakdown by funding type of the unspent funding. Of the $80.3M of FCSAP funding that was not spent in 2019–2020, $80.1M (99%) was for remediation, $0.08M (0.1%) was for assessment and $0.1M (0.1%) was for program management.

Figure 10: Distribution of FCSAP variance

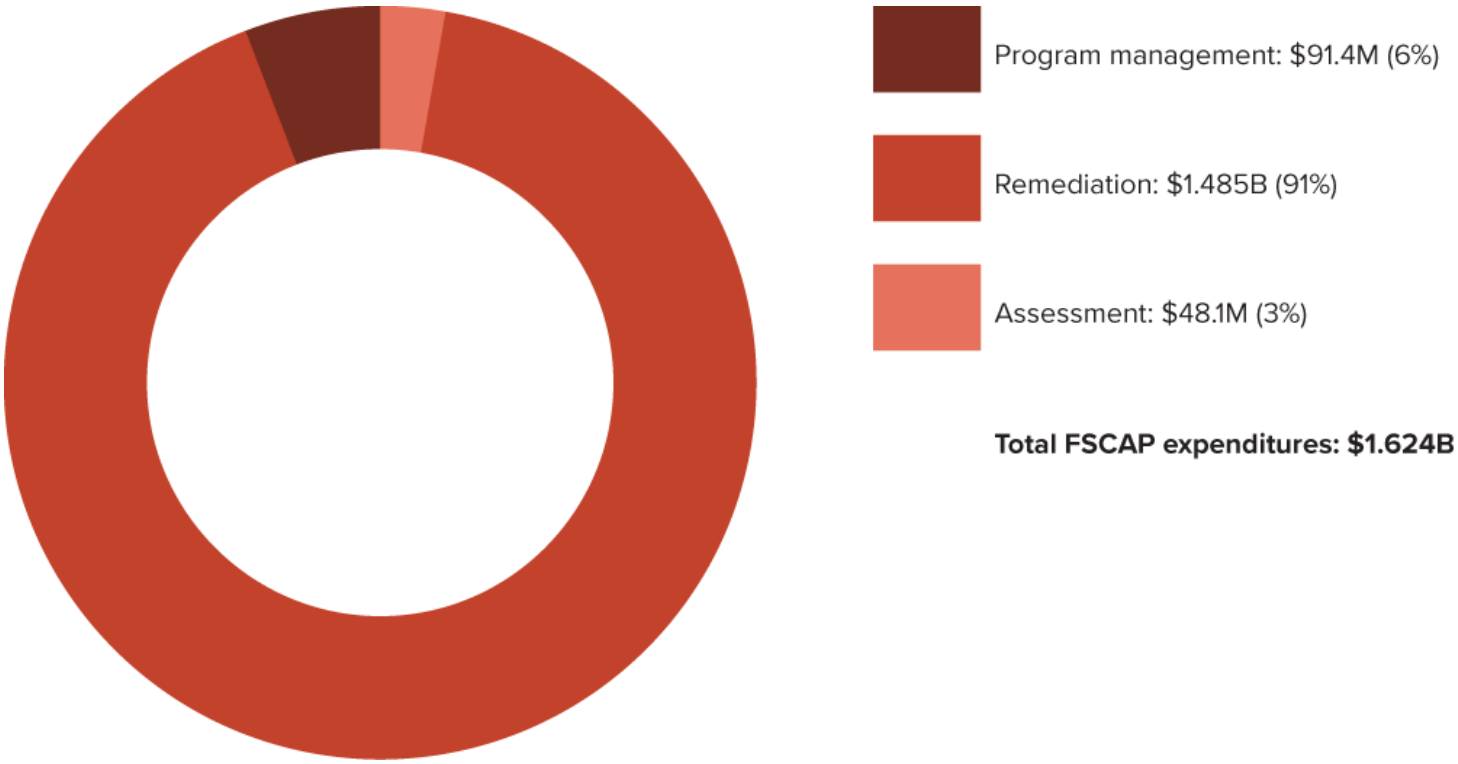


5. Phase III results (2016–2019)

This section summarizes the overall results of Phase III of the Federal Contaminated Sites Action Plan (FCSAP), which ran from 2016–2019.

In Phase III, federal custodians continued to assess and remediate high-priority federal contaminated sites and to reduce the related environmental liabilities. The custodians reported total FCSAP expenditures of $1.624 billion for Phase III (this includes $203.6 million of Federal Infrastructure Initiative funding). The breakdown of total FCSAP expenditures is: $48.1 million spent on assessments, $1.485 billion spent on remediation and risk management and $91.4 million for program management activities related to federal contaminated sites (Figure 11). An additional $124.9 million was spent as part of the custodian cost-share requirement for FCSAP.

Figure 11: Distribution of FCSAP expenditures in Phase III

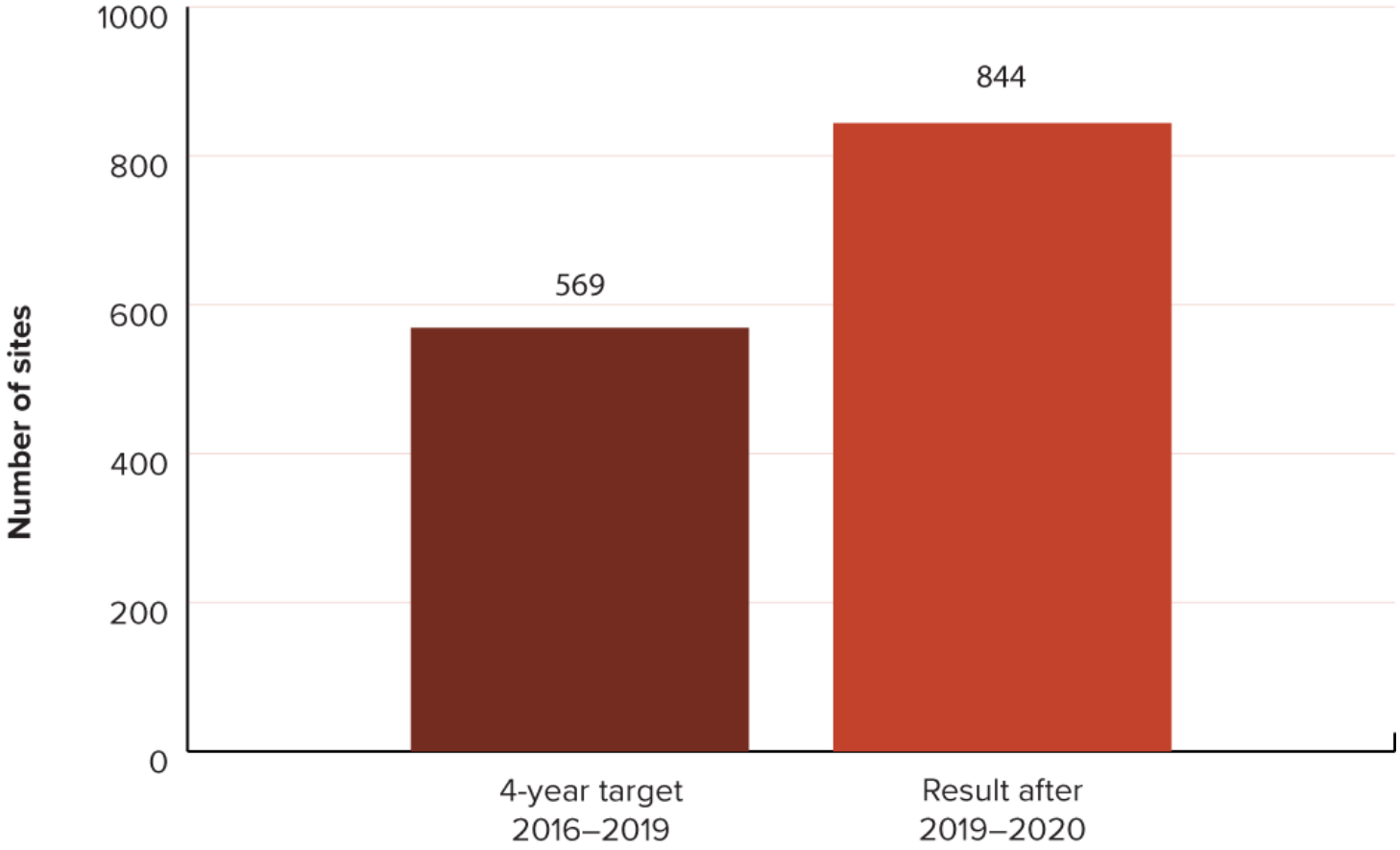


At the end of 2019–2020, $1.624 billion (95%) of total funding available in Phase III was spent, $77.6 million (4.5%) of funding was reprofiled, carried forward or cash managed to Phase IV and $10.0 million (0.6%) of funding was lapsed.

Phase III assessment activities – key results

By the end of Phase III, custodians had conducted assessments at 844 sites, exceeding the 4-year performance target of 569 assessments (Figure 12). The target was based on planning information provided by custodians. Although targets were adjusted to reflect additional funding received through the Federal Infrastructure Initiative, custodians were able to assess more sites than originally planned.

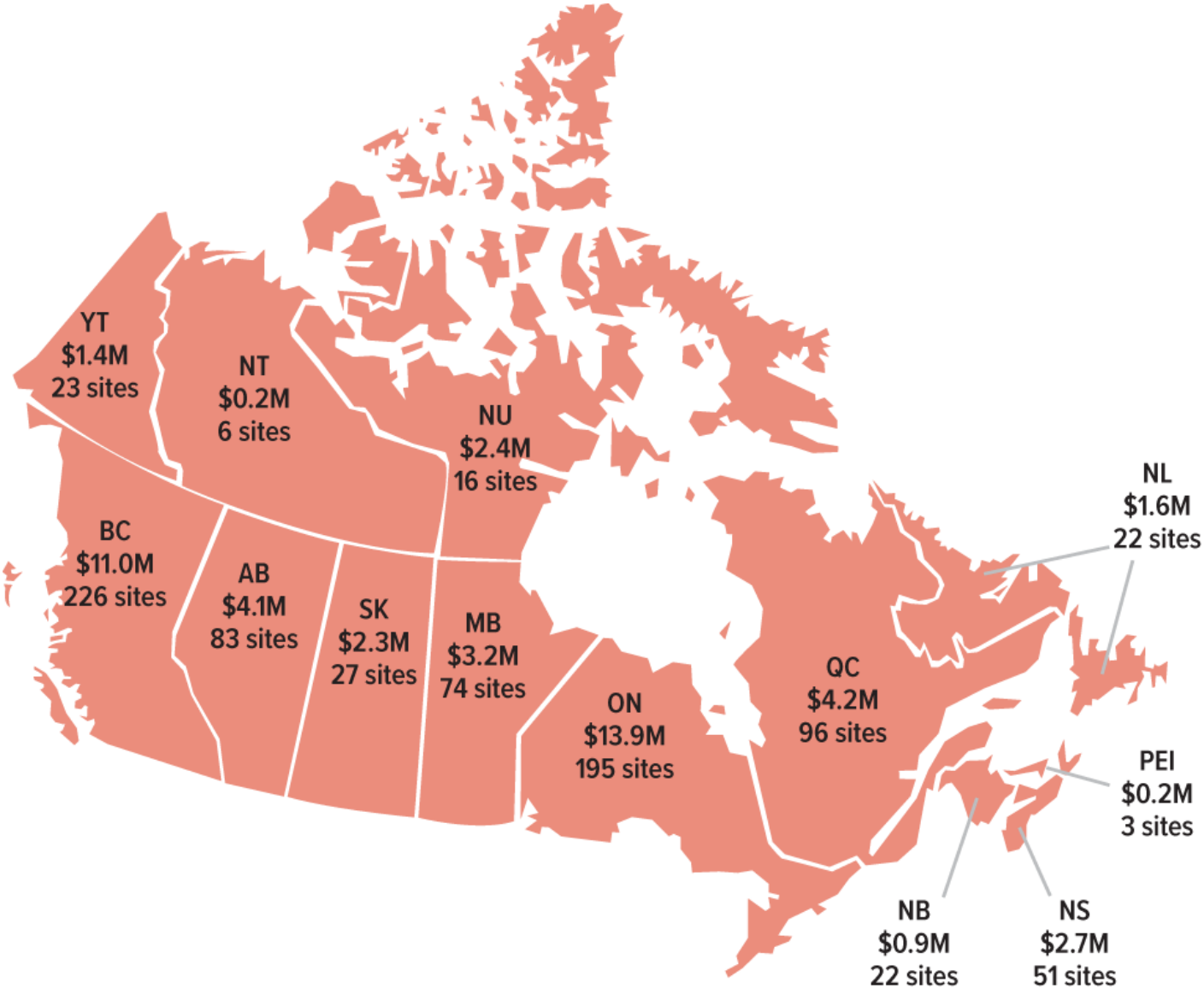
Figure 12: Number of sites where FCSAP-funded assessments were conducted over Phase III



The two custodians that spent the most on assessments were the Department of National Defence and Indigenous Services Canada, which together spent 57% of the FCSAP assessment expenditures reported in Phase III ($27.3 million of $48.1 million). These two custodians also conducted 64% of all FCSAP-funded site assessments in Phase III (539 of 844 sites).

The largest expenditures for assessment occurred in Ontario and British Columbia, accounting for 52% of all FCSAP assessment expenditures in Phase III ($24.9 million of $48.1 million). These two provinces also had the largest number of sites with assessment activity (50%, or 421 of 844 sites), as shown in Figure 13.

Figure 13: Distribution of FCSAP assessment expenditures and sites in Phase III, by province and territory

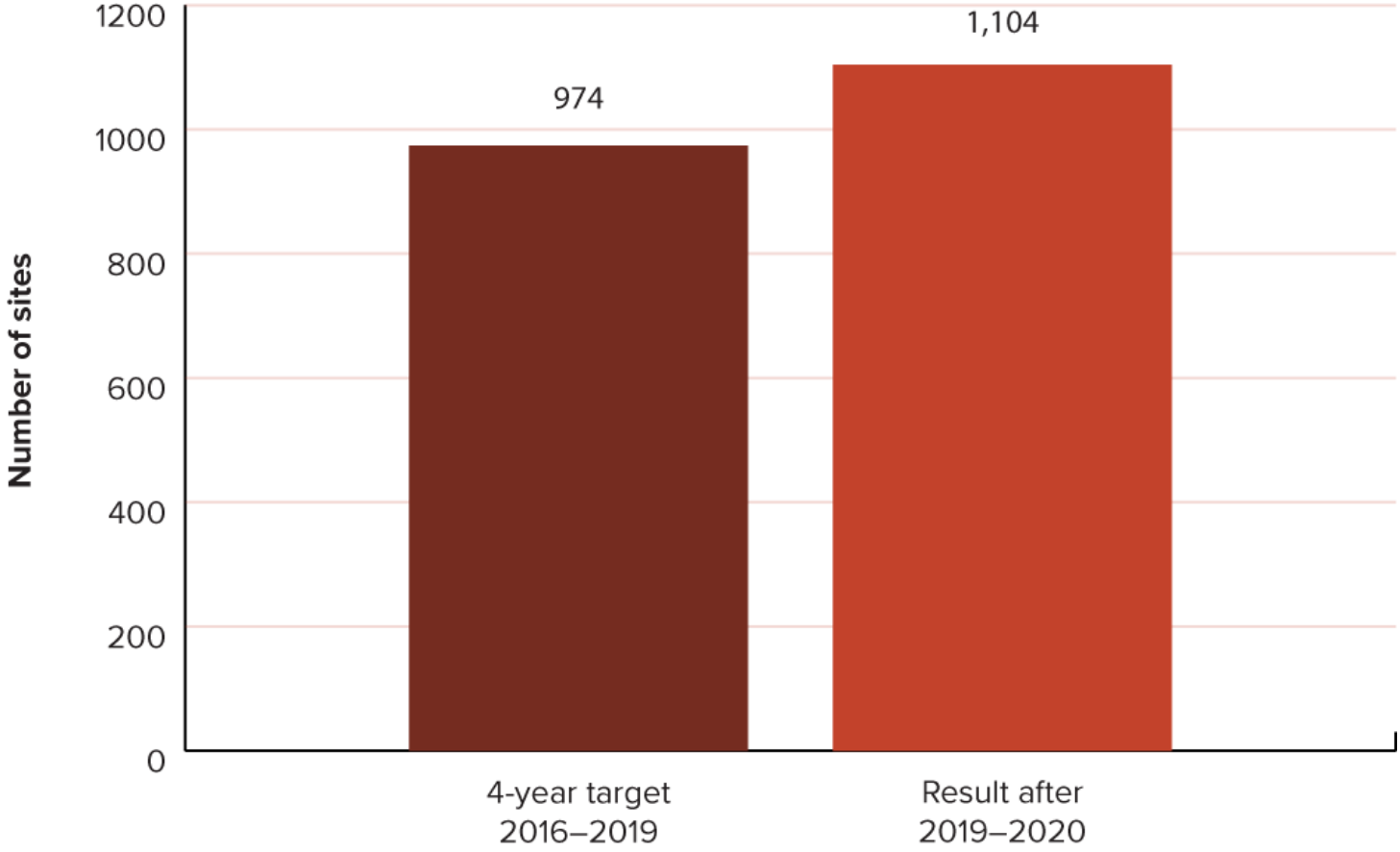


Phase III remediation and risk-management activities – key results

The FCSAP Secretariat tracks two indicators related to risk-reduction activities: the number of FCSAP-funded sites where risk-reduction activities were conducted, and where these activities were completed.

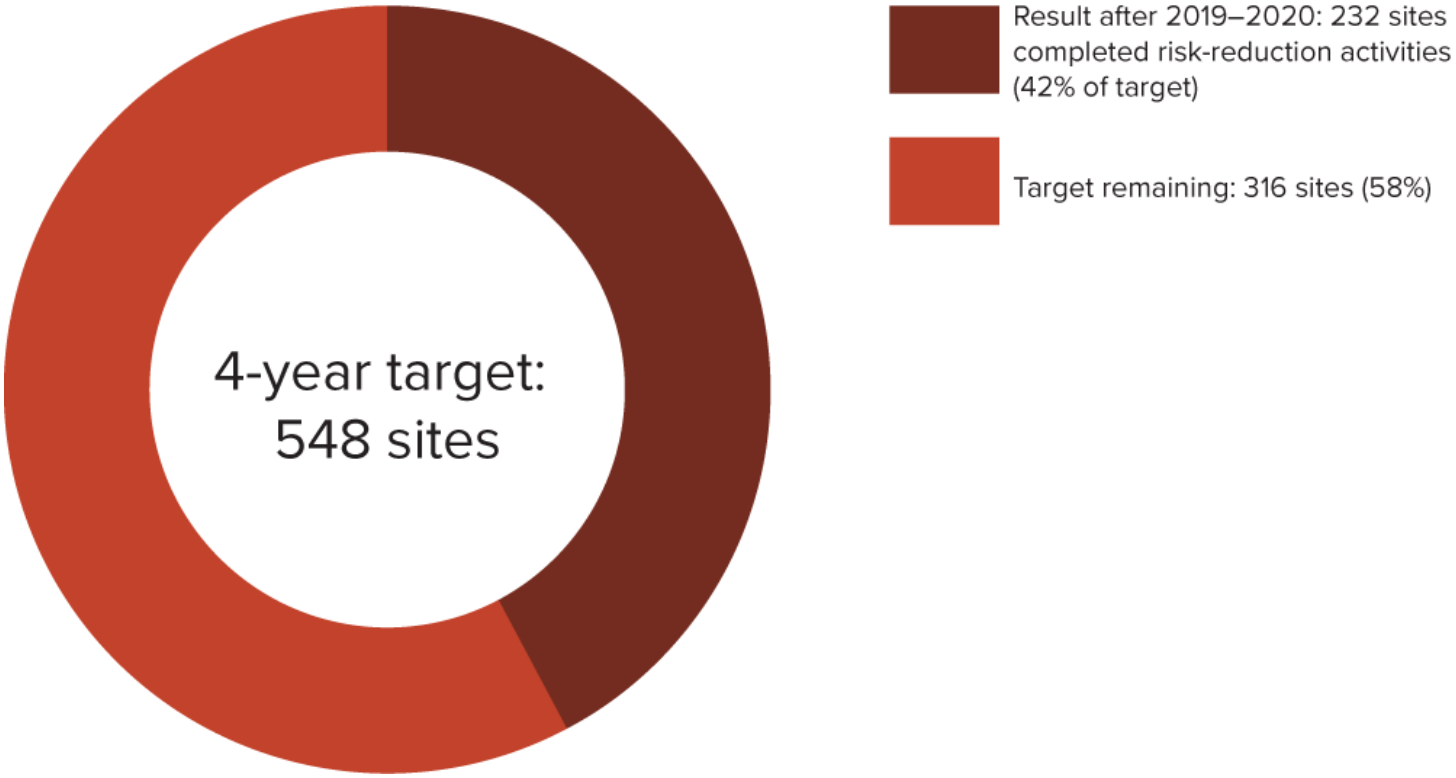
By the end of Phase III, custodians had conducted risk-reduction activities at 1,104 sites, exceeding the 4-year performance target of 974 sites (Figure 14). The target was based on planning information provided by custodians. Although targets were adjusted to reflect the additional funding received through the Federal Infrastructure Initiative, custodians were able to conduct risk-reduction activities at more sites than originally planned.

Figure 14: Number of FCSAP-funded sites where risk-reduction activities were conducted in Phase III



The number of sites undergoing remediation and risk management varies from year to year. Weather or unanticipated technical issues may cause delays at some sites, especially at remote northern sites. By the end of Phase III, custodians had met 42% of the 4-year target for completing risk-reduction activities (Figure 15). The remediation and risk management of a site is a complex process that can take many years. The duration of remediation activities at a site depends on the type and extent of the contamination, scientific knowledge of the contamination, location of the site and weather conditions.

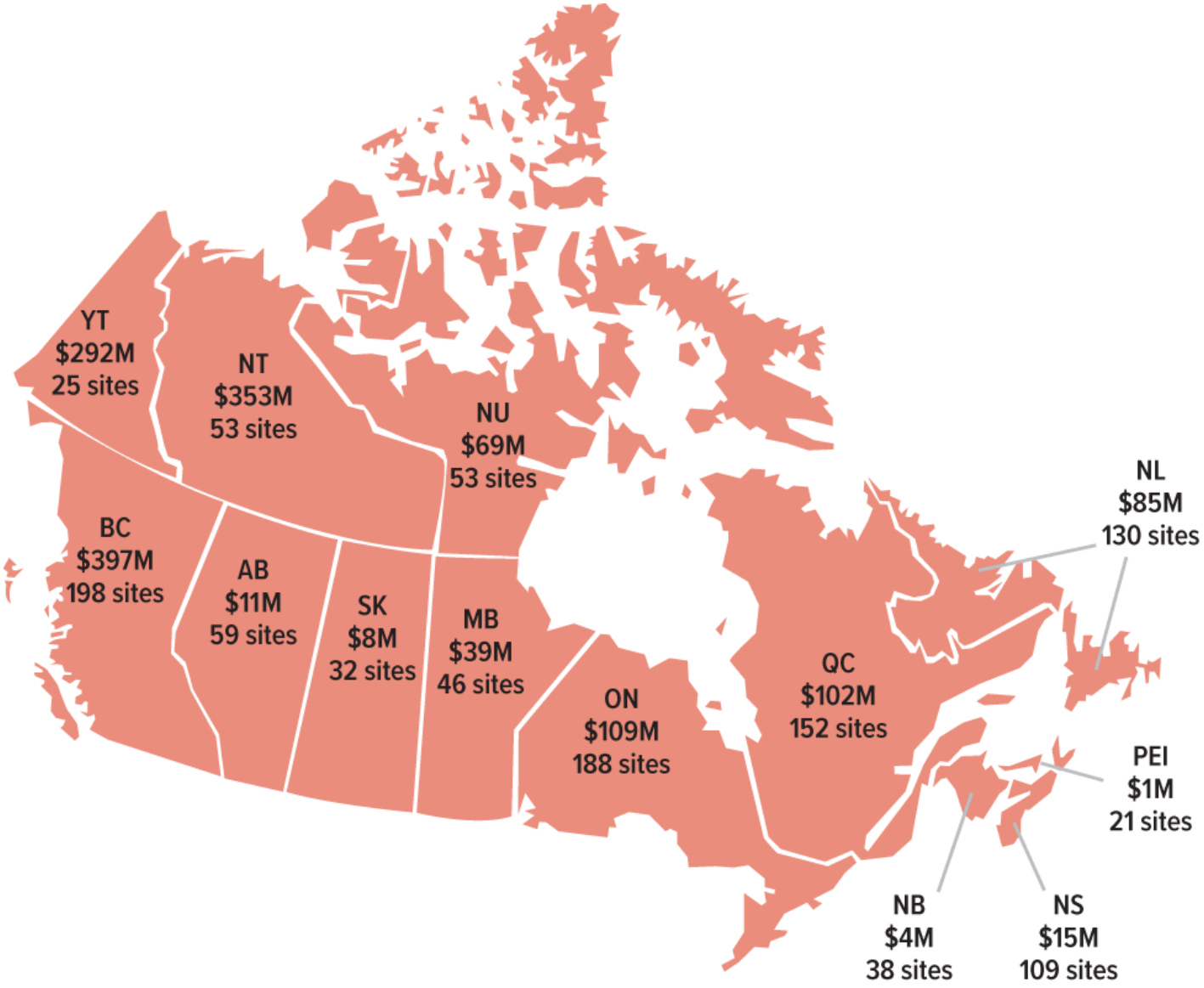
Figure 15: Number of FCSAP-funded sites where risk-reduction activities were completed, 2019–2020



The two custodians that spent the most on remediation and risk management were Crown-Indigenous Relations and Northern Affairs Canada and the Department of National Defence, which together spent 66% of the FCSAP remediation expenditures reported in Phase III ($978 million of the $1.485 billion). Fisheries and Oceans Canada, Indigenous Services Canada and the Department of National Defence conducted 66% of all FCSAP-funded remediation of sites in Phase III (732 of 1,104 sites).

The largest expenditures occurred in British Columbia, Northwest Territories and Yukon, accounting for 70% of all FCSAP remediation expenditures in Phase III ($1.042 billion of $1.485 billion). The provinces with the largest number of sites with remediation activity were British Columbia, Ontario and Quebec (49%, or 538 of 1,104 sites), as shown in Figure 16.

Figure 16: Distribution of FCSAP remediation expenditures and sites in Phase III, by province and territory



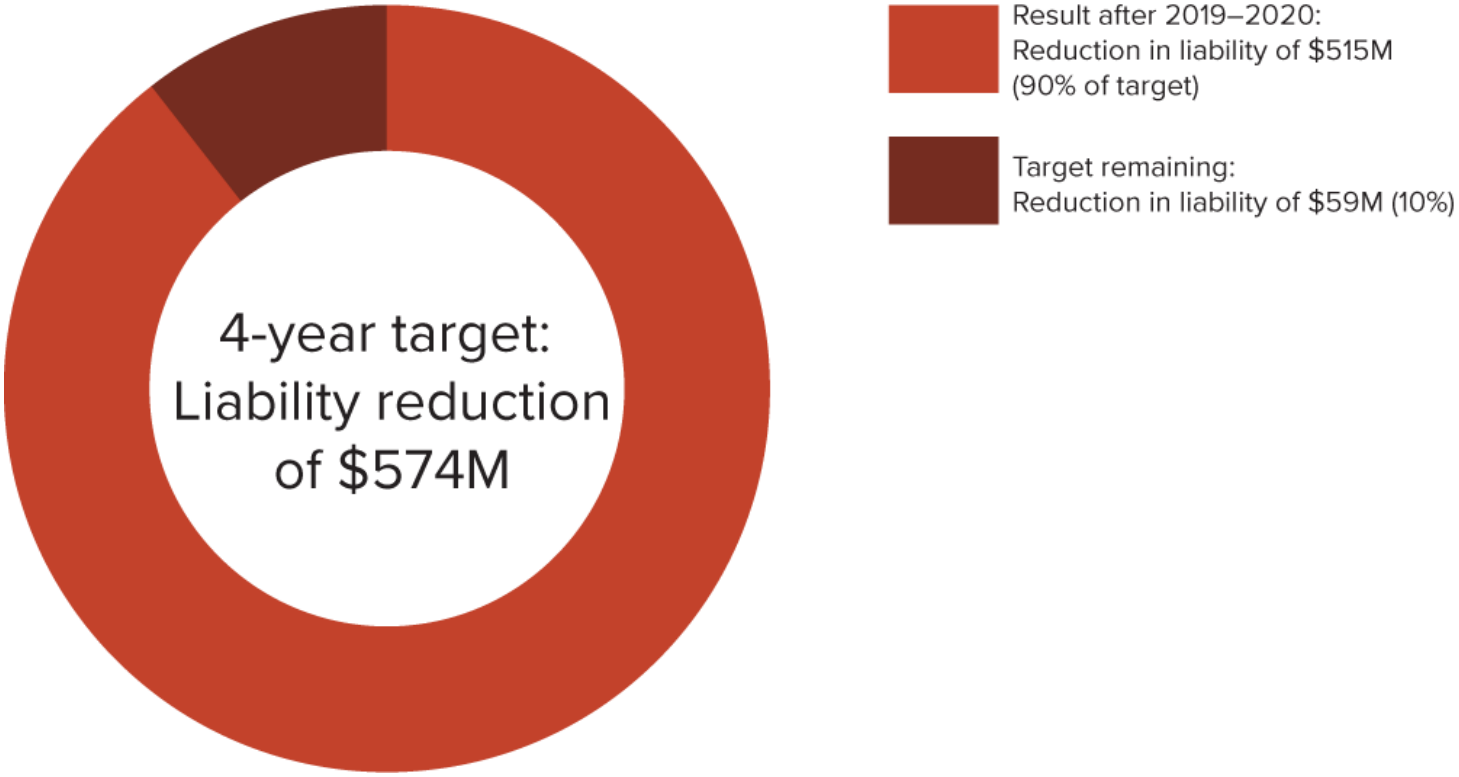
Phase III liability – key results

For Phase III, the FCSAP Secretariat tracked two indicators related to the reduction of liability:

- reduction in liability at FCSAP-funded sites where the remedial action plan was developed and remediation activities were planned for Phase III, and
- the percentage of remediation expenditures that reduced liability over the four years of Phase III.

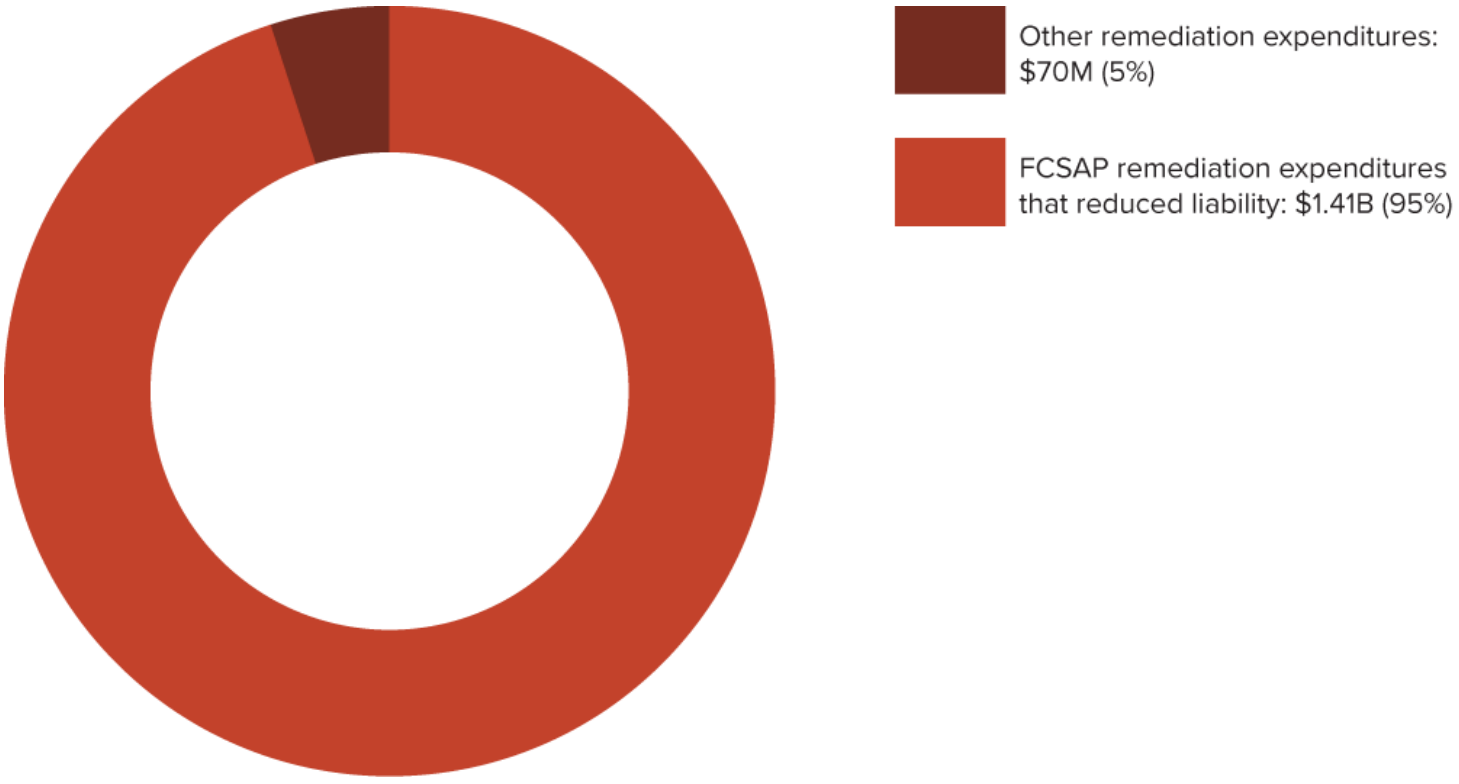
For the first indicator, custodians estimated that liability would be reduced at these sites by $574 million by the end of Phase III. At the end of Phase III, custodians had achieved 90% of the 4-year target for liability reduction. Remediation and risk-management activities at these sites decreased the liability by $515 million (Figure 17). However, this reduction was offset by an increase in liability, due to such things as changes in project costs, of $338 million, resulting in a net reduction in liability of $177 million.

Figure 17: Reduction in liability at FCSAP-funded sites, by the end of Phase III



The second indicator relates to the percentage of remediation expenditures that reduced liability over the four years of Phase III. At the end of Phase III, 95% of FCSAP remediation expenditures ($1.41 billion of $1.48 billion) had led to reductions in liability (Figure 18). This meets the target established for Phase III of 95%.

Figure 18: Percentage of FCSAP remediation expenditures that reduced liability related to FCSAP sites in Phase III



6. Preparing for FCSAP Phase IV

On July 24, 2019, the Minister of Transport announced, on behalf of the Minister of Environment and Climate Change, that the Government of Canada was renewing FCSAP for another 15 years (2020–2034), and was investing $1.16 billion from 2020–2024, in alignment with Budget 2019. The new investment will allow custodians to continue remediating federal contaminated sites. In turn, this work will improve the health of the environment, fuel economic growth and create jobs, notably for people living in Indigenous and northern communities.

In preparation for FCSAP Phase IV, the FCSAP Secretariat, expert support departments and custodians worked toward the implementation of regional integrated planning boards (RIPBs). The objectives of the RIPBs are to:

- provide forums for regional networking, collaboration and information sharing
- bring together expert support departments and custodians to offer training sessions and share information about relevant guidance and tools
- develop and maintain long-term regional integrated work plans to reduce surplus funds through better planning, project management and procurement
- help custodians spend funds more effectively by bundling sites where efficiency can be demonstrated
- identify possible contingency projects
- assess the level of support needed from expert support departments to implement work plans

7. Case studies

Remediation at the Fort Reliance Former Weather Station

Location: Fort Reliance, Northwest Territories
Custodian: Environment and Climate Change Canada (ECCC)

The Fort Reliance former weather station lies about 270 km east of Yellowknife on the eastern end of Great Slave Lake, and within the Thaidene Nene National Park Reserve.

Since 1993, the site has been vacant, with the exception of a small automated weather station still operated by ECCC. The site also contained abandoned buildings and infrastructure, remnants of the Department of National Defence’s operations from the 1940s to the early 1970s, as well as the Atmospheric Environment Service’s use from the late 1950s to the early 1990s.

Assessing the contamination

ECCC, Public Services and Procurement Canada and various environmental consultants have conducted investigations since the late 1980s to identify and characterize areas of environmental concern resulting from the site's past use:

- While in operation, the Fort Reliance former weather station used diesel fuel to generate heat and power. By 1989, fuel-storage and handling practices had caused petroleum hydrocarbon (PHC) contamination in soil and groundwater around the site.
- Furthermore, two dumpsites for household and operational waste had caused metal contamination of the groundwater and soil.
- Hazardous building materials and paint were also contaminating soil around the buildings.

Historical and modern remediation

The only remediation conducted during operations started in 1991, when ECCC installed a hydrocarbon containment and bioremediation system. This system was located parallel to the shoreline of Great Slave Lake and down-gradient of the fuel-tank farm. By 1993, the system had extracted about 19 million litres of groundwater and treated it with a separator, hydrogen peroxide and nutrients – reducing the total PHC concentration in the extraction trench by about 65%.

In 2019–2020, ECCC implemented a three-month physical remediation and risk-management plan to address the remaining contamination. This involved several actions:

- 500 L of hydrogen peroxide injections into wells to address PHC-contaminated groundwater
- removal of 34 m^3 of PHC-contaminated soil, mainly from the former tank-farm area
- removal of 10 m^3 of soil impacted by lead-based paints, from around buildings
- removal of 1,000 m^3 of debris, including some leaching metals, from the dumpsites
- decommissioning of buildings containing hazardous materials
- sampling of groundwater and surface water at McLeod Bay in Great Slave Lake, to ensure that contaminated groundwater was not migrating to surface water

This remediation achieved the environmental objectives for the rehabilitation of the site.

Collaboration and next steps

The major contributing factor to the success of the project was the coordination and active participation of significant parties and stakeholders.

ECCC held formal consultations with the Łutsël K'e Dene First Nation, who view Thaidene Nene as a sacred place. The consultations were widely successful, in terms of gathering input on the project and generating acceptance, as well as ensuring that

economic, employment and training opportunities would be provided to the community. ECCC also coordinated with the Mackenzie Valley Land and Water Board to obtain permits, and with an environmental consultant and other contractors who played key roles in the success of the project.

As Parks Canada Agency (PCA) has expressed interest in acquiring the site, ECCC coordinated with PCA throughout the project and ensured that the standards for testing would meet those required by PCA within a National Park Reserve. Moreover, although all 16 of the buildings at the site were environmental concerns, five were historically significant, and had been designated federal heritage buildings. Coordination with PCA ensured that ECCC was able to maintain the historical significance of the buildings during decommissioning and remediation.

The involvement of FCSAP Expert Support in providing guidance at various stages throughout the project was an invaluable resource.

The future of the Fort Reliance site is bright. ECCC has committed to monitoring site conditions to ensure that remedial activities continue to benefit future generations of Canadians.

This project was funded through Canada's Federal Contaminated Sites Action Plan (FCSAP). FCSAP provides funding to assess and remediate federal contaminated sites and to reduce environmental and human-health risks from known federal contaminated sites.

Waste Oil Pit Remediation Project in Wasauksing First Nation

Location: Wasauksing First Nation, Ontario
Custodian: Indigenous Services Canada (ISC)

The Waste Oil Pit Remediation Project, completed in November 2019, involved the remediation of four waste-oil pits through the removal of 8,855 tonnes of contaminated soil. The project site lies in Wasauksing First Nation on Parry Island on the eastern shore of Georgian Bay. The Wasauksing First Nation encompasses all of Parry Island – which, at 7,800 hectares, is the second-largest island in Lake Huron.

The waste-oil pits were historically used for the disposal of fuel waste removed from Parry Sound harbour between 1951 and 1952, after a large oil spill in 1950. ISC assessed the pits as part of a Phase III environmental site assessment, completed in 2018, that found soil contaminated with petroleum hydrocarbons and polycyclic aromatic hydrocarbons (PAHs). One of the sites also contained miscellaneous waste, such as old cars and scrap metal.

Public Services and Procurement Canada (PSPC) awarded the remediation design work on June 28, 2019 to a consultant specializing in providing environmental services to First Nation, Inuit and northern communities. Once the design work was complete, PSPC initiated a competitive process and awarded remediation work on September 4, 2019 to an environmental contracting company. The project team consisted of

members from Wasauksing First Nation, ISC, PSPC, environmental consultants and contractors. The success of the Project was mainly due to the great collaboration between parties.

Completing the remediation

Remediation work was completed by Wasauksing First Nation members under contract with the contractor, and took place at the four oil pits from September 26 to November 26, 2019. Remediation activities included:

- completion of a species-at-risk assessment (as several species at risk inhabit Parry Island, an experienced biologist conducted a pre-construction survey to confirm their absence from the sites; also, as several migratory birds use Parry Island, the project team put in place mitigation measures in case they, their nests or their young were encountered)
- tree clearing, including distribution for reuse by Wasauksing First Nation members
- erosion-control measures
- excavation, transportation and disposal of contaminated soil to an approved off-site facility
- dewatering of the excavation area, when needed
- decommissioning of existing monitoring wells
- importing and placement of clean backfill materials
- site restoration, including laying topsoil and seeding

Removal of contaminated soil from the waste pits was performed using an excavator that removed soil in lifts. The project team then loaded the soil onto haulage trucks to be transported to an approved off-site facility for disposal. While being filled, the trucks were situated on a decontamination pad located beside each site. At two of the sites, water management was necessary during the remediation work, and the contractor pumped the water into temporary above-ground storage tanks, then removed it with hydrovac equipment and safely disposed of it offsite.

Problem solving

As with any project of this scale, some deviations from the initial plan became necessary:

- At two of the sites, access limitations and deteriorating weather conditions made transportation of excavated material a challenge. To avoid delays, the project team decided to transfer the excavated material to a temporary stockpile at the Wasauksing First Nation waste-transfer station. The team instituted several mitigation measures to ensure that the soil did not contaminate adjacent areas:
  - placing the stockpile on an impermeable tarp, situated on asphalt
  - continuous monitoring
  - covering the stockpile with a tarp to limit exposure
- Once the Project was complete, the team safely removed the stockpile and disposed of it at an approved off-site facility.

- To reduce the amount of excavation water to be transported offsite for disposal, the project team decided to discharge about 80,000 L of excavation water at the Wasauksing First Nation waste-transfer facility. The contractor sampled and analyzed the water to ensure that this disposal would be safe.
- Because of poor weather in late November 2019, material from the pre-approved imported topsoil backfill source was very wet, making it difficult to transport, place and grade. To avoid delays, the project team used the previously sampled berm material (already present on the waste sites) as backfill material instead. This allowed for the work to be completed in 2019, rather than delaying until warmer weather. It also provided a more natural site topography, once the berms were graded to match adjacent conditions.

Next steps

Post-remediation soil samples and groundwater sampling have shown that the Project met all applicable remediation criteria. The project team also conducted well-water quality testing at two of the sites, and showed that samples met drinking-water criteria. Grass seed was placed post-remediation at the four sites on November 2019, which is late in the growing season. However, the project team inspected and assessed the growth in the spring of 2020, and rectified any deficiencies.

The remediation work met the standards for residential land use, allowing the community unrestricted use of these sites.

This project was funded through Canada's Federal Contaminated Sites Action Plan (FCSAP). FCSAP provides funding to assess and remediate federal contaminated sites and to reduce environmental and human-health risks from known federal contaminated sites.

Remediation and risk management of a former firefighter training area at Ferguson's Cove, Nova Scotia

Location: Ferguson's Cove (Halifax Regional Municipality), Nova Scotia
Custodian: Department of National Defence (DND)

DND's Damage Control Division (DCD) School at Ferguson's Cove, Nova Scotia conducted firefighter training from 1959 until commissioning a new on-site training facility in 2002.

At the former firefighter training area, firefighter training involved the controlled burning of diesel fuel, stove oil and gasoline, and used water, potassium bicarbonate, carbon dioxide and firefighting foams to extinguish fires. In 1995, DCD School introduced spill control and containment activities to try to contain the foams and minimize potential impacts on the environment as much as possible.

Decommissioning and initial risk management

After decommissioning the facility in the summer of 2005, DND assessed the condition of the site and the risk to human health and the environment, and implemented a risk-management plan for petroleum hydrocarbons on the property.

Following the assessment, DND installed a gravel and vegetation cap over the site and implemented a groundwater-monitoring program. Groundwater monitoring for petroleum hydrocarbons continued until 2019, when it was determined that the potential risk to the environment and human health was minimal. DND continues to visually inspect the engineered cap annually to ensure its integrity.

The former firefighter training activities had also affected a nearby wetland and beach area on the DCD School property. In the mid-1990s, DND remediated the beach area by excavating the soil and treating it off-site, and conducted bioremediation from 2003 to 2005. However, the bioremediation was not successful at reducing the significant petroleum contamination in the wetland. As a result, DND conducted further excavation work and off-site treatment of contaminated soil and sediment in 2009. After excavation, DND reinstalled the wetland.

A newly identified toxic substance

In December 2006, perflurooctane sulfonate (PFOS), a compound in the poly- and perfluoralkylated substance (PFAS) group of chemicals, was added to the list of toxic substances included in the *Canadian Environmental Protection Act*.

PFAS are manufactured chemicals used in a variety of consumer and industrial products, including firefighting foams. PFAS are very stable, meaning that they do not break down easily in nature. PFAS are also highly water soluble, so they dissolve into water easily and can move with it over long distances. For these reasons, the understanding of PFAS properties in the environment is still evolving, along with best practices to address it.

Since the DCD School used firefighting foams that contained PFAS as part of its training activities, DND assessed the former firefighter training area for PFAS in 2007. The initial assessment identified PFAS concentrations in groundwater in the former training area which led to other PFAS investigations across the DCD school property from 2007 to 2021. The investigations were completed to assess PFAS in various media (groundwater, soil, surface water and sediments), as well as to better understand the potential risks of off-site migration.

Addressing PFAS

To address potential off-site PFAS migration in groundwater, DND installed two deep monitoring wells in 2017–2018 near the southern property boundary of Ferguson Cove. Groundwater analysis indicated that off-site PFAS migration in groundwater was unlikely, as PFAS concentrations were below laboratory detection limits. This ruled out risks to human health.

Out of an abundance of caution, DND conducted additional soil, groundwater, and surface water sampling as part of an ecological risk assessment to determine if further remediation or risk management measures were required.DND consulted with Expert Support Departments, specifically Environment and Climate Change Canada and Fisheries and Oceans Canada, when planning the ecological risk assessment, which included the review of the initial PFAS site characterization reports, review of the ecological risk assessment problem formulation and work plan, in addition to the proposed toxicity reference values and species at risk considered receptors of concern at the site. DND will continue to engage Expert Support as the ecological risk assessment moves forward.

In 2018–2019, DND completed the additional soil sampling in surrounding areas of the former firefighter training area within the DCD school property, including the previously remediated wetland and beach area. DND also completed the initial stages of the ecological risk assessment, which has helped provide a better understanding of the presence of PFAS in the area and potential risks.

In 2019–2020, planning the ecological risk assessment continued and a site was chosen to sample and analyze soil, sediment, surface water, underwater and land vegetation, small mammals, amphibians and fish, as well as plant health in the area. This analysis is taking place at the former firefighting training facility as well as another chosen off-site property for general background information. This assessment is being carried out in 2020–2021.

DND will use the site-specific ecological risk assessment currently underway to determine if further risk management/remediation is required. DND will also continue to monitor the groundwater for potential off-site migration.

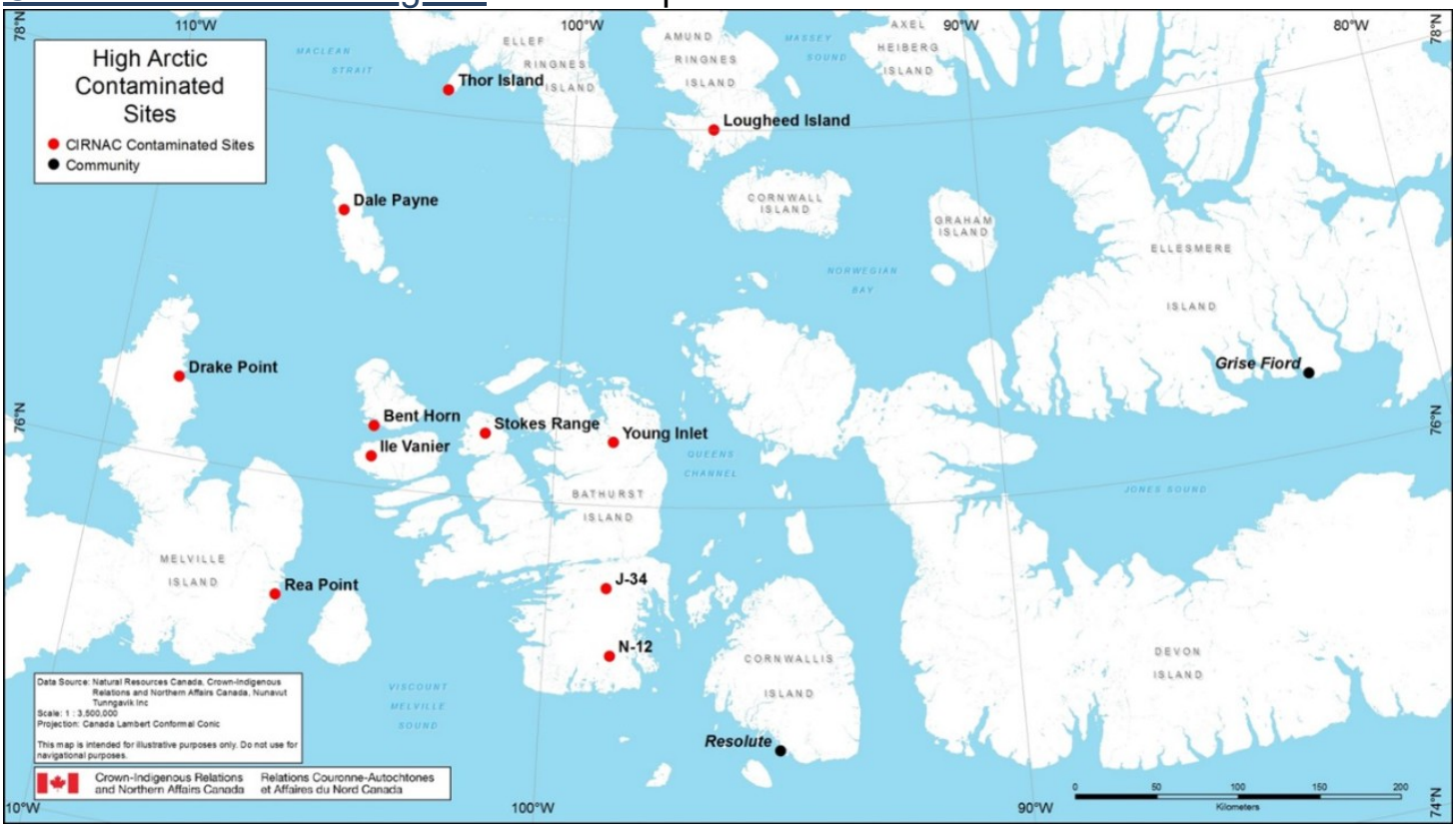
This project was funded through Canada’s Federal Contaminated Sites Action Plan (FCSAP). FCSAP provides funding to assess and remediate federal contaminated sites and to reduce environmental and human-health risks from known federal contaminated sites.

Bathurst Island and High Arctic Remediation Project

Location: Nunavut
Custodian: Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)

The Bathurst Island and High Arctic Remediation Project consists of 12 sites located between 120 km and 630 km north of the nearest community,Resolute, Nunavut. All of the sites were former oil and gas exploration and production sites developed by Panarctic Oils Limited from the 1960s to early 1980s. The sites are spread across six islands in the high Arctic, north of the 75th parallel. Some sites are also located within the boundaries of the newly established Qausuittuq National Park and Nanuit Itillinga (Polar Bear Pass) National Wildlife Area on Bathurst Island. The only infrastructure on

the sites consists of a few abandoned exploration trailers, well markers, and scattered non-hazardous debris. These are the most northerly sites that CIRNAC's Northern Contaminated Sites Program has attempted to address.



High Arctic sites

Between 2011 and 2015, CIRNAC completed Phase I, II and III environmental site assessments for each site to identify and determine the extent of the contaminants of concern. The identified contaminants were predominately petroleum hydrocarbons and metals; however, soil contaminated by polychlorinated biphenyls (PCBs) was also present at one site. Other hazards included numerous drums containing fuel, compressed-gas cylinders, batteries, and hazardous materials such as mercury thermostats and asbestos in some of the abandoned structures.

An alternative approach

Given the challenges of the remoteness of the sites and the extremely high costs of conventional remediation approaches, CIRNAC explored the alternative of risk management. The initial step in this exploration was the completion of preliminary quantitative risk assessments for each of the sites. These assessments included consideration of potential land use by Inuit hunters and visitors, and of potential environmental effects on food sources. Information gathered during the assessments, along with some conservative assumptions, indicated some risks at the sites – most of them deemed to be low, due to the limited number of receptors and active exposure pathways. With input from the community of Resolute, CIRNAC developed remediation and risk-management plans for each site to address the highest risks and hazards.

Because the sites were within a few hundred kilometres of each other and had similar contaminants, CIRNAC grouped them into one project for efficiency and cost-effectiveness.

Remediation and risk management begin

CIRNAC completed the remediation and risk-management activities during July and August 2019, basing operations in Resolute, with daily flights to and from the sites. The site work included:

- the removal of hazardous materials (mercury, gas cylinders, drums containing fuel)
- excavation and removal of a small volume of contaminated soil containing PCBs
- placement of an engineered soil cover to contain lead-contaminated soil at Île Vanier
- installation of warning signs to inform potential visitors that they are entering an area designated as a contaminated site

CIRNAC also assisted Parks Canada Agency with the cleanup of non-hazardous debris at sites within Qausuittuq National Park boundaries, to make the most effective use of the funding for both federal organizations.

Challenges and delays

The field team had to contend with many challenges, including:

- mobilizing to and from the sites, many of which lacked airstrips in good condition, limiting access by helicopters and Twin Otter aircraft
- a short field season of less than eight weeks – halved by bad weather
- difficult terrain and poor weather conditions, including fog, rain, snow, and wind
- working in continuous permafrost, in a region with a seasonal active layer of about 150 to 300 mm within soils

Due to the lost time and field conditions, not all of the work was completed in 2019–2020. The remaining work was originally rescheduled for 2020–2021 but due to the COVID-19 outbreak, Project completion has been deferred to 2021–2022. This work will include the collection and containerization of hazardous materials, liquids, drums, and contaminated soil. All waste is to be shipped to southern disposal facilities by sealift in the fall of 2021.

After the Project is completed in 2021, CIRNAC will review the results and develop a long-term monitoring strategy for the sites. The plan will likely consist of monitoring land use in the area and verification of the assumptions of the risk assessment.

Collaboration toward common goals

The Project included requirements for maximizing community involvement and supporting Inuit employment. To those ends, CIRNAC developed working relationships with the community of Resolute throughout the Project, holding community meetings there in 2015, 2016, 2018, and in June 2019 before the start of remediation and risk-management. This meeting was used to introduce the contractor and update the community. The contractor hired several Inuit from Resolute as members of the field team; the Project also used Inuit-owned supplies and local businesses.

A final community presentation will be held once the work is complete, to inform the community of the results.

The Project was carried out with the cooperation and support of Public Services and Procurement Canada, Parks Canada Agency, the Canadian Wildlife Service, the Sulukvaut Area Co-Management Committee, and residents of Resolute.

Significant cost savings and efficiencies were achieved by adopting a risk-management strategy to address these remote sites.

Completion of the project will meet the Northern Contaminated Sites Program objectives to protect the health and safety of Nunavummiut, protect the environment, reduce liability associated with contaminated sites, and fulfill CIRNAC's custodial obligations.

This project was funded through Canada's Federal Contaminated Sites Action Plan (FCSAP). FCSAP provides funding to assess and remediate federal contaminated sites and to reduce environmental and human-health risks from known federal contaminated sites.

Indigenous Engagement at the Faro Mine Remediation Project

Location: Faro, Yukon
Custodian: Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)

With the submission of the Faro Mine Remediation Project proposal to the Yukon Environmental and Socio-economic Board (YESAB) in May 2019, YESAB and the Canadian Northern Economic Development Agency, on behalf of the Government of Canada, engaged the Ross River Dena Council, Liard First Nation and Selkirk First Nation to validate their past involvement in the Project and to share information on the assessment process underway.

As the remediation plan for the Faro Mine site evolves, First Nations and their technical advisors continue to be involved in the technical aspects of the project through participation in the Technical Review Committee. This governance body brings together representatives from CIRNAC, affected First Nations, the Government of Yukon and technical consultants to review and discuss current site conditions, care and maintenance activities, and urgent work and design components. The Committee held 24 bi-weekly meetings during the 2019–2020 fiscal year.

Participation in governance committee meetings provides frequent opportunities for affected First Nations and their representatives to share their views and interests, and to contribute to decisions. CIRNAC provides annual capacity funding to support the involvement of affected First Nations in all aspects of the Project, and the project team will continue to ensure that appropriate governance mechanisms and processes remain in place for effective First Nation participation.

This year saw the establishment of an important partnership with Ross River's Dena Nezziddi Development Corporation, through the realignment of the north fork of Rose Creek at the site. This partnership generated important socio-economic benefits through training, employment and subcontracting to Ross River businesses and citizens.

As the Project moves forward, important work is being initiated with the Ross River Dena Council to develop community-based land-use objectives that will guide future revegetation trials and, eventually, the revegetation plan for the Faro Mine site.

This project was funded through Canada's Federal Contaminated Sites Action Plan (FCSAP). FCSAP provides funding to assess and remediate federal contaminated sites and to reduce environmental and human-health risks from known federal contaminated sites. Starting in 2020–2021, this project will be funded through the Northern Abandoned Mine Reclamation Program.

Indigenous Engagement at the Giant Mine Remediation Project

Location: Yellowknife, Northwest Territories
Custodian: Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)

Giant Mine was once a major economic driver for the Northwest Territories. Operating between 1948 and 2004, the mine produced over 7.5 million ounces of gold from arsenopyrite ore formations on the western shore of Yellowknife Bay. The processing of gold involved roasting the ore, creating a by-product of highly toxic arsenic trioxide dust. Control of the property, as well as the main environmental liabilities, was transferred to CIRNAC after the mine's closure.

The Giant Mine site lies within the asserted traditional territory of the Akaitcho Territory Dene First Nation, and within the extended Monfwi (Môwhì Gogha Dè Nîîtåèè) boundary, as defined in the Tlicho Land Claim and Self-Government Agreement. The site also lies on the boundary of the Interim Measures Agreement Area of the Northwest Territories Métis Nation. As custodian of the Giant Mine Remediation Project, CIRNAC recognizes the importance of providing opportunities for all stakeholders to engage meaningfully on key issues. The Project team also appreciates the importance of showing how stakeholder input has been gathered and incorporated into decision-making.

Since the responsible Ministers' decision on the environmental assessment in 2014, the engagement process has matured and become more streamlined. Key activities, such as the engagement on surface design, helped establish momentum and trust with

some stakeholder groups, particularly the Yellowknives Dene First Nation and the North Slave Métis Alliance. Through the ongoing consultation activities, the project team has also gained important insight that allowed the planning and execution of engagement sessions and public events to become easier and more effective.

Over the 2019–2020 fiscal year, the Project team undertook or participated in 67 engagement activities or events. These included sessions on the Quantitative Risk Assessment, the Perpetual Care Plan, Borrow Design, the Hoèla Weteèst'eèdeè: Understanding Community Well-being Around Giant Mine Study (as part of Measure 10), and work towards implementing the Socio-Economic Strategy through ongoing meetings with the Socio-economic Working Group and the Socio-Economic Advisory Body. In addition, the Project team was involved in technical sessions and Public Hearings as part of the Mackenzie Valley Land and Water Board Water Licence process. The Project team also conducted outreach to youth with local schools, providing students with hands-on science experiences and classroom visits.

The Giant Mine Remediation Project also recognizes the importance of incorporating traditional knowledge into the planning for final site remediation, and will continue to work with the Yellowknives Dene First Nation and the North Slave Métis Alliance to ensure that the gathering and use of traditional knowledge continues to improve. As the Project moves forward, engagement in the year to come will also focus on engaging on Monitoring and Management Plans required through the Water Licence, as well as engagement through an Aquatics Advisory Committee.

This project was funded through Canada's Federal Contaminated Sites Action Plan (FCSAP). FCSAP provides funding to assess and remediate federal contaminated sites and to reduce environmental and human-health risks from known federal contaminated sites. Starting in 2020–2021, this project will be funded through the Northern Abandoned Mine Reclamation Program.

8. Updates on priority projects

Faro Mine Remediation Project

Location: Faro, Yukon
Custodian: Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)

The Faro Mine complex is located in south-central Yukon, 22 km north of the town of Faro and almost 350 km northeast of Whitehorse. From Whitehorse, the mine is a 30-minute charter flight or a four-hour drive away. The mine complex is located in the traditional territory of the Kaska Nation and is upstream from the traditional territory of the Selkirk First Nation.

History

A former open-pit lead and zinc mine, Faro Mine operated for 30 years until its last operator, Anvil Range Mining Corporation, went into receivership in 1998. In 2003, the authority to manage public lands and resources, including abandoned mine sites, was transferred to the Government of Yukon, under the Yukon Northern Affairs Organization Devolution Transfer Agreement and the *Yukon Act (2002).* The Agreement left the federal government financially liable for remediation of the Faro Mine, with the Government of Yukon responsible for the management of the remediation project. This joint governance model has posed challenges for the management of this complex, high-risk and large-scale project. To align the project management with best practices and effectively manage the risks, the Government of Yukon and the Government of Canada have negotiated an agreement to alter their roles and transition the site to full federal control. The agreement is expected to be signed in 2020–2021.

Contamination

Faro Mine is one of the largest and most contaminated sites in Canada. The site consists of waste-rock dumps, ore-processing facilities, water-treatment plants, tailings-disposal facilities, offices and other buildings. There are approximately 70 million tonnes of tailings and 320 million tonnes of waste rock across the mine complex.

These materials have the potential for both metal release and acid rock drainage, which occurs when sulphide-containing waste rock and tailings are exposed to air and water. This will become more problematic as the acid concentrations reach saturation and begin releasing in high concentrations into the environment. If unchecked, this would make the waters downstream in the Pelly River watershed highly toxic to fish. Orange-red precipitate from sulphide oxidation would coat stream beds, making them inhospitable to aquatic organisms and fish spawning. The tailings are contained behind three impoundments, but these are physically unstable. If the main tailings impoundment fails, the damage downstream could be irreparable.

Maintenance and closure

CIRNAC continues to manage the necessary care and maintenance activities at Faro Mine to protect human health, public safety and the environment. These activities include water pumping and treatment, stream diversions, building maintenance, continuous inspection and monitoring of dams, and site security.

In 2008, CIRNAC, the Government of Yukon and First Nations developed the Faro Mine Preferred Remediation Plan, which involves stabilizing and capping the waste rock and tailings, and instituting a permanent water-management and treatment system.

Notable achievements in the 2019–2020 fiscal year were:

- the submission of the project proposal for the Faro Mine Remediation Project to the Yukon Environmental and Socio-economic Assessment Board for review
- the start of construction of a channel realignment to support the diversion of the north fork of Rose Creek, which in turn will enable clean water to flow through
- advancement on the agreements for the transition of the Faro Mine Remediation Project from the Government of Yukon to CIRNAC

This project was funded through Canada's Federal Contaminated Sites Action Plan (FCSAP). FCSAP provides funding to assess and remediate federal contaminated sites and to reduce environmental and human-health risks from known federal contaminated sites. Starting in 2020–2021, this project will be funded through the Northern Abandoned Mine Reclamation Program.

Giant Mine Remediation Project

Location: Yellowknife, Northwest Territories
Custodian: Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)

The Giant Mine site covers approximately 900 hectares within the city limits of Yellowknife. The site lies along the western shore of Yellowknife Bay, an arm of Great Slave Lake. The site is a former gold mine that operated from 1948 to 2004. The operations led to significant contamination, including 237,000 tonnes of arsenic trioxide dust stored in 15 underground chambers. Moreover, 16 million tonnes of arsenic-contaminated tailings are stored in surface tailings ponds. The underground mine water, industrial buildings and surface soil are all contaminated with arsenic. Furthermore, because a creek passes through the mine site, above the arsenic chambers and adjacent to mine openings, there is a potential for the mine to flood.

Giant Mine was operated by private interests until its last operator, Royal Oak Mines Inc., went into receivership in April 1999. The Ontario Superior Court, under the provisions of the *Bankruptcy and Insolvency Act* (1985), then ordered the transfer of the property, including all environmental liability, from the interim receiver to CIRNAC, on behalf of the federal Crown.

Site stabilization and risk management

Since 2006, CIRNAC has performed or contracted a large amount of work on the site:

- Advanced remediation activities have been completed to mitigate high risks at the site; these include the deconstruction of small buildings, the sealing of openings to the mine, the testing and evaluation of the arsenic chamber freezing process and asbestos removal from existing infrastructure.
- Remediation work was also initiated under the Site Stabilization Plan, developed to address the largest risks, in order to protect human health and safety and the environment. This plan required several project elements to proceed urgently, including the deconstruction of the roaster complex, completed in December 2014, and urgent backfilling of stopes from 2013 to 2016. Additionally, other high-risk

infrastructure was removed in 2015 and 2016, including the deconstruction of the C-shaft headframe in 2015, and the A-shaft headframe and hoist room, the assay lab, and the curling club in 2016.
- In May 2018, contractors began construction under the final stage of the Site Stabilization Plan. This primarily consisted of backfilling stope complex C5-09 with paste and self-levelling concrete. Other key activities in 2018–2019 included carrying out quality-assurance work on criteria for backfill quality and void fullness, during ongoing underground stabilization void-backfilling processes, and removing equipment from the C5-09 backfilling activities after completion. The Site Stabilization Plan is now finalized, marking a significant milestone for the Project.

Carrying out the Giant Mine Environmental Assessment measures

In August 2014, the responsible Minister (then titled the Minister of Aboriginal Affairs and Northern Development) approved the decision to proceed with the Project. However, this approval was subject to 26 legally binding measures recommended through the environmental assessment, which altered the scope, timelines and cost of the Project. These measures required CIRNAC to perform an in-depth review of the Project, including extensive public and stakeholder scrutiny through numerous consultations. This will also allow the Project team to develop accurate cost estimates and determine the scope, schedule, cost, and risk implications of the measures. Some of the measures are interdependent; so, their integration into the project plan and the collection of site-specific data will continue for the rest of the definition phase of the Project, and will continue to inform the remediation strategy.

Measures completed to date include dealing with the negotiation of an environmental agreement and the creation of the Giant Mine Oversight Board (Measures 3, 4, 7 and 8), a final report on long-term funding options (Measure 6), investigating options for Baker Creek (Measure 11), and setting site-specific water-quality objectives (Measure 12).

The investments required to implement measures, such as the human health and ecological risk assessments and the outcomes of the quantitative risk assessment (Measure 5), are currently being made and will continue over the coming years.

Activities in 2019–2020

The past year’s activities largely focused on work supporting the water-licence process, advancement of several project design plans, advancement of several measures and additional stabilization work. Key activities included the following:

- An independent consultant was retained in 2018 to complete the quantitative risk assessment (Measure 5). A separate consultant was retained to develop the engagement component. To date, the quantitative risk assessment team has prepared and presented an overall methodology and engagement strategy to the Giant Mine Remediation Project Working Group. The team held public sessions on risk identification, consequence criteria and acceptability thresholds, and adjusted

the strategy in response to input. In 2019–2020, the focus was on discussing and confirming the final list of failure scenarios, and understanding potential effects on “way of life”. The team issued a final report, and further engagement is expected, to discuss and receive input on how the results can be used to improve the Project.

- In 2016, the project team established an advisory committee for the Health Effects Monitoring Program (Measure 9). The committee is made up of health experts, territorial and federal government officials, and community members. The Program includes biological sampling; the first sampling period was completed in the fall of 2017 and included a total of 898 participants from Dettah, Ndilo and Yellowknife. The second sampling period was completed in the spring of 2018 and included 1,139 participants. This completed the baseline study, with 2,037 individuals aged 3 to 79, including Elders. Participants received results of the sampling in 2019–2020. In May of 2019, the project team reported back to the community and participants on the initial results of the study. A follow-up representative study is expected to begin with children in 2022 and with both children and adults in 2027.
- The Dust Management and Monitoring Plan, which includes best practices to minimize the chances of dust and contaminants blowing into Yellowknife, Dettah and Ndilo (Measure 20), continued in 2019–2020. The Air Quality Monitoring Program also continued, with the eight fenceline and three community stations (Ndilo, Niven Lake and near Great Slave Sailing Club) operational (Measure 25).
- The Project finalized and submitted the water-licence application, which included the final Closure and Reclamation Plan, to the Mackenzie Valley Land and Water Board on April 1, 2019. In 2019–2020, the project team participated in technical sessions and public hearings, provided responses to reviewer comments, information requests and undertakings, and participated in a dedicated discussion on the closure criteria for the Project. The Land and Water Board will make its recommendation on the water licence to the Minister of Northern Affairs in August 2020. The Project anticipates ministerial approval in the fall of 2020.
- At the Giant Mine site, dams are used for management of mine and surface water, and to retain solid tailings. Dams are inspected annually to assess water-level restrictions and geotechnical considerations. In 2019–2020, the Project conducted the annual geotechnical inspection of the dams. This work included visual inspections, reviews (survey data, pumping records, instrumentation, previous deliverables, dam-consequence classifications), summaries and recommendations for immediate action related to maintenance, monitoring, operations, and studies. A 10-year dam-safety review was also conducted to ensure compliance with Canadian Dam Association guidelines; recommendations from the final report are expected to be carried out in 2020–2021.
- The project team had assessed potential improvements to the Northwest (formerly known as Akaitcho) Deep Well Pump Station to increase its reliability and ensure effective redundancy. In 2017, the team decided to complete upgrades, using two deep-well submersible pumps near the Northwest shaft. In April 2019, a new deep-well pump station began operating and was used to dewater during heavy runoff periods.

Socio-economic update

As part of CIRNAC's commitment to promote socio-economic benefits and support reconciliation efforts with Indigenous peoples in Canada, the project team completed the following activities as they relate to the socio-economic aspect of the Project:

- The team continued to engage with its partners on implementation of key socio-economic activities through the Socio-economic Advisory Body (holding six meetings to date) and the Socio-economic Working Group (15 meetings to date). The Socio-economic Advisory Body is made up of senior-level federal, territorial, municipal and Indigenous partners. Its role is to provide advice and guidance on socio-economic aspects of the Project and assist in identifying potential organizational barriers to successful implementation. The Socio-economic Working Group is made up of federal, territorial, municipal and Indigenous partners. Its purpose is to coordinate implementation of socio-economic activities.
- The Socio-economic Strategy identified key barriers that could limit the Project's ability to achieve socio-economic outcomes: insufficient Northern and Indigenous workforce capacity; fluctuating northern and Indigenous business or contracting capacity; and the risk of socio-economic effects offsetting Project benefits. To address these barriers, the Strategy identified 15 immediate and long-term activities; work is already underway on 10 of these. To make sure that the Project is well positioned to maximize socio-economic opportunities, the Socio-economic Working Group was joined by other experts in early February 2020 to identify actions (related to training, employment and procurement) for successful implementation of the Strategy over the 2020–2021 and 2021–2022 fiscal years. Between February and June of 2020, the actions will be refined and combined with the existing 15 strategies to develop a draft Socio-economic Implementation Plan 2020–2022.
- To make sure that the GMRP's Socio-economic Implementation Plan is reflective of changes in existing and newly added priorities, the Project will hold focus groups with its rights-holders and stakeholders in 2020–2021. The objectives of these focus groups are to provide current information about the Project and the Socio-economic Strategy; to share the Socio-economic Implementation Plan and discuss those items most relevant or of greatest interest to the participants in each focus group; and to identify opportunities to work together to support implementation of the Strategy, including specific actions for each organization and partner. The team has plans to meet with the Yellowknives Dene First Nation, the North Slave Métis Alliance, the Tłı̨chǫ, and the City of Yellowknife's Mayoral Task Force on Economic Development, and a group of relevant partners on the topic of potential social impacts.
- In June 2020, the project team and the Socio-economic Working Group, with advice from the Socio-economic Advisory Body, will develop targets for the Project, focusing on key performance indicators that encourage and drive performance and are more directly under the control or influence of the Project.
- The project team will review key performance indicators and adjust them in response to lessons learned from 2019–2020 reporting.

In 2020–2021, the Project plans to do the following activities:

- Advance the development of the evergreen 2020–2021 Socio-economic Implementation Plan with the Socio-economic Working Group and through bilateral meetings with the Yellowknives Dene First Nation, the North Slave Métis Alliance and the City of Yellowknife.
- Implement actions within the plan, including:
  - holding a session with social-service providers to discuss potential social effects of the Project and potential mitigation measures
  - holding another industry day with Indigenous governments and economic-development corporations, northern business organizations, and the City of Yellowknife, in collaboration with territorial and federal government partners
  - advancing a partnership on training coordination for the North Slave region, with representatives of the territorial Education, Culture and Employment and Industry, Tourism and Investment departments
- Undertake regular engagement with stakeholders, local businesses, and governments (such as the territorial government and the City of Yellowknife) to ensure adequate coordination across the parties to maximize the Project's socio-economic benefits.
- Hold focus groups in the fall of 2020 with its partners and further develop the Socio-economic Implementation Plan 2020–2022.
- Revisit the idea of establishing the Indigenous Benefits Plan Monitoring and Advisory Committee and exploring potential membership.

The FCSAP Expert Support Departments (Environment and Climate Change Canada, Health Canada, and Fisheries and Oceans Canada) all participate in the Giant Mine Working Group on an ongoing basis.

This project was funded through Canada's Federal Contaminated Sites Action Plan (FCSAP). FCSAP provides funding to assess and remediate federal contaminated sites and to reduce environmental and human-health risks from known federal contaminated sites. Starting in 2020–2021, this project will be funded through the Northern Abandoned Mine Reclamation Program.

United Keno Hill Mine Remediation Project

Location: Central Yukon
Custodian: Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)

The United Keno Hill Mines (UKHM) properties cover about 15,000 hectares near the former Elsa town site and the village of Keno City in central Yukon, approximately 350 km north of Whitehorse. An all-weather gravel highway connects the site to the town of Mayo, 60 km to the south. The site is within the traditional territory of the First Nation of Nacho Nyak Dun.

History

For over a century, the property operated under various ownership structures. From 1946 to 1989, 5,340,000 tons of ore were mined and milled, producing mainly silver, as well as lead and zinc. Production ceased in 1989. Attempts to re-open the mine in the 1990s were unsuccessful. On February 18, 2000, UKHM Limited filed for creditor protection. Several creditors tried to sell the assets but were unsuccessful, due to a lack of financing by potential buyers and the lack of a comprehensive plan to address the environmental issues on the site.

Environmental concerns associated with the site include:

- 19 open pits
- 65 underground workings, some of which are discharging contaminated water into nearby water courses
- 47 waste-rock dumps (estimated at over 5.5 million tonnes)
- tailings (estimated at over 4 million tonnes) with elevated concentrations of metals
- tailings dams, which have settled and were built without spillways
- approximately 216 abandoned buildings, some containing asbestos and other contaminants

Ownership and management

In June 2003, the property was declared abandoned under the *Waters Act (Yukon)* and *Quartz Mining Act (Yukon)*. As a result, it was classified in April 2003 as a Type II Site under the Yukon Northern Affairs Program Devolution Transfer Agreement, which sets out a cooperative (federal and territorial) approach to managing the site. The Agreement identifies the Government of Canada as financially responsible for historic environmental liabilities, while the Government of Yukon is responsible for the ongoing management.

On April 6, 2004, the Supreme Court of Yukon appointed Pricewaterhouse Coopers Inc. as interim receiver and receiver-manager of the property. It had a mandate to sell the assets and develop a long-term solution to the environmental issues at the mine site. Pricewaterhouse Coopers advertised the property for sale in January 2005. An evaluation process involving Pricewaterhouse Coopers and the federal and territorial governments concluded in July 2005 with the selection of Alexco Resource Corporation as the preferred purchaser.

In December 2007, the Government of Yukon determined that its role as the government project manager and contracting authority was not appropriate. As the site was no longer abandoned, the Government of Yukon requested that CIRNAC assume the role of government project manager and contracting authority. The overall project is now managed through a project team. The team consists of Alexco’s wholly owned subsidiary Elsa Reclamation and Development Corporation (ERDC) and CIRNAC, with the Government of Yukon and the First Nation of Nacho Nyak Dun taking on secondary roles.

Maintenance and closure

To protect human health, public safety and the environment, the project team has undertaken basic care and maintenance activities. These include compliance with the water licence, water management (pumping and treatment), surface and groundwater monitoring, building maintenance, continuous inspection and monitoring of dams, and site security.

To prepare for closure of the site, CIRNAC and ERDC have completed a comprehensive environmental site assessment of the property. They also developed a report that outlines remedial options to address the human-health and environmental risks. Consultations with the Government of Yukon and the First Nation of Nacho Nyak Dun selected preferred closure options, which the governments endorsed in 2014–2015. These preferred closure options involve stabilizing and capping mine openings, waste rock and tailings, and instituting a permanent water-management and treatment system.

Through a collaborative review process, with input from CIRNAC, the Government of Yukon, and the First Nation of Nacho Nyak Dun, ERDC prepared a reclamation plan with costing to an indicative level (approved by the Government of Canada on March 15, 2018). The reclamation plan informed the development and submission of the project proposal on September 28, 2018 to the Yukon Environmental Socio-economic Assessment Board (YESAB) for environmental assessment. YESAB issued an evaluation report on February 24, 2020, recommending that the reclamation project proceed, subject to 29 terms and conditions. The environmental assessment process will conclude in 2020–2021 with a decision document prepared jointly by CIRNAC and the Government of Yukon.

Activities in 2019–2020 included compliance with the renewed care and maintenance water licence, advancing the reclamation plan and costing from the indicative level toward the substantive level, with detailed engineering design activities, and conclusion of the YESAB process.

In 2020–2021, the Project aims to submit a water-use licence application to the Yukon Water Board and finalize detailed engineering design activities, advancing the reclamation plan with costing to a substantive level.

Public Services and Procurement Canada provides support to CIRNAC as a member of the project team and reviews content from a procurement and constructability perspective.

This project was funded through Canada’s Federal Contaminated Sites Action Plan (FCSAP). FCSAP provides funding to assess and remediate federal contaminated sites and to reduce environmental and human-health risks from known federal contaminated sites. Starting in 2020–2021, this project will be funded through the Northern Abandoned Mine Reclamation Program.

Goose Bay Remediation Project

Location: 5 Wing Goose Bay, Happy Valley-Goose Bay, Newfoundland and Labrador
Custodian: Department of National Defence (DND)

DND is committed to environmental sustainability and minimizing the impact of military operations on the environment. In 2009, the Department launched the Goose Bay Remediation Project to reduce potential risks to human health and the environment posed by contamination at the base. Most of the contamination was attributed to the past handling and storage of various substances over decades of military activities. Contaminants identified at the base included:

- petroleum hydrocarbons
- polycyclic aromatic hydrocarbons
- volatile organic compounds
- metals
- pesticides
- polychlorinated biphenyls

DND applied lessons learned from its previous remediation projects to the approach for the Goose Bay Remediation Project. DND considered all contaminated areas collectively to understand the overall environmental condition of the site. Through this analysis, 10 areas were identified for remediation and risk management.

The 2019–2020 fiscal year saw the end of the Goose Bay Remediation Project, with the completion of project reports and long-term monitoring plans for sub-projects where they are required. Though the Project itself has ended, the contaminated sites will remain open, as work outside the scope of the initial project continues.

DND used several technologies throughout the project for various contaminants and site characteristics. Fuel-recovery techniques, such as dual-phase and multi-phase vapour extraction, removed free-phase fuel from the subsurface. The Department also used landfarming, chemical oxidation and soil washing to treat contaminated soil. DND also used risk-management approaches at various sites – for example, by implementing a light non-aqueous phase liquid (LNAPL) framework, as numerous sites have free-phase liquid hydrocarbons. DND has also installed containment measures at historic dump sites and capped contaminated sediment.

Since 2004, the Goose Bay Remediation Project has engaged stakeholders in discussions about the causes, effects and remediation of the contamination at Goose Bay. Participants in these discussions included local residents; Indigenous groups (Innu, Métis and Inuit); local environmental organizations; regional, national and international industry representatives and science and engineering experts; and all levels of government. Engagement has taken place through a variety of public and one-on-one meetings, open houses, public presentations, industry workshops, and more. This engagement has been an important part of the project's progress and will continue throughout the project.

In addition, a Technical Advisory Group comprised of FCSAP Expert Support Department representatives was established early in the Project. The principal function of the Technical Advisory Group was to provide a technical forum for the Project team to disseminate information on project status and specific activities to members who have an interest in the Project. Throughout the duration of the Project, members participated in annual site visits and meetings as well as providing technical review of various reports (i.e. human health/ecological risk assessments, LNAPL Management Frameworks) when requested by DND.

This project was funded through Canada's Federal Contaminated Sites Action Plan (FCSAP). FCSAP provides funding to assess and remediate federal contaminated sites and to reduce environmental and human-health risks from known federal contaminated sites.

Esquimalt Harbour Remediation Project

Location: Victoria, British Columbia
Custodian: Department of National Defence (DND)

Launched in 2014, the Esquimalt Harbour Remediation Project is addressing historical contamination that accumulated in the harbour seabed during almost 200 years of commercial, military and industrial use. The Project is primarily funded by FCSAP, and is reducing ecological health risks associated with contaminated sediments in the harbour.

There are over 25 known contaminants in the harbour seabed, all of which exceed the Canadian Environmental Quality Guidelines for sediments. These contaminants include:

- metals (such as arsenic, cadmium, lead and mercury)
- polycyclic aromatic hydrocarbons
- organometals (such as tributyltin)
- dioxins, furans and polychlorinated biphenyls

Remediation projects in the Esquimalt Harbour are an investment for the future and have resulted in significant economic and environmental benefits for the region. The Esquimalt Harbour remediation work has already reduced ecological risks associated with contaminated sediments, minimized the potential for recontamination, and provided economic development opportunities for surrounding communities. This remediation work has also helped clear the way for vital infrastructure upgrades at Canadian Forces Base Esquimalt, which are providing modern and functional dockyard infrastructure to support the long-term operational success of the Royal Canadian Navy.

Specifically, DND removed contaminated sediments from six areas of the harbour where DND operates: A Jetty, B Jetty, C Jetty, ML Floats, Y Jetty and Lang Cove. In addition to this project, cleanup has progressed at five other areas of Esquimalt

Harbour, including: D Jetty, F/G Jetty, Ashe Head, Plumper Bay and Central Constance Cove. A harbour-wide risk-management plan is also being further refined to address any remaining contamination after the remediation of prioritized areas is completed.

During the 2019–2020 fiscal year, the sediment remediation work in Esquimalt Harbour passed several milestones:

- Remediation of the contaminated sediments around C Jetty and the ML Floats was completed in July 2019. It involved removing more than 37,000 m^3 of contaminated sediment and more than 155,000 tons of debris from this portion of Esquimalt Harbour. The first year of performance monitoring is planned for 2020–2021.
- The remediation of Y Jetty and Lang Cove progressed significantly. All of the remediation on the south side of Y Jetty finished by October 2019, with the removal of more than 30,000 m^3 of contaminated sediments. The remediation on the north side of Y Jetty and in Lang Cove started in November 2019 and is expected to be completed by June 2020.
- In July 2019, DND awarded a contract to remediate areas with contaminated sediments in the central part of Constance Cove. The Project completed 80% of the required remediation dredging by the end of March 2020 and is expected to finish by July 2020.
- Three years of post-remediation performance monitoring has been completed at D Jetty as well as at F/G Jetty, with the third year sampling and lab analysis completed in January 2020. All of the areas at D Jetty and F/G Jetty, except for one small dredge unit, have met all of the post-remediation objectives. The dredge unit showing some exceedances will be investigated further in 2020–2021 as part of the harbour-wide risk-management plan.
- Areas of B Jetty that had been remediated as part of the Esquimalt Harbour Remediation Project have also been subject to underwater rock removal as part of the A/B Jetty Recapitalization Project. Sediment sampling completed after the underwater blasting showed that further remediation is required near B Jetty, as well as adding 300 mm of clean sand as a residual management cover. Placement of this cover started in January 2020 and further remediation in the B Jetty area continues in 2020.

This project was funded through Canada’s Federal Contaminated Sites Action Plan (FCSAP). FCSAP provides funding to assess and remediate federal contaminated sites and to reduce environmental and human-health risks from known federal contaminated sites.

Appendix A – Program administration

In the 2019–2020 fiscal year, $19.9 million was spent on program management activities for custodians, the Federal Contaminated Sites Action Plan (FCSAP) Secretariat, Treasury Board of Canada Secretariat, and expert support services. The

breakdown of expenditures is shown in Table A.1. For a few departments, salary increases and retroactive payments due to the signature of new collective agreements, and changes to the rate used for employee benefit plans resulted in expenditures that exceeded the funding available. This has been paid by departmental funding not FCSAP.

Table A.1: Summary of FCSAP program management expenditures (2019–2020)

Department	Available FCSAP funding ($)	FCSAP expenditures ($)	Variance ($)*
Agriculture and Agri-Food Canada	70,000	70,000	0
Correctional Service of Canada	149,891	149,891	0
Crown-Indigenous Relations and Northern Affairs Canada	2,675,000	2,675,000	0
Environment and Climate Change Canada	-	-	-
Custodian	436,000	446,844	-10,844
Expert Support	2,534,980	3,131,779	-596,799
Secretariat	2,772,155	2,163,269	608,886
Fisheries and Oceans Canada	-	-	-
Custodian	907,000	902,127	4,873
Expert Support	2,112,846	2,467,026	-354,180
Health Canada (expert support)	2,114,958	2,311,195	-196,237
Indigenous Services Canada	2,222,885	2,222,885	0
Jacques Cartier and Champlain Bridges Incorporated	0	0	0
National Capital Commission	102,000	102,000	0
National Defence	1,138,124	1,124,776	13,348
National Research Council of Canada	0	0	0
Natural Resources Canada	0	0	0
Parks Canada Agency	362,800	243,357	119,443

Department	Available FCSAP funding ($)	FCSAP expenditures ($)	Variance ($)*
Public Services and Procurement Canada	-	-	-
Custodian	200,000	192,842	7,158
Expert Support	565,000	564,817	183
Transport Canada	594,909	594,909	0
Treasury Board of Canada Secretariat	535,000	567,787	-32,787
VIA Rail Canada	0	0	0
Adjustments	594,048	0	594,048
Total expenditures	**20,087,596**	**19,930,504**	**157,092**

*Variance = available FCSAP funding - FCSAP expenditures

Key activities

Custodians

In the 2019–2020 fiscal year, custodians continued to manage the federal contaminated sites for which they are responsible. This included activities related to program planning and reporting and responding to information requests from the FCSAP Secretariat. Custodians developed annual and long-term workplans in preparation for Phase IV.

Federal Contaminated Sites Action Plan Secretariat

In its role as Secretariat of the FCSAP program, Environment and Climate Change Canada (ECCC), with support from the Treasury Board of Canada Secretariat, continued to provide overall program oversight, support and administration.

In the 2019–2020 fiscal year, the FCSAP Secretariat performed activities in the following areas:

- **Program governance and oversight** – The FCSAP Secretariat continued to provide support to the governance committees, to provide advice on site eligibility, to manage the program performance and reporting requirements, and lead the resolution of operational and technical issues. The Secretariat also co-chaired and organized meetings for the Contaminated Sites Management Working Group, Director Generals Committee and Assistant Deputy Ministers Steering Committee, and other meetings as required. Likewise, it coordinated regional integrated planning board (RIPB) activities through the development of terms of reference, and participated in the meetings in support of custodians and expert support. The

Secretariat developed governance processes, including the governance schedule and the terms of reference for Phase IV governance committees; and worked with the Treasury Board of Canada Secretariat to revise guidance and procedures for the Shared-Responsibility Contaminated Sites Project Funding Framework.

- **Engagement and outreach** – The FCSAP Secretariat participated in both the Planning and Technical Committees of the Real Property Institute of Canada (RPIC) Federal Contaminated Sites Regional Workshop (held in Halifax, Nova Scotia on June 4–5, 2019) and organized a booth and participated in several presentation sessions there. It also organized and participated in the biennial Expert Support Workshop and regular meetings with Expert Support National Coordination Offices to ensure a consistent approach to the provision of technical advice and harmonized messaging on program and policy issues. Internationally, the Secretariat engaged with the Government of Rwanda to support the memorandum of understanding signed by Canada and Rwanda to strengthen international environmental cooperation.
- **Performance monitoring and reporting** – The FCSAP Secretariat published the 2016–2017 FCSAP annual report, drafted the 2017–2018 and 2018–2019 annual reports and coordinated approvals and communications. It updated the federal contaminated sites web portal, prepared documentation to announce FCSAP Phase IV in July 2019; published the *Process for the Development, Review and Publication of FCSAP Guidance Documents*, and continued to coordinate the review and approval of new guidance documents.
- The Secretariat also coordinated the revision of performance indicators in the "results and delivery" section of the Phase IV Treasury Board submission, including setting up working groups and soliciting feedback from results groups and custodians. It worked closely with federal custodians and Treasury Board of Canada Secretariat to ensure that information reported to the Federal Contaminated Site Inventory (FCSI) was accurate and complete.
- **Strategic planning** – The FCSAP Secretariat led program improvements in the Memorandum to Cabinet for program renewal (2020–2034), and led the development of the Phase IV Treasury Board submission (2020–2024). The Secretariat also surveyed custodians to understand how they could provide support going into Phase IV of FCSAP; this input guided the Secretariat's work with expert support departments to develop guidance documents and tools that would help custodians with the FCSAP renewal. The Secretariat also collaborated with the expert support departments to implement changes of the renewed FCSAP program at the outset of Phase IV.

Treasury Board of Canada Secretariat

In 2019–2020, the Treasury Board of Canada Secretariat (TBS) supported ECCC in the management of the FCSAP program through the provision of strategic advice and guidance. In this role, TBS:

- supported ECCC in the approval process for the memorandum to Cabinet for program renewal and the Treasury Board submission to access funding for

FCSAP Phase IV
- supported ECCC in monitoring government-wide progress on federal contaminated sites by participating in key program activities such as annual reporting and the FCSAP program evaluation
- maintained and enhanced the FCSI through improved reporting and mapping functionality
- supported custodians in meeting their FCSI reporting requirements
- responded promptly to public enquiries about FCSAP
- supported delivery of the RPIC Federal Contaminated Sites Regional Workshop

Expert support departments

In 2019–2020, expert support departments continued to develop guidance documents and deliver training on the management of federal contaminated sites. They also provided advice, conducted reviews of contaminated-site management projects, and promoted innovative and sustainable remediation technologies. Highlights on each of the departments' activities are provided below.

Fisheries and Oceans Canada (DFO) provided scientific and technical advice to custodians on the management of their contaminated sites in relation to risks and impacts to fish and fish habitat. DFO conducted 115 site-classification reviews to confirm eligibility for FCSAP funding. It also conducted reviews of 34 technical documents in support of site assessment and remediation and risk management, to ensure that the potential impacts to fish and fish habitat were appropriately considered, and to promote compliance with relevant legislation and regulations.

To develop guidance material and provide expert advice and training on the management of FCSAP sites to custodial departments, DFO:

- provided updates to the FCSAP *Ecological Risk Assessment Guidance* document, including addition of aquatic components;
- supported development of two draft technical memos on fish-toxicity reference values;
- initiated updates to aquatic-based FCSAP guidance and tools (such as the FCSAP Framework for Addressing and Managing Aquatic Contaminated Sites) to align with the 2019 changes to the *Fisheries Act*;
- developed and delivered an internal in-class training session on the FCSAP Aquatic Sites Classification System in October 2019; and
- developed and delivered an internal in-class training session on Phase II and III environmental site assessments in October 2019.

DFO also participated in FCSAP national and regional interdepartmental working groups and site-specific technical committees.

Environment and Climate Change Canada (ECCC) acted as a one-stop shop for all regional expert services to federal custodial departments for the management of their contaminated sites. The Department coordinated expert support activities in regions involving the other expert support departments; this included the important transition

from interdepartmental regional working groups to RIPBs, project-update meetings and integrated work planning. ECCC reviewed the site-classification scores and site-specific technical reports submitted by custodians, and provided them with technical advice on the assessment, remediation and risk management of their contaminated sites. ECCC also disseminated information on program tools and guidelines, shared lessons learned, addressed custodians' needs and oversaw national consistency.

Some specific achievements include the following:

a. ECCC implemented the regional integrated planning boards.
b. In collaboration with the other expert support departments, ECCC reviewed 115 site classifications submitted by custodians to confirm eligibility for funding and reviewed 50 technical documents to assist custodians with their assessment and remediation projects and to promote regulatory compliance.
c. ECCC developed or contributed to the development or the updating of guidance documents on the management of FCSAP sites in the following areas:
    - ecological risk assessment: general guidance, defining background conditions and using background concentrations, ecological risk assessment for amphibians, and default wildlife-toxicity reference values
    - monitored natural attenuation in soil and groundwater
    - management of sites contaminated with light non-aqueous phase liquids
    - implementation of the Canada-wide standard for petroleum hydrocarbons in soil
    - management and treatment of values below the detection or quantification limit
    - provision of consistent expert advice
    - site classification reviews in Phase IV
d. ECCC provided training to custodians and Expert Support Departments on the following subjects:
    - ecological risk assessment
    - Tiers I and II of the Canadian Council of Ministers of the Environment (CCME) Canada-wide standard for petroleum hydrocarbons in soil
    - the *Species at Risk Act*
    - ERA Module 5 on defining background conditions and using background concentrations
    - awareness about Indigenous peoples
    - reference values (CCME guidelines and other environmental quality criteria) and the National Classification System for Contaminated Sites and the Aquatic Sites Classification System

Health Canada continued to provide scientific and technical advice to federal custodians. This involved close collaboration with the other expert support departments on addressing current and emerging chemical issues, such as perfluorooctane sulfonate and perfluorooctanoic acid, as they relate to federal contaminated sites.

More specifically, Health Canada's activities included:

- continued development of five human health risk assessment (HHRA) guidance documents
- responding to 144 requests from custodians for expert review, participating in 17 site visits, and providing input to 18 environmental assessments
- participating in national and regional working-group meetings, as well as in regularly scheduled and as-needed interdepartmental meetings
- developing and presenting three in-class training sessions to custodians and consultants on general HHRA, and on oral bioavailability considerations in an HHRA – as well as co-hosting seven regional ECCC-led training sessions for custodians
- delivering five presentations and two posters on HHRA topics related to poly- and perfluoralkylated substances (PFAS) to external audiences and one paper published in a journal

Public Services and Procurement Canada (PSPC) continued to provide project management and procurement advice to federal custodians and developed tools, such as the FCSAP Project Readiness Form, in collaboration with a working group. PSPC collected and shared innovative and sustainable approaches with industry – for example, two new technology profiles are now available along with the existing ones. PSPC also addressed procurement issues and informed the private sector about the federal demand for services. Consequently, PSPC developed the FCSAP Interactive Map Tool to complement the FCSAP Phase IV Contaminated Sites Demand Forecast Analysis Report, which were presented to industry on five occasions across the country to approximately 400 participants. PSPC also organized the RPIC Federal Contaminated Sites Regional Workshop on PFAS and Other Emerging Contaminants, and hosted two short courses on dredging and materials management, both in Halifax. Finally, PSPC supported the integrated planning of FCSAP Phase IV by co-chairing the RIPBs.

Appendix B – Data tables

Table B.1: Available assessment funding and expenditures, by custodian (2019–2020)

Custodian	Number of sites with activity	Available FCSAP funding ($)*	FCSAP assessment expenditure ($)	Custodian expenditures (cost share) ($)	Total expenditures ($)
AAFC	0	0	0	0	0
CIRNAC	0	0	0	0	0
CSC	0	0	0	0	0
DFO	3	254,590	230,425	57,606	288,031
DND	7	298,327	298,327	74,582	372,909

Custodian	Number of sites with activity	Available FCSAP funding ($)*	FCSAP assessment expenditure ($)	Custodian expenditures (cost share) ($)	Total expenditures ($)
ECCC	2	128,000	128,000	42,047	170,047
ISC	62	973,826	973,826	279,832	1,253,658
JCCBI	0	0	0	0	0
NCC	16	150,233	150,233	37,558	187,791
NRC	0	0	0	0	0
NRCan	1	53,124	53,124	0	53,124
PCA	6	315,100	262,704	159,296	422,000
PSPC	0	0	0	0	0
TC	0	0	0	0	0
VIA Rail	0	0	0	0	0
Total	**97**	**2,173,200**	**2,096,639**	**650,921**	**2,747,560**

* Funding available = funding allocated from TB submission + any funding reprofiled/carried forward/cash managed from previous years + any funding transferred from another custodian (or minus any funding transferred to another custodian)

Table B.2: Available remediation funding and expenditures, by custodian (2019–2020)

Custodian	Number of sites with activity	Available FCSAP funding ($)	FCSAP remediation expenditures ($)	Custodian expenditures (cost share) ($)	Total expenditures ($)
AAFC	1	92,000	92,000	27,056	119,056
CIRNAC	50	189,813,150	176,418,671	13,714,390	190,133,061
CSC	3	120,000	107,781	19,020	126,801
DFO	76	4,008,780	3,622,925	652,851	4,275,776
DND	83	107,630,753	76,554,161	2,562,984	79,117,145
ECCC	9	37,369,230	22,389,636	1,892,150	24,281,786
ISC	69	24,044,688	24,044,688	5,380,325	29,425,013

Custodian	Number of sites with activity	Available FCSAP funding ($)	FCSAP remediation expenditures ($)	Custodian expenditures (cost share) ($)	Total expenditures ($)
JCCBI	2	3,852,911	1,358,494	239,734	1,598,228
NCC	19	9,881,601	3,381,924	593,523	3,975,447
NRC	0	0	0	0	0
NRCan	1	335,721	20,305	0	20,305
PCA	22	4,268,400	2,808,469	377,527	3,185,996
PSPC	20	26,485,757	21,793,372	3,298,595	25,091,967
TC	33	30,375,277	25,560,076	1,555,704	27,115,780
VIA Rail	0	0	0	0	0
Total	**388**	**438,278,268**	**358,152,502**	**30,313,859**	**388,466,361**

Table B.3: Program-level summary of available FCSAP funding (2019–2020)

FCSAP funds	Program management ($)	Assessment ($)	Remediation ($)	Total ($)
FCSAP funding approved for 2019–2020	19,211,739	1,932,450	281,834,847	302,979,036
FCSAP funding brought forward from previous fiscal years	235,924	652,251	156,077,805	156,965,980
FCSAP funds received from another custodian (+)	0	0	0	0
FCSAP funds given to another custodian (-)	0	0	0	0
FCSAP funds internally transferred to another stream (assessment, remediation, program management) (±)	45,885	-411,501	365,616	0
Adjustments	594,048	0	0	594,048
Total available FCSAP funding	20,087,596	2,173,200	438,278,268	460,539,064

Table B.4: Program-level summary of FCSAP expenditures and variance (2019–2020)

FCSAP funds	Program management ($)	Assessment ($)	Remediation ($)	Total ($)
Total available FCSAP funding	20,087,596	2,173,200	438,278,268	460,539,064
FCSAP expenditures	19,930,504	2,096,639	358,152,502	380,179,644
Total variance	157,092	76,561	80,125,766	80,359,420
Explanation of variance:	-	-	-	-
FCSAP funds reprofiled to a future year	13,348	0	59,41`0,026	59,423,374
FCSAP funds carried forward to a future year	119,443	75,510	9,662,301	9,857,254
Internal cash-management of FCSAP funds to a future year	0	0	8,334,196	8,334,196
Lapsed FCSAP funds	24,301	1,051	2,719,246	2,744,598

Filter items Showing 1 to 10 of 388 entries**Show** 10 **entries**

Table B.5: List of remediation sites funded by FCSAP (2019–2020)

Custodian	Site name	Federal site identifier	Province/ Territory	FCSAP remediation expenditures ($)	Custodian expenditures ($)
AAFC	The Atlantic Food and Horticulture Research Centre	02731004	NS	92,000	27,056
CIRNAC	Arctic Gold and Silver	C2506001	YT	987,479	174,261
CIRNAC	BAF 5 - Resolution Island	C1017001	NU	2,270,789	400,727
CIRNAC	Bathurst Island - Bent Horn (Cameron Island)	00024167	NU	329,077	58,072

Custodian	Site name	Federal site identifier	Province/ Territory	FCSAP remediation expenditures ($)	Custodian expenditures ($)
CIRNAC	Bathurst Island - Île Vanier	00000282	NU	476,253	84,045
CIRNAC	Bathurst Island - N-12 Allison R	00025589	NU	224,817	39,674
CIRNAC	Bathurst Island - Young Inlet (east of Humphries Hill)	00000266	NU	131,414	23,191
CIRNAC	Beaulieu Mine (John Lake; Brandy, Irene, Norma, Tungsten and Gold Mines Limited)	00023544	NT	75,115	13,256
CIRNAC	Blanchet Island Mine (HRL Claims)	00000402	NT	94,826	16,734
CIRNAC	Bullmoose Lake Mine (formerly Mann Lake)	00000068	NT	237,029	41,829

1 2 3 4 5 39 Next

Appendix C – Environmental liability for Federal Contaminated Sites

Environmental liabilities are the estimated costs related to the remediation or risk management of contaminated sites for which the Government of Canada is obligated, or will likely be obligated, to incur costs. FCSAP is aimed to address specifically remediation liability. A contingent liability is disclosed when the Government's obligation to a contaminated site is unknown and where future events are expected to resolve the uncertainty. Recording environmental liability is a requirement of the Treasury Board *Directive on Accounting Standards*; liabilities are reported annually in the Public Accounts of Canada. [2]

According to Treasury Board of Canada Secretariat guidance, an environmental liability for the remediation of contaminated sites is recognized when all of the following criteria are satisfied:

- an environmental standard exists,
- contamination exceeds the environmental standard,
- the Government is directly responsible or accepts responsibility,
- it is expected that future economic benefits will be given up, and
- a reasonable estimate of the amount can be made.

The Government has identified 6,860 sites where contamination may exist and where assessment, remediation and monitoring may be required. Of these, the Government has identified 2,444 sites where action is required and for which a gross liability of $7.117 billion has been recorded. This liability estimate was based on site assessments performed by environmental experts. Moreover, to estimate the liability for a group of unassessed sites, the Government uses a statistical model based on a projection of the number of sites that will proceed to remediation and on current and historical costs. This group includes 3,562 unassessed sites, of which 1,464 sites are projected to proceed to remediation and for which an estimated liability of $258 million has been recorded. These two estimates, based on information available on March 31, 2020, total $7.375 billion, the Government's best estimate of the costs required to remediate sites to the current minimum environmental standard.

For the remaining 854 sites, the Government has recognized no liability for remediation. Some of these sites are at various stages of testing and evaluation; if remediation is required, liabilities will be reported as soon as a reasonable estimate can be determined. For other sites, the Government does not expect to give up any future economic benefits, as there is likely no significant environmental impact or human-health threats. These sites will be re-examined and a liability for remediation will be recognized if future economic benefits will be given up.

Table C.1: Changes in total liability for remediation of contaminated sites (2019–2020)

	March 31, 2019 ($)	March 31, 2020 ($)	Difference ($)
Opening balance	5,710,488,358	6,478,074,737	767,586,379
Less: expenditures reducing opening liabilities	583,549,885	585,673,239	2,123,354
Add: changes in estimated remediation costs	1,127,718,946	1,428,328,494	300,609,548
Add: new liability for sites not previously recorded	223,417,318	54,418,978	-168,998,340
Closing balance (gross)	6,478,074,737	7,375,148,970	897,074,233
Less: Expected recoveries[a]	23,161,964	25,655,597	2,493,633

	March 31, 2019 ($)	March 31, 2020 ($)	Difference ($)
Closing balance (net)	**6,454,912,773**	**7,349,493,373**	**894,580,600**

[a] An expected recovery is reported when it is likely that a recovery will be received by the Crown and a reasonable estimate of the amount of the recovery can be made.

Table C.2: Estimated remediation liability for federal contaminated sites that may be eligible for FCSAP (2019–2020)

	March 31, 2019 ($)	March 31, 2020 ($)	Difference ($)
Total liability for remediation of contaminated sites[a]	6,478,074,737	7,375,148,970	897,074,233
Less[b]: Atomic Energy of Canada Limited	1,054,978,000	877,196,000	-177,782,000
Less[b]: Canada Border Services Agency	1,317,794	1,770,812	453,018
Less[b]: Canadian Broadcasting Corporation	352,000	273,000	-79,000
Less[b]: Global Affairs Canada	15,934	16,253	319
Less[b]: Royal Canadian Mounted Police	11,088,614	11,260,019	171,405
Less[b]: Windsor-Detroit Bridge Authority	19,523,000	9,088,000	-10,435,000
Less[b]: Expected recoveries	23,161,964	25,655,597	2,493,633
Estimated remediation liability for federal contaminated sites that may be eligible for FCSAP	**5,367,637,431**	**6,449,889,289**	**1,082,251,858**

[a] Total liability for remediation of contaminated sites, as reported in the Public Accounts of Canada, 2020.

[b] Some organizations are not part of FCSAP, as they have their own funding sources or their sites do not meet the eligibility requirements of FCSAP.

Table C.3: Estimated remediation liability for federal contaminated sites that may be eligible for FCSAP, by participating custodian (2019–2020)

Custodian	March 31, 2019 ($)	March 31, 2020 ($)	Difference ($)
Agriculture and Agri-Food Canada	5,978,858	9,284,096	3,305,238
Correctional Service of Canada	3,211,004	2,649,382	-561,622

Custodian	March 31, 2019 ($)	March 31, 2020 ($)	Difference ($)
Crown-Indigenous Relations and Northern Affairs Canada	3,772,146,710	4,361,394,318	589,247,608
Environment and Climate Change Canada	213,611,159	206,021,558	-7,589,601
Fisheries and Oceans Canada	226,345,681	268,022,078	41,676,397
Indigenous Services Canada	38,534	379,387,007	379,348,473
Jacques Cartier and Champlain Bridges Incorporated	26,592,000	34,396,000	7,804,000
National Capital Commission	65,354,000	63,901,000	-1,453,000
National Defence	526,425,304	541,307,536	14,882,232
National Research Council of Canada	3,458,402	2,358,615	-1,099,787
Natural Resources Canada	1,800,845	1,866,717	65,872
Parks Canada Agency	76,892,665	96,177,742	19,285,077
Public Services and Procurement Canada	239,334,375	253,480,574	14,146,199
Transport Canada	228,297,858	250,208,263	21,910,405
VIA Rail Canada Inc.	1,312,000	5,090,000	3,778,000
Less: Expected recoveries	23,161,964	25,655,597	2,493,633
Estimated remediation liability for federal contaminated sites that may be eligible for FCSAP	**5,367,637,431**	**6,449,889,289**	**1,082,251,858**

Source: Public Accounts of Canada, 2020

1 These custodians were AAFC, CIRNAC, CSC, DFO, DND, ECCC, ISC, JCCBI, NCC, NRCan, PCA, PSPC and TC.

2 Public Accounts of Canada, 2020, Volume I (PSPC, 2020)

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