

CHAPTER 3

Federal Contaminated Sites and Their Impacts

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Federal Contaminated Sites and Their Impacts

Main Points

What we examined

Causes of environmental contamination vary widely, from ongoing pollution to the long-term legacy of abandoned mines, underground oil tanks, and others. Often environmental impacts and their costs to the public purse can still be felt decades after an activity has ended.

In 1989, the federal government and the provinces recognized the importance of remediating contaminated sites in Canada. The Office of the Auditor General first audited federal activities involving federal contaminated sites in 1995, when only a few thousand sites had been identified. By March 2011, the government had identified around 22,000 sites of suspected or actual contamination in the Federal Contaminated Sites Inventory. The inventory includes contaminated sites under federal custodianship as well as non-federal sites for which the government has accepted responsibility. Federal contaminated sites range in size and type from small areas of soil contaminated by spilled fuel to very large abandoned mine sites that are contaminated by heavy metals and other toxic substances.

We examined how the federal government manages and reports actions taken to address the contaminated sites in its inventory, including the financial impact of environmental damage arising from them. Audit work for this chapter was substantially completed on 6 March 2012. More details on the conduct of the audit are in **About the Audit** at the end of this chapter.

Why it's important

Contaminated sites pose numerous risks to human health and the environment. Thousands of federal contaminated sites exist across Canada in both urban and rural settings. Unless managed properly, contaminated sites can lead to significant contamination of water, soil, and air, which can threaten human health and the environment. They can also result in land being taken out of productive use, and can jeopardize the way of life of those who depend on the land for a living.

What we found

- The government has established systems and processes to assess the risks on its individual contaminated sites as well as the current or potential adverse impact of a site on human health and the environment. It also has a process to prioritize sites for action based on the level of concern they pose. However, there is lack of a standard site closure reporting system. At the time of our audit, management was in process of developing a standard site closure tool for sites funded under the Federal Contaminated Sites Action Plan (FCSAP).
- Action on federal contaminated sites has increased over the past six years under the FCSAP program. Progress has been made with about one third of the total federal inventory of contaminated sites recorded as closed and not requiring further action as of March 2011. However, many sites remain to be remediated, and federal custodians had not begun assessments of about one half of the active sites in the federal inventory as of March 2011. As a consequence, the full extent of risks that federal contaminated sites present to the environment and human health remains unknown as well as the financial exposure of these sites.
- The government lacked a consolidated plan with clear and measurable expectations for all contaminated sites that identifies what departments with custodial responsibilities for contaminated sites need to accomplish and by when. A performance measurement strategy for the FCSAP program was approved in January 2012 to be implemented over the next few years.
- As of March 2011, the estimated financial liability for dealing with federal contaminated sites exceeded the amount of dedicated funding remaining under the FCSAP program by about \$500 million. As a result, there is risk that contaminated sites will not be sufficiently addressed.
- Public transparency can be improved by disclosing what has been accomplished for costs incurred. While about \$1.5 billion has been spent addressing federal contaminated sites, a performance measurement and reporting system does not exist to allow Parliament to determine the value for money of the government's approach to managing all federal contaminated sites.

The departments have responded. The departments agree with our recommendations. Their detailed responses follow each recommendation throughout the chapter.

Introduction

Federal contaminated sites

3.1 Contaminated sites contain substances that pose, or are likely to pose, a hazard to human health or the environment. More specifically, a contaminated site is one at which substances occur at concentrations above background levels and pose, or are likely to pose, an immediate or long-term hazard to human health or the environment, or exceed the levels specified in policies and regulations. Such sites are found all across Canada, with some in urban settings and others in remote areas.

3.2 Contaminated sites are a long-standing concern that this Office first reported on in 1995. At that time, the government had identified a few thousand such sites. As of March 2011, about 22,000 actual, suspected, or closed contaminated sites were listed in a federal inventory. Contamination at these sites can affect the integrity of soil, water, and air; may jeopardize the health of people who live or work near these sites; and may harm natural flora and fauna. Contaminants include toxic and hazardous substances, such as petroleum products, heavy metals, and radioactive materials.

3.3 Beyond the environmental risks associated with these sites, the financial implications they represent to the federal government are significant. Since 2005, the federal government has spent about \$1.5 billion to address the problem.

3.4 The contaminated sites referred to in this audit are sites that became contaminated due to operations of the federal government, and tenants on federal lands. In thousands of cases, environmental damage took place decades before the government introduced tighter regulations on pollution and toxic substances. Contamination has resulted from a range of activities, including dumping of hazardous waste, spills, leaks from fuel tanks, and improper decommissioning of industrial sites.

3.5 The federal government is one of the largest landowners in Canada. Its portfolio includes land and natural resources in northern regions of the country along with pockets of land scattered across the country, such as military bases and training areas, airports, ports and harbours, laboratories, and other areas used for federal operations. The federal government also takes responsibility for contaminated sites on Aboriginal reserves.

3.6 In some cases, the government inherited contaminated sites from other parties. That is the case in the northern territories, where private mining companies extracted gold and other metals under federal permits. When these mines were abandoned or the owner went bankrupt, the sites, including the liability for remediating them, reverted to the federal government as the landowner.

Responsibilities for managing contaminated sites

3.7 Over 20 federal entities are involved in managing contaminated sites across Canada (Exhibit 3.1).

Exhibit 3.1 Key responsibilities for managing federal contaminated sites

Organization	Responsibilities
Treasury Board of Canada	<ul style="list-style-type: none"> Approves policy for the management of real property and approves allocation of approved funding.
Treasury Board of Canada Secretariat	<ul style="list-style-type: none"> Develops and monitors implementation of policy. Maintains the Federal Contaminated Sites Inventory. Supports Environment Canada in administering the Federal Contaminated Sites Action Plan (FCSAP) program.
Environment Canada (FCSAP Secretariat)	<ul style="list-style-type: none"> Administers and coordinates the FCSAP program across the federal government.
Custodian departments, agencies, and Crown corporations (custodians)	<ul style="list-style-type: none"> Administer property and buildings on federal lands. Identify, assess, manage, and remediate contaminated sites. Input and maintain data in the Federal Contaminated Sites Inventory.
Expert support departments: Environment Canada, Fisheries and Oceans Canada, Public Works and Government Services Canada, Health Canada	<ul style="list-style-type: none"> Provide scientific and technical assistance to custodians.

Risk manage—Select and implement a strategy to control risk, then monitor and evaluate the effectiveness of that strategy. Risk management may include direct remedial actions or other strategies that reduce the probability, intensity, frequency, or duration of the exposure to contamination. This includes warnings, access restriction, or change in land use.

Remediate—Improve a contaminated site to prevent, minimize, or mitigate damage to human health or the environment. Remediation involves developing and applying a planned approach that removes, destroys, contains, or otherwise reduces the impact of contaminants.

Source: Contaminated Sites Management Working Group

Enterprise Crown corporation—A government-owned entity that is mostly self-sustaining through commercial revenues.

3.8 Departments receive direction through the Treasury Board policy on the management of real property. Under this policy, departments are required to

- assess, classify, and **risk manage** known and suspected contaminated sites to determine the most appropriate and cost-effective course of action;
- prioritize sites posing the highest human health and ecological risks;
- manage the activities (including **remediation**) needed for current or intended federal use, guided by standards approved by the Canadian Council of Ministers of the Environment; and
- recover the cost of managing contamination caused by others, when economically feasible.

3.9 The Treasury Board of Canada Secretariat maintains a database called the Federal Contaminated Sites Inventory. Custodians put data into this inventory, which serves as a record of basic information on sites for which the Government of Canada has accepted responsibility. The inventory includes such information as location of the site, contaminants, quantity of contamination, proximity to human population, and current status of each site. The inventory does not include contaminated sites owned by **enterprise Crown corporations**, other levels of government, or the private sector.

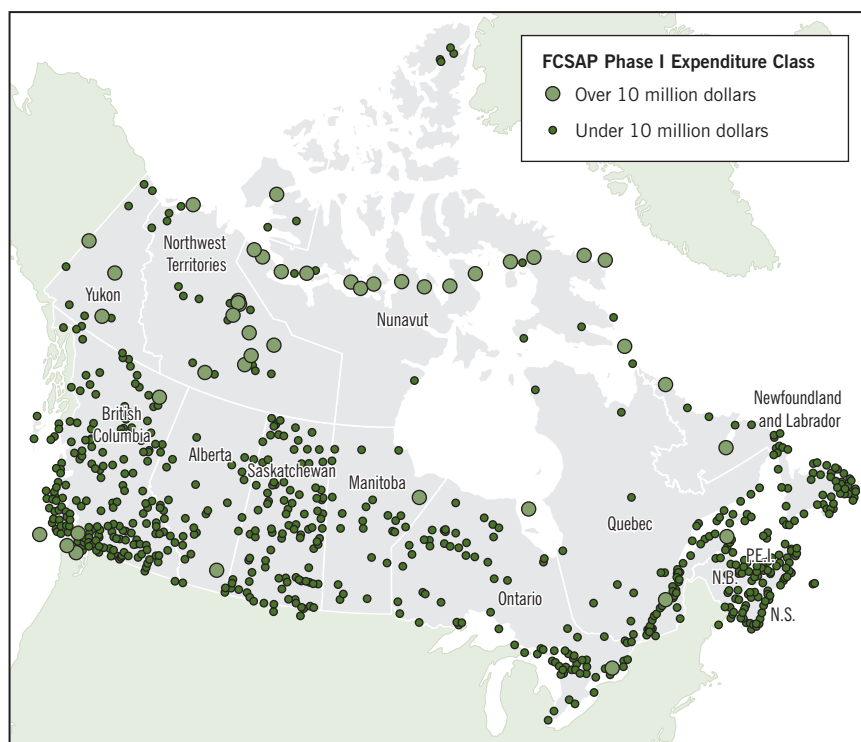
3.10 For many sites, the entire process from identification to remediation can be done in a relatively short time. However, Environment Canada estimates that about 13 percent of the sites will take 10 or more years to complete the process. This is often the case for larger sites, such as abandoned mines in the northern territories. Some sites might need care and maintenance or monitoring for a few years, for decades, or into perpetuity. Addressing contaminated sites is often a complex task, involving long timelines and major expenditures now and into the future.

3.11 The Federal Contaminated Sites Action Plan program.

In 2005, the federal government created the Federal Contaminated Sites Action Plan (FCSAP) program. This \$3.5 billion, 15-year cost-sharing program, which Environment Canada administers, assists custodians with the costs of assessing and taking action for higher-risk sites. The program has two key goals: to reduce the risks to human health and the environment from these sites and to reduce the financial liability for known federal contaminated sites by 2020. The program is divided into three phases: Phase I ended in March 2011, Phase II ends in 2016, and Phase III ends in 2020.

3.12 The FCSAP program financially supports projects in all regions of the country (Exhibit 3.2) that meet certain administrative criteria and technical requirements. Only sites where contamination occurred before 1998 are included. About 8,200 sites received funding under the program. This is just over one third of the total number of sites listed in the federal inventory as at March 2011.

Exhibit 3.2 Sites funded through the Federal Contaminated Sites Action Plan (FCSAP) are found across the country



Source: Treasury Board of Canada Secretariat, Federal Contaminated Sites Inventory

Public Accounts and environmental liabilities

3.13 As reported in the Public Accounts of Canada, the financial liability to remediate or otherwise risk manage about 2,200 contaminated sites was estimated at \$4.3 billion as of 31 March 2011. This estimate is based on Canadian public sector accounting standards and criteria for recognizing a financial liability. An environmental liability for a site is established when

contamination occurs, when there is a federal obligation or likely obligation to incur remediation costs, and when a reasonable estimate can be made of the amount involved. The Public Accounts are not intended to report all possible future costs or environmental risks associated with federal contaminated sites, unless accounting criteria are met. Exhibit 3.3 shows the composition of recorded environmental financial liabilities.

3.14 In addition to the FCSAP program, there are three other major initiatives that address contaminated sites or facilities for which the federal government has accepted some or all financial responsibility.

- **Port Hope Area Initiative.** This initiative was approved in 2000 to address historic low-level radioactive waste sites in the Port Hope, Ontario area. The current estimated financial liability for this initiative is \$1.1 billion. These sites are included in the Federal Contaminated Sites Inventory but are not funded by the FCSAP program. They are funded through Natural Resources Canada.
- **Nuclear Legacy Liabilities Program.** This program was approved in 2006 to address the decommissioning of research facilities, contaminated lands, and radioactive waste of Atomic Energy Canada Limited. The current estimated financial liability of the program is about \$3.3 billion. These facilities are not included in the Federal Contaminated Sites Inventory and are not funded by the FCSAP program. They are funded through Natural Resources Canada.
- **Shared-Responsibility Contaminated Sites.** These sites are those where the federal government has agreed to share responsibility for the costs to remediate them. They include the Sydney Tar Ponds in Nova Scotia, the Marwell Tar Pit in the Yukon, and the Gunnar uranium mine in Saskatchewan. These sites are not included in the Federal Contaminated Sites Inventory and are not funded by the FCSAP program. Federal contributions are funded through a separate pool of funds of up to \$500 million, approved in 2004.

3.15 Exhibit 3.3 shows the administrative structure and financial makeup of contaminated sites.

Exhibit 3.3 Programs and initiatives reported sizeable environmental liabilities

Public Accounts—environmental liabilities as at 31 March 2011	In billions of dollars
Contaminated sites	
Sites within the Federal Contaminated Sites Inventory	
• Sites in the Federal Contaminated Sites Action Plan (FCSAP) program	\$2.4
• Port Hope Area Initiative	\$1.1
• Site liabilities not covered by the FCSAP program	\$0.5
Sites of Crown corporations and a shared site	\$0.3
	\$4.3
Asset restoration	
Nuclear Legacy Liabilities Program	\$3.3
Others	\$0.1
	\$3.4
Total environmental liabilities reported	\$7.7

Source: Public Accounts and Federal Contaminated Sites Inventory

Previous audit work

3.16 Our 2002 October Report of the Commissioner of the Environment and Sustainable Development, Chapter 2, The Legacy of Federal Contaminated Sites, reported on our audit of the management of contaminated sites. In that audit we found that the federal government did not know how many sites it had, the health and environmental risks these sites represented, or the likely cost of cleaning them up. Also, the government was not providing central leadership and an action plan for dealing with higher-risk sites. The audit made several recommendations to address these issues, which were accepted.

3.17 We conducted a follow-up audit in 2008. In our Status Report of the Commissioner of the Environment and Sustainable Development, Chapter 3, Chemicals Management—Federal Contaminated Sites, we reported that four departments we examined were putting significant effort into managing their contaminated sites. We also noted that the government had allocated \$1.5 billion over five years to deal with its sites. The government had also established the FCSAP program. We concluded that satisfactory progress had been made since 2002.

Focus of the audit

3.18 We examined whether selected federal entities have appropriate systems in place to manage and report the financial impact of environmental damage arising from federal contaminated sites. We examined the data in the Federal Contaminated Sites Inventory and reviewed information provided to Parliament regarding federal contaminated sites.

3.19 The audit focused on the Federal Contaminated Sites Inventory, including those sites funded by the Federal Contaminated Sites Action Plan program, and on administrative activities within selected custodian departments. The scope of our audit included

- Environment Canada,
- Treasury Board of Canada Secretariat,
- Aboriginal Affairs and Northern Development Canada,
- Fisheries and Oceans Canada, and
- Natural Resources Canada.

3.20 More details about the audit objective, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

Observations and Recommendations

Environmental risks

A process has been established for assessing risks and prioritizing actions

3.21 As part of our audit, we examined whether the government had put in place processes to assess the risks of contaminated sites to human health and the environment.

3.22 The Treasury Board's Framework for the Management of Risk requires departments to establish effective and transparent risk management practices to help achieve organizational objectives.

3.23 Effective risk management practices are key to identifying the nature and extent of risk that contaminated sites pose to human health and the environment. Determining risk is an important step in deciding what remediation or risk management actions may be needed, how extensive they should be, and how much they will cost.

3.24 We found that custodians use a scoring system developed by the Canadian Council of Ministers of the Environment. This Council is made up of environment ministers from the federal, provincial, and

territorial governments. The scoring system is designed to evaluate and classify contaminated sites so they can be prioritized for action based on the level of concern they pose (Exhibit 3.4).

Exhibit 3.4 Contaminated sites are classified based on their level of risk

Class 1: Site is rated as high risk with a high priority for action.

Class 2: Site is rated as medium risk with a medium priority for action.

Class 3: Site is rated as low risk. Based on available information, the site is currently not a high concern. Additional investigation may be required to confirm the site classification.

Class N: Site is not a priority for action.

Class INS: Insufficient information to classify a site.

Source: Canadian Council of Ministers of the Environment

3.25 Also, the government has a comprehensive 10-step process for addressing contaminated sites (Exhibit 3.5). Custodians are to identify a suspected contaminated site and conduct historical reviews and assessments to find out what kinds of contaminants might be present and the potential risks they may pose. This information is to be used to determine if a suspected site is contaminated, to evaluate and rank sites, and to decide what action should be taken to address the sites. If necessary, a remediation plan or a risk management strategy is developed and implemented.

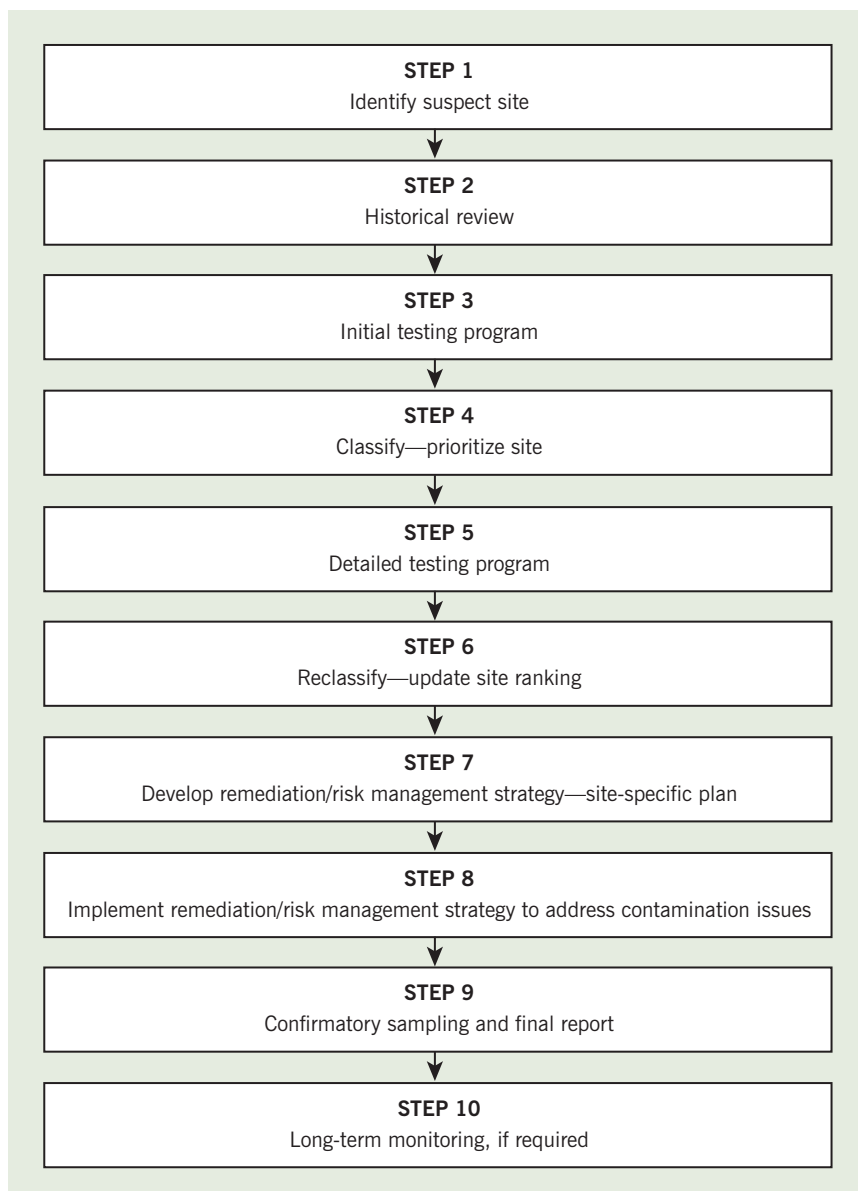
3.26 Remediating a site could involve improving the site to prevent, minimize, or mitigate damage by removing, destroying, containing, or otherwise reducing potential exposure to contaminants. It can involve, for example, pumping and treating contaminated groundwater or surface water, excavating soil, as well as containing the damage by covering or encapsulating contaminated areas.

3.27 In summary, we found that federal entities have mechanisms in place for assessing the risks associated with contaminated sites and establishing priorities.

3.28 However, a standard tool was not in place for custodians to use when closing a site supported by the Federal Contaminated Sites Action Plan (FCSAP) program. We note that as we were completing our audit, the FCSAP Secretariat of Environment Canada was developing this much-needed tool. The aim of this tool is to validate how appropriate the risk assessment processes and custodian’s decisions are and to ensure

that FCSAP-funded sites have met their remediation objectives. The tool will include a consistent set of criteria that must be met in order to close a site. When this tool is in place, it should strengthen the management of federal contaminated sites by providing a complete and consistent method for closing sites.

Exhibit 3.5 Addressing a contaminated site involves up to 10 steps



Note: The steps listed show the complete process for dealing with contaminated sites. In some cases, not all steps will be needed.

Source: Adapted from *A Federal Approach to Contaminated Sites*, Government of Canada, 1999

Contaminated sites can have a significant impact on human health and the environment

3.29 Part of our audit examined the steps custodians were taking to assess the risks that contaminated sites pose to the health of Canadians and to the environment. Unless they are managed properly, contaminated sites can have a negative impact on the surrounding water, soil, and air, and can threaten human health and the environment. These sites can also have economic impacts if land must be taken out of productive use or if contamination limits or prevents land development.

3.30 The guidance under the government's 10-step process for addressing contaminated sites directs custodians to identify suspected sites, to determine what type of and how much contamination is present, and to decide on the actions needed to remediate the site. Custodial departments must start the process by reviewing historical literature or documentation for a suspected site, conducting interviews, and visiting the site. On-site assessments, such as field studies and the sampling of soil and groundwater or surface water, would follow.

3.31 Our audit reviewed the FCSAP program and the processes that custodial departments used to manage contaminated sites. We did not visit sites, conduct independent site assessments, or validate whether individual sites in the federal inventory had been properly remediated and closed.

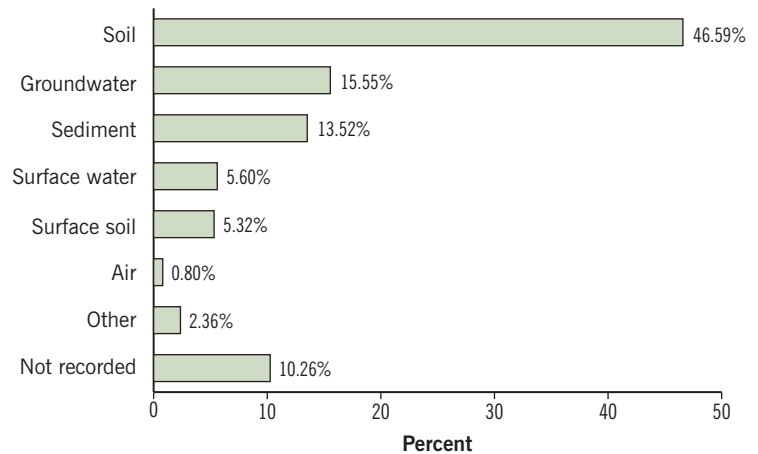
3.32 Site investigations show that most confirmed sites have soil contamination, which is the result of fuelling activities, spilling, leaking from above ground storage tanks, or dumping of contaminants on the ground. The quality of groundwater and surface water is also often affected. Contaminants can be mobile. They can penetrate soil and migrate into on-site or off-site drinking water sources or be released from bottom sediments in lakes, rivers, and coastal areas. Fumes or dust can emanate from these sites, affecting outdoor and indoor air quality. Many parts of the environment can be affected by a single source at a site. Exhibit 3.6 presents various types of contaminated media.

3.33 Because contaminants are generally toxic, even small amounts can be a cause for concern. Exhibit 3.7 sets out the types of contaminants that custodial departments have identified. Contaminants include substances such as trichloroethylene (TCE) or polychlorinated biphenyls (PCBs), which are listed as toxic substances under the *Canadian Environmental Protection Act, 1999*. Many sites are

contaminated with metals such as lead and arsenic, or by diesel fuel and other petroleum-based products due to spills and leaks during refuelling or because of faulty underground and above ground fuel storage tanks and systems. Radioactive substances are contaminants identified at some sites.

Exhibit 3.6 Soil and water are most affected by contamination

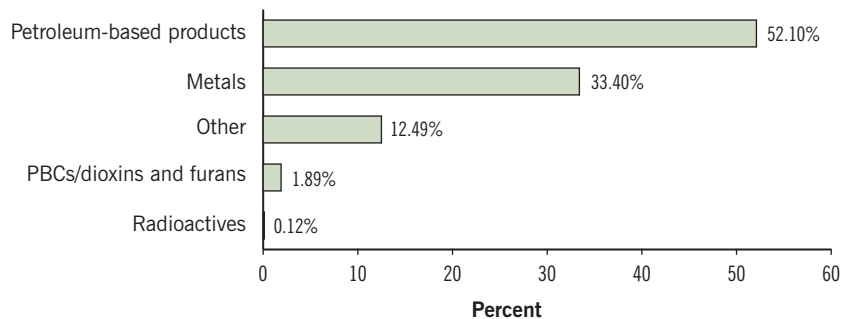
Type of contaminated media



Source: Federal Contaminated Sites Inventory

Exhibit 3.7 Petroleum-based products are the most common type of contaminant

Types of contaminants





Source: Federal Contaminated Sites Inventory

3.34 Exhibit 3.8 sums up two cases that show how even relatively small high-priority sites can have a significant impact on the environment and human health. Some sites can have a profound effect on local communities and their quality of life.

3.35 The sites described in Exhibit 3.8 are high-priority sites. By definition, high-priority sites are much more likely to have a greater impact on human health and the environment than medium- or low-priority sites. So far, relatively few active sites (about 5 percent) are classified as high priority.

Exhibit 3.8 Contaminated sites can pose real risks to human health and the natural environment—examples

Contaminated site	Risks to human health and the natural environment
 <p>Photo: Aboriginal Affairs and Northern Development Canada</p>	<p>Property name and location: Attawapiskat Soil Remediation Project, Ontario</p> <p>Classification and last step completed: Class 1—high priority for action; completed step 7, remediation strategy.</p> <p>Custodian: Aboriginal Affairs and Northern Development Canada (AANDC)</p> <p>History: The Attawapiskat Soil Remediation project includes the J.R. Nakogee Elementary School, the site of a former water treatment plant and underground fuel supply lines. The site was contaminated in 1979 when 24,450 litres of diesel fuel seeped into the soil and groundwater around the school. In 2000, the school was closed due to health concerns. The students were relocated to large portables, which they are still using today. The school was demolished in 2009.</p> <p>Contaminants: Diesel fuel contains toxins such as benzene, toluene, xylene, and other chemicals. Health and safety concerns related to diesel fuel are immediate and long term, including headaches, nausea, and possibly cancer.</p> <p>Closure objectives: Since 1997, \$3.6 million has been spent on remediation of the school site. A further \$10.1 million has been approved under AANDC's Federal Contaminated Sites Action Plan (FCSAP) program budget to address the contamination by 2014–15. In 2011, AANDC announced that a new school was to be built on a new site by 2014.</p>
 <p>Photo: Fisheries and Oceans Canada, Pacific Region</p>	<p>Property name and location: Victoria Coast Guard Base, Victoria, British Columbia. This location has four contaminated sites.</p> <p>Classification and last step completed: Class 1—high priority for action; completed step 7, remediation strategy.</p> <p>Custodian: Fisheries and Oceans Canada</p> <p>History: The base covers a 7.26-hectare parcel of land on Shoal Point in Victoria, British Columbia. The site is the Regional Operations Centre for the Canadian Coast Guard's Pacific Region. There are nine buildings on the property, some dating back to the 1970s. The site was previously occupied by various industrial operations. Site assessments identified contamination of about 91,000 cubic metres in soil, sediment, groundwater, and surface water in four areas. The contamination is being addressed by a combination of remediation and risk management measures. About 800 cubic metres is planned for remediation; the rest is to be risk managed.</p> <p>Contaminants: Petroleum hydrocarbons (PHCs), polycyclic aromatic hydrocarbons (PAHs), and metals.</p> <p>Closure objectives: About \$360,000 has been spent since 2005–06. There will be ongoing risk management, assuming no change in operations.</p>

The full extent of risk to human health and the environment remains unknown

3.36 Custodial departments are responsible for assessing potential contaminated sites to identify the extent of the risks they pose to human health and the environment. By analyzing data from the Federal Contaminated Sites Inventory, we examined the extent to which custodians had fulfilled this responsibility.

3.37 Since the FCSAP program was introduced, we noted that the number of suspected and contaminated sites that custodians have identified has grown from about 8,500 sites in 2005 to about 22,000 sites—of which about 14,500 sites were active (not closed) as of March 2011. Identification is important to pinpoint specific sites, to compile a complete list, and to determine the extent of risk to human health and the environment.

3.38 Our audit analyzed the status and activity of sites listed in the federal inventory as they go through the 10-step process (Exhibit 3.9). Custodians have made progress, thanks to funding from the FCSAP program. However, our analysis shows that as of March 2011, much work remains to be done on active sites if the government is to know the full extent of risks and is to put in place management plans to address the environmental and human health risks linked to contaminated sites:

- About 48 percent of the active sites (6,968) were at step 1 or step 2 of the process: contamination was suspected; a review of historical and current information and a site visit would be expected, but custodians would not have done any physical testing of soil or groundwater yet.
- About 10 percent of active sites were at step 3 of the assessment process: initial field investigations and sampling of soil and groundwater would have been done so custodians could assess what contaminants were present, in what quantities, how they were moving, and who or what could be affected by exposure to them (people, animals, or plants). At this stage, risks have not been fully evaluated, nor has a site necessarily been ranked and classified according to risk.
- Almost 81 percent of active sites have not completed step 6, the point at which risk assessments and site classifications are updated and finalized based on the results of more detailed testing and investigations.

3.39 Not all contaminated sites will need to go through the entire 10-step process. For example, if a suspected site is found not to be contaminated, it would be closed in the early steps of the 10-step

process, as it would not require further action. The Treasury Board of Canada Secretariat told us that in the earlier years of the FCSAP program, about one in two assessments (53 percent) resulted in a site being found to be contaminated. More recently, about one in five assessments (19 percent) resulted in such a finding. This shift indicates that custodians were finding that fewer suspected sites were contaminated. The Secretariat also informed us that 45 percent of the sites in the inventory were closed during early steps of the process.

3.40 In our view, given the number of sites that remain to be assessed, the government cannot know the full extent of potential risks to human health and the environment that federal contaminated sites pose.

Exhibit 3.9 Most federal contaminated sites were in the early steps of the 10-step process during the 2010–11 fiscal year

Steps completed	Total sites at this step	Percentage of active sites
Steps 1 and 2—The site is identified as a suspected site. In step 2, do a historical review to identify past activities on the site and potential risks of contamination.	6,968	47.9%*
Step 3—Conduct initial testing program. This step involves site visits and some physical assessments of the site and its surroundings, including soil and water testing.	1,493	10.3%*
Step 4—Based on the conclusions of the initial assessments, classify the sites as high, medium, or low priority for action. A preliminary estimate of costs to address the site could be developed at this point.	2,382	16.4%*
Step 5—Conduct detailed testing program.	900	6.2%*
Step 6—Update site classification.	722	5.0%
Step 7—Develop a remediation and/or risk management strategy. An updated estimate of costs to implement the strategy can be developed at this point.	853	5.9%
Step 8—Implement the remediation and/or risk management strategy.	571	3.9%
Step 9—Conduct confirmatory sampling and prepare final report.	558	3.8%
Step 10—Provide long-term monitoring, if required.	91	0.6%
Total open active sites as of March 2011	14,538	100%
Sites with activity in 2010–11, closed during 2010–11	2,372	
Sites with no activity in 2010–11, closed in previous years	5,027	
Total sites closed	7,399	
Total sites in the inventory	21,937	

* Steps 1 to 5 represent 80.8% of active sites.

Source: Steps from the Federal Approach to Contaminated Sites. Data from the Federal Contaminated Sites Inventory.

3.41 The Federal Contaminated Sites Inventory is a live database that can change at any time. The data and analysis presented in Exhibit 3.9 represent sites that were active during the 2010–11 fiscal year and that remained open as of March 2011. In total, about 7,400 sites were recorded as closed—about one third of the total federal inventory of about 22,000 sites.

3.42 A site can be recorded as closed at any of the 10 steps. Closed sites are sites that have been identified as “no further action required”; “closed” does not necessarily mean a site has been remediated. A site can be recorded as closed for several reasons, including that it is not seen to need any further consideration, assessment, or remediation. A closed site can be reopened if more information becomes available. The pace of site closures has been accelerating over recent years.

3.43 We found that the majority (60 percent) of about 2,370 sites that were active during the 2010–11 fiscal year and then closed at some point during that year were closed at one of the first two steps of the 10-step process. Very few sites (7 percent) were closed at final remediation steps during 2010–11. About 68 percent of the 2,370 sites closed had no priority classification. This means that custodians assessed them as not needing further action or that no federal liability remains on the site. It does not necessarily mean the site has no contamination.

3.44 The Federal Contaminated Sites Inventory does not clearly indicate why a site has been closed—for example, whether a site has been sufficiently remediated or has been closed because the criteria for contamination were not met or the property had been disposed of. Therefore, transparency is limited concerning how many sites have been satisfactorily remediated or closed for other reasons.

Financial implications

The Federal Contaminated Sites Action Plan program has accelerated activities to address contaminated sites

3.45 As part of our audit, we looked at the effect the introduction of the Federal Contaminated Sites Action Plan (FCSAP) program has had on addressing and remediating contaminated sites.

3.46 As noted, the federal government introduced the FCSAP program in 2005 to provide funding and support federal departments, agencies, and consolidated Crown corporations (collectively called custodians) in managing contaminated sites.

3.47 Addressing contaminated sites is a complex, time-consuming, and expensive process. In some cases, all 10 steps may be completed within a few years, while on complex sites, assessment to determine the

nature and extent of the problem can take decades. The need for monitoring or for long-term care and maintenance may vary greatly, from a few years to perpetuity.

3.48 Since the FCSAP program was introduced in 2005, the federal government has spent about \$1.5 billion on assessing or remediating nearly 10,600 federal contaminated sites, or about half of the sites in the inventory. Under the cost-sharing arrangements of the FCSAP program, it funded about \$1.3 billion or about 90 percent of the spending, including \$245 million from Canada's Economic Action Plan during the 2009–10 and 2010–11 fiscal years. Custodians funded the remaining amount.

3.49 Much has been accomplished since 2005. Spending under Phase I of the FCSAP program (the first 6 years of a 15-year program), which ended in March 2011, was for assessment and remediation, as well as to determine whether projects were eligible for the program and to provide expert support for reviewing site classifications and proposed remediation strategies. Spending enabled about 6,100 site assessments to be completed. Environment Canada also said that since 2005, about 650 high- and medium-priority sites have been remediated using FCSAP funds. The number of remediated sites is only a fraction of all inventoried sites.

3.50 These government funds have allowed custodians to move forward with their assessment and remediation of contaminated sites and to solidify their action plans to address sites that need remediation or risk management. Custodians have also been able to refine the cost estimates for carrying out action plans.

3.51 While progress has been made in addressing federal contaminated sites, environmental and human health risks remain, given the number of contaminated sites still to be addressed. These include 827 high-priority and 2,437 medium-priority active sites. Of the 827 active sites assessed as high priority, 52 percent were recorded as having reached at least step 7 of the 10-step process—the point at which a site-specific action plan is to be established. Of the sites assessed as medium priority, about 30 percent had reached the point of having a site-specific action plan. This means a large portion of high-priority sites (48 percent) and medium-priority sites (70 percent) remained to be fully assessed as of March 2011.

3.52 Moreover, about 7,800 or 54 percent of active federal contaminated sites have yet to be given a priority classification as needing or not needing action due to environmental and human

health risks. About a further 600 sites have not been assigned a priority due to insufficient information.

3.53 In summary, while the FCSAP program accelerated assessments, and some 7,400 sites are recorded as closed as of March 2011, a large number of sites had yet to be fully assessed or assigned a priority classification.

The full extent of the government's financial exposure is not known

3.54 As part of our audit, we reviewed the progress the government has made in estimating the costs of addressing contaminated sites. Such estimates are a key part of the government's 10-step process.

3.55 Cost estimates are essential for setting strategies, goals, targets, and budgets and for understanding the financial impacts of remediating sites in the federal inventory. Understanding the cost helps the government make decisions about reducing environmental risks and addressing contaminated sites in a cost-effective way. Site assessments are important for this purpose.

3.56 We analyzed the Federal Contaminated Sites Inventory to determine the progress the government has made in assessing the sites and identifying costs. Specifically, we looked at where each contaminated site was in the 10-step process and whether the costs for addressing the sites were recorded in the federal inventory.

3.57 We found that the government does not know the full extent of its financial exposure at this time. The first step in understanding the cost of remediation is to know how much environmental risk there is. However, as Exhibit 3.9 shows, 58 percent of active sites are only at the initial stages of the assessment process. As a result, custodians may not have even a preliminary cost estimate. Our analysis found that about 11,800 sites—81 percent of active sites, including 313 high-priority and 1,185 medium-priority sites—do not yet have any cost estimate recorded in the federal inventory.

3.58 We also noted that only 14 percent of active sites are at step 7 or higher, a point where custodians are expected to have a reasonable estimate of costs for carrying out a remediation plan.

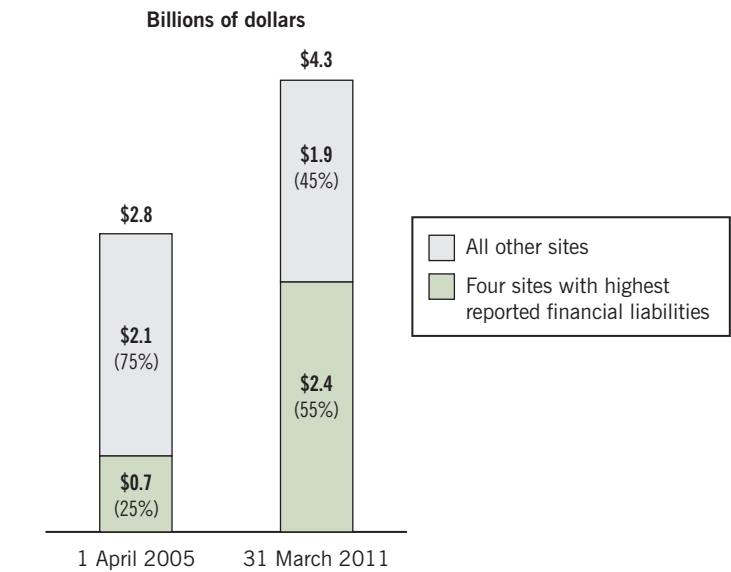
3.59 Because so many sites are still at the early steps of the process, the government does not have the information it needs to know the cost and the resulting financial liability for federal contaminated sites. The total cost to the government will likely increase over time as more sites are assessed and as action plans, along with cost estimates, are developed and refined.

3.60 The pace at which sites will be assessed in the future will depend in part on how much assessment funding custodians receive. The Treasury Board of Canada Secretariat informed us that assessment funding under the FCSAP program will be reduced by 68 percent so more money can be used to remediate known high-priority sites. Unless custodians find additional funds or prioritize sites for assessment, this reduction may slow the pace for determining whether sites are contaminated and for estimating costs for remediation.

3.61 Costs for implementing a final remediation or risk management plan may be lower or higher than the original cost estimates that were developed in the earlier assessment stages. In the case of larger, complex sites, we noted that final costs can be much higher than original estimates. As shown in Exhibit 3.10, the estimated amount of financial liability remaining for costs on four large sites grew from an estimated \$732 million in 2005 to \$2.4 billion by March 2011—an increase of about \$1.6 billion over six years.

3.62 Exhibit 3.10 reveals a clear trend: the estimated financial liability for large, complex sites can rise substantially as a remediation strategy is developed and implemented. Of about 2,200 sites recording a financial liability, 9 percent had an average liability of about

Exhibit 3.10 Estimated financial liabilities for four large, complex sites grew substantially between the 2005–06 and 2010–11 fiscal years



Source: Data from Federal Contaminated Sites Inventory

\$5 million each, and 90 percent had an average reported liability of less than \$1 million each. Even for smaller sites, cost estimates can increase as sites progress through the 10-step process.

3.63 Exhibit 3.11 sets out details about the four contaminated sites listed in the Federal Contaminated Sites Inventory that have the highest recorded financial liabilities.

3.64 Since 58 percent of active sites have not moved beyond the first 3 steps of the 10-step process, the environmental and financial impacts of federal contaminated sites are not fully known, nor is it easy to know how much funding is needed to address these sites.

3.65 We noted that the total estimated financial liabilities for federal contaminated sites is about \$500 million higher than the amount of dedicated funding remaining under the FCSAP program. This shortfall does not include \$1 billion of contingent liabilities (potential additional costs) or any future cost increases from new or updated site assessments and cost estimations. Without enough dedicated funding, many federal contaminated sites may not be assessed, remediated, or risk managed.

3.66 Given a risk of financial shortfall, and given that the FCSAP program does not deal with all contaminated sites and that many sites have yet to be assessed or prioritized for action, we looked to see if a consolidated strategy and plan was in place for all federal contaminated sites. We did not find such a strategy and plan in place during the period covered by our audit.

3.67 However, we found that individual custodians that seek FCSAP program funding must prepare, every year, a three-year contaminated sites management plan for their participation in the FCSAP program. These plans, which are submitted to the Treasury Board of Canada Secretariat, variously set out activity targets, annual expenditures, remaining challenges, and mitigation strategies. While these plans provide useful information on individual custodians, they are not a strategy and plan for the Federal Contaminated Sites Inventory as a whole.

3.68 For the first six years of the FCSAP program, an overall performance measurement strategy and plan were not in place. However, as we were completing this report, management approved a final performance measurement strategy in January 2012. This strategy is to be implemented over the next few years.

Exhibit 3.11 The four contaminated sites in the federal inventory with the highest reported financial liabilities





Contaminated site	Situation in 2010–11
Port Hope Area  <p>Photo: The Port Hope Community Health Concerns Committee</p>	<p>Property name and location: Port Hope Area Contaminated Sites, Ontario</p> <p>Classification and last step completed: Class 2—medium priority for action; at step 7, remediation strategy.</p> <p>Responsibility: Natural Resources Canada accepted responsibility to manage.</p> <p>Estimated liability: Protected information. Funded through the Port Hope Area Initiative.</p> <p>Reason for involvement: Contamination of lands by former Crown corporation for which the federal government has accepted financial responsibility.</p> <p>Issues: Estimated 1,380,000 cubic metres of low-level radioactive waste on these sites.</p> <p>Closure objectives: Containment of radioactive wastes in above ground engineered facility.</p> <p>Contaminants: Low-level radioactive waste radium 226, uranium, and arsenic.</p>
Welcome Waste Management Facility  <p>Photo: Port Hope Area Initiative website</p>	<p>Property name and location: Welcome Waste Management Facility (Port Hope, Ontario)</p> <p>Classification and last step completed: Class 2—medium priority for action; at step 7, remediation strategy.</p> <p>Custodian: Natural Resources Canada</p> <p>Estimated liability: Protected information. Funded through the Port Hope Area Initiative.</p> <p>Reason for involvement: Contamination from former Crown corporation and contractual obligation.</p> <p>Issues: Estimated 620,000 cubic metres of low-level radioactive waste.</p> <p>Closure objectives: Containment of radioactive wastes in above ground engineered facility and operation of treatment ponds and effluent discharge.</p> <p>Contaminants: Low-level radioactive waste radium 226, uranium, and arsenic.</p>
Faro Mine  <p>Photo: 2008 Status Report of the Commissioner of the Environment and Sustainable Development, Chapter 3</p>	<p>Property name and location: Faro Mine (Yukon)</p> <p>Classification and last step completed: Class 1—action required; at step 7, remediation strategy.</p> <p>Custodian: Aboriginal Affairs and Northern Development Canada (Northern Affairs Program)</p> <p>Estimated liability: Protected information</p> <p>Reason for involvement: Former owner bankrupt—federal government assumed liability.</p> <p>Issues: Estimated 64,000 hectares of contaminated soil and groundwater on this site. Leaching of acids and metals into groundwater and surface water; long-term treatment of contaminated water (at least 100 years) and sludge, and potential physical instability of tailings dams and waste rock dumps.</p> <p>Closure objectives: Constructing soil covers over waste sites (over 5 km squared), long-term treatment of contaminated groundwater, demolition of buildings, and site cleanup.</p> <p>Contaminants: Petroleum hydrocarbons (soil); metal, metalloid, and organometallics.</p>

Exhibit 3.11 The four contaminated sites in the federal inventory with the highest reported financial liabilities (continued)

Contaminated site	Situation in 2010–11
Giant Mine 	<p>Property name and location: Giant Mine (Yellowknife, Northwest Territories)</p> <p>Classification and last step completed: Class 1—action required; at step 7, remediation strategy.</p> <p>Custodian: Aboriginal Affairs and Northern Development Canada (Northern Affairs Program)</p> <p>Estimated liability: Protected information</p> <p>Reason for involvement: Former owner bankrupt; federal government assumed liability.</p> <p>Issues: 237,000 tonnes of arsenic trioxide dust stored in 15 underground chambers; 16,000,000 tonnes of tailings, which is also arsenic rich; three large tailings ponds that require water treatment and discharge; and eight open pits, with 35 mine openings.</p> <p>Closure objectives: Perpetual (100+ years) freezing of arsenic trioxide and contaminated soil to prevent release; treating and discharging water from tailings ponds; and covering tailings and open pits.</p> <p>Contaminants: Petroleum hydrocarbons (soil); metal, metalloid, and organometallics.</p>

3.69 Recommendation. In collaboration with custodians and the Treasury Board of Canada Secretariat, Environment Canada should conduct an integrated risk review of federal contaminated sites. Based on this review and determination of priorities, a consolidated plan should be developed by Environment Canada to ensure that inventoried sites are satisfactorily addressed within specified time frames and in accordance with established requirements.

Environment Canada's response. Agreed in principle. As the Secretariat of the Federal Contaminated Sites Action Plan program, Environment Canada has already conducted an integrated risk review of federal contaminated sites as part of the program's renewal, in collaboration with custodian organizations and Treasury Board of Canada Secretariat. As a result of the review, a consolidated plan that included all custodian departments was developed and approved by Cabinet for the second phase of the Federal Contaminated Sites Action Plan, which began in 2011–12. The plan directs funding to the highest priority federal contaminated sites within approved resources available under the program.

As Secretariat, Environment Canada administers and coordinates the Federal Contaminated Sites Action Plan across the federal government. However, the responsibility for managing contaminated

sites, as well as ensuring that they are addressed within the plan time frames and approved resources available under the program, rests with each custodian organization.

Treasury Board of Canada Secretariat's response. Agreed in principle. As indicated by Environment Canada, the integrated risk review of federal contaminated sites was undertaken, priorities were established, and a consolidated plan was developed and approved by Cabinet for the second phase of the Federal Contaminated Sites Action Plan, which began in 2011–12. The Treasury Board of Canada Secretariat (TBS) provided data from the Federal Contaminated Sites Inventory to support the integrated risk review. TBS also notes that the responsibility to ensure inventoried sites are addressed within the plan time frames and within the approved resources available under the program rests with each custodian organization.

Aboriginal Affairs and Northern Development Canada's response. Agreed. The Department supports sound risk management and will continue to monitor and manage the sites under its authority with a view to updating the Department's Federal Contaminated Sites Action Plan (FCSAP) management plan on an annual basis. We will also support Environment Canada in its response to the recommendation.

Fisheries and Oceans Canada's response. Agreed. The Department agrees, with the caveat that the plan must be developed on the basis of available resources. We will support Environment Canada and the Treasury Board of Canada Secretariat to implement the recommendation.

Natural Resources Canada's response. Agreed. As a custodian, Natural Resources Canada concurs with and supports Environment Canada's response.

Management and accountability

Appropriate management practices are in place, but improvements are needed

3.70 As part of our audit, we examined whether arrangements had been put in place to provide strategic direction to and oversight of the management, monitoring, and remediation of contaminated sites. We expected that the government would have created mechanisms to provide strategic direction to manage contaminated sites, including how risk is monitored and assessed, how performance targets are set, and how progress is measured.

3.71 Such arrangements ensure that contaminated sites are identified and are properly assessed for the risks they pose to the health of Canadians and the environment. These arrangements should

emphasize a clear understanding of the financial impacts of addressing contaminated sites and should ensure that decisions are transparent concerning whether to remediate a site and how much remediation to do.

3.72 Policy framework. We reviewed the policy framework that provides direction and guidance to departments, looked at whether clear roles and responsibilities had been established, and examined whether the necessary organizational structures had been created to ensure that contaminated sites are managed effectively.

3.73 Various Treasury Board policies and guidelines on real property, risk, and financial management apply generally to custodians. One policy—the November 2006 Treasury Board Policy on Management of Real Property—specifically refers to contaminated sites; as a principles-based policy, it makes deputy heads responsible for ensuring that

- known and suspected contaminated sites are assessed and classified, and risk management principles are applied to decide on the most appropriate and cost-effective course of action for each site;
- priority is given to sites posing the highest risk to human health and the environment;
- management activities (including remediation) are undertaken to the extent required for current or intended federal use and are guided by standards endorsed by the Canadian Council of Ministers of the Environment; and
- the costs of managing contamination caused by others must be recovered, when economically feasible.

3.74 This administrative policy allows individual custodians to be flexible and to make their own decisions when managing contaminated sites, whether they will be remediated or addressed in some other way. The policy, which applies to all federal contaminated sites no matter where they are located, is scheduled for review. The Treasury Board of Canada Secretariat has begun that review process.

3.75 Federal Contaminated Sites Action Plan program.

Environment Canada provides central guidance and coordination for the Federal Contaminated Sites Action Plan (FCSAP) program with support from the Treasury Board of Canada Secretariat. Environment Canada administers this government-wide program through its FCSAP Secretariat.

3.76 We noted that a number of governance structures have been put in place for this program. These structures include an Assistant Deputy Minister (ADM) Steering Committee that is jointly chaired by Environment Canada and the Treasury Board of Canada Secretariat. The ADM committee provides policy direction and strategic oversight for the FCSAP program. This committee is supported at the operations level by the Federal Contaminated Sites Director General Committee, which handles operational and tactical issues, provides oversight and direction to the program, and approves priority sites for remediation. We noted also that the FCSAP Secretariat has created various working groups to address specific issues related to managing contaminated sites.

3.77 We found that the FCSAP Secretariat has issued guidance for helping custodians to manage contaminated sites. An FCSAP guidance manual was issued in 2008; it describes roles and responsibilities, program objectives and eligibility requirements, and the funding approval process. Also, in July 2010, the Treasury Board of Canada Secretariat issued updated guidelines for custodians to use when preparing their individual contaminated sites management plans. The Treasury Board Secretariat also issued a guide for inputting information into the Federal Contaminated Sites Inventory.

3.78 In 2009, Environment Canada completed a program evaluation of the FCSAP program. At the time of our audit, the Treasury Board of Canada Secretariat and Environment Canada were tracking progress on carrying out recommendations from the program evaluation.

3.79 Custodial departments. Individual custodians are responsible for particular contaminated sites within the federal government inventory. For this reason, the management and oversight activities for these federal contaminated sites rest with the individual custodians.

3.80 Our review in selected custodial departments found that policies and procedures are in place for administering federal contaminated sites. For example, in the 2010–11 fiscal year, Fisheries and Oceans Canada implemented a standard site closure process on a department-wide basis. Individual custodians are continuing to improve their practices. For example, at the time of our audit, Aboriginal Affairs and Northern Development Canada was developing standard practices for closing sites.

3.81 However, we found three significant system gaps that affect custodians:

- Standardized reporting practices for FCSAP site closures are lacking. These practices are needed to document consistently the decisions made and results achieved, and to support the status of sites as recorded in the federal inventory.
- Integrated information systems for managing contaminated sites are lacking. Information systems require reconciliation between the FCSAP and Federal Contaminated Sites Inventory (FCSI) systems. Also, the FCSI system does not include key management information, such as the total estimated full costs of remediation.
- There is no overall performance measurement and reporting system for the FCSAP program and the sites it supports.

3.82 Environment Canada and the Treasury Board of Canada Secretariat have recognized that these gaps exist with regard to FCSAP-funded sites for all custodians. Management was taking steps to address the gaps as we were completing this report. As of January 2012, an FCSAP performance measurement strategy was approved. Also, a site closure tool was under development and is expected to be implemented during the 2012–13 fiscal year.

Reporting does not adequately disclose the significance and financial impact of environmental concerns

3.83 Our audit also examined whether mechanisms had been put in place to comprehensively measure and report on contaminated sites, to identify the progress being made, and to determine the environmental and financial impacts of these sites.

3.84 Federal Contaminated Sites Action Plan program. We found that Environment Canada produces an annual report for the FCSAP program. The reports contain detailed information about program achievements, resources, and expenditures, as well as FCSAP project locations, activity, and progress. These reports do not, however, cover all federal contaminated sites—only those funded by the FCSAP program, about 8,200 of the some 22,000 sites in the Federal Contaminated Sites Inventory. At the time of our audit, annual reports were three years behind schedule. We noted that the FCSAP Secretariat was making efforts to catch up on late annual reports.

3.85 While annual FCSAP reports are produced for management and are placed on the Government of Canada website for anyone to view, they are not required to be formally tabled in Parliament. Environment Canada also does not include in its annual departmental performance reports to Parliament a cumulative and consolidated summary of progress made to date in addressing federal contaminated sites under the FCSAP program.

3.86 However, Environment Canada's performance report for 2010–11 contains a link to supplementary tables on "horizontal initiatives." The FCSAP program is one such initiative, but it is not identified as such in the performance report. Unless readers are aware that the FCSAP program is such an initiative, they would not likely follow the link. Certain performance information can be found in the tables. Readers can view, for example, the number of assessments planned and achieved that year by each custodian in the FCSAP program. Environment Canada informed us that the connection between the FCSAP program and the supplementary tables will be made clear in the next departmental performance report.

3.87 Federal Contaminated Sites Inventory. We reviewed the federal inventory system to find out what type of information and how much information it contains.

3.88 The inventory is important because it is intended to keep the Government of Canada, ministers, members of Parliament, and Canadians informed about the state of federal contaminated sites, including their environmental and financial impacts.

3.89 The content of the federal inventory is available to the public on the website of the Treasury Board of Canada Secretariat. While a lot of information is presented, the listing does not include all sites, since about 1,000 sites are suppressed from public view. The Secretariat told us that this is done for security reasons. Nor does the listing show the total estimated financial liability for addressing a federal contaminated site or the total amounts spent to date. The Secretariat told us that financial liability information for a site is not shown because it has been classified as protected information to avoid compromising contract bidding for project work on federal contaminated sites. Therefore, the total expenditure and remaining financial liability for a given site is not visible to the public.

3.90 Departmental performance reporting. Custodian departments present information on contaminated sites to Parliament through their individual annual departmental performance reports. The information

presented varies from one custodian to another, and content has not been consistent over the years.

3.91 In brief, while information can be found in various places, consolidated information on results to date, compared with what was planned, is not available to Parliament or the public.

3.92 Although information about federal contaminated sites can be found, the problem is disparate information and the lack of clear, consolidated reporting in one place. As a result, it is difficult to find out what progress the government has made to date in addressing federal contaminated sites, to what extent environmental and human health risks have been reduced, and what it has cost taxpayers. Information is not as transparent as it could be.

3.93 Recommendation. In collaboration with custodians and the Treasury Board of Canada Secretariat, Environment Canada should periodically issue a publicly available consolidated report on the progress made by the Federal Contaminated Sites Action Plan program in addressing all federal contaminated sites. This report should differentiate between sites covered by the program and not covered by the program.

Environment Canada's response. Agree with the intent of this recommendation to improve reporting on federal contaminated sites. Environment Canada, as part of its role as Secretariat for the Federal Contaminated Sites Action Plan (FCSAP) program, and in collaboration with custodians and the Treasury Board of Canada Secretariat, will continue to publish annual reports on progress achieved by the program. Starting with the 2011–12 annual report, reporting will be enhanced by including information about the program's progress in addressing sites in the Federal Contaminated Sites Inventory, with the understanding that the FCSAP program is intended to address the highest priority sites.

Treasury Board of Canada Secretariat's response. Agreed. As part of its regular business, the Treasury Board of Canada Secretariat provides data from the Federal Contaminated Sites Inventory for input into the Federal Contaminated Sites Action Plan (FCSAP) annual report prepared by Environment Canada.

Aboriginal Affairs and Northern Development Canada's response. Agreed. The Department recognizes the importance of transparency and accountability and will work with Environment Canada on a consolidated report on the progress made by the FCSAP beginning in 2011–12.

Fisheries and Oceans Canada's response. Agreed. Fisheries and Oceans Canada will support Environment Canada and the Treasury Board of Canada Secretariat to implement the recommendation.

Natural Resources Canada's response. Agreed. As a custodian, Natural Resources Canada concurs with and supports Environment Canada's response.

Subsequent events

3.94 The Federal Contaminated Sites Inventory is a live database and can be updated on a daily basis. As we were finalizing this report, the Treasury Board of Canada Secretariat gave us summary inventory data as of 24 January 2012. As of that date, about 9,100 sites were recorded as closed. This means that as of January 2012, about 42 percent of the total federal inventory was recorded as not needing further action. Also, there were about 1,100 fewer active sites at the initial steps of the 10-step process than there were in March 2011. Nearly all sites were closed at step 1 of the process.

Conclusion

3.95 The government has put in place systems and processes to assess the risks of contaminated sites, including the current or potential adverse impact of a site on human health and the environment. The government has a process to prioritize sites for action based on the level of concern they pose. However, the system lacks standard closure reporting as well as clear and measurable expectations for what departments with custodial responsibilities for contaminated sites are to accomplish under the Federal Contaminated Sites Action Plan (FCSAP) program, and by when. Management was working on a site closure tool and a performance measurement strategy at the time we were completing this report.

3.96 Action on federal contaminated sites has increased over the past six years under the FCSAP program. Progress has been made, with about one third of the total federal inventory of contaminated sites recorded as closed and not requiring further action as of March 2011.

3.97 However, many active sites remain to be remediated. Federal custodians had not begun assessments of about one half of the sites that were active in the federal inventory as of March 2011. As a result, the full extent of risks that federal contaminated sites present to the environment and human health remains unknown. Also, since 81 percent of active sites do not yet have a recorded financial liability, the government cannot know the full extent of the financial impacts of

federal contaminated sites on the public purse. Since environmental and financial impacts are not fully known, the government has limited information for planning and allocating financial resources.

3.98 The government has not created a consolidated strategy for ensuring that all federal contaminated sites are adequately addressed. There is a need to assess the risk that financial resources may not be sufficient to achieve planned results.

3.99 Transparency is limited when it comes to stating what has been accomplished for money spent. While about \$1.5 billion has been spent to address federal contaminated sites, a performance reporting system does not yet exist to connect money spent with results planned and achieved. There is no consolidated Government of Canada report showing progress in terms of total sites remediated, which sites remain contaminated, what it will cost to remediate them, and what the potential consequences are of not taking action. While information can be found in various places, Parliament and Canadians do not receive a clear picture of the status of federal contaminated sites, the progress made to address them, and the cost involved.

About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

Objective

The objective of the audit was to determine whether federal entities have appropriate systems in place to manage and report the financial impact of environmental damages arising from federal contaminated sites.

The word “systems” is intended to cover structures, policies, processes, procedures, mechanisms, and information for achieving control and accountability. By “environmental damage” we mean actual or potential damage to the environment caused by government or industrial activity, including adverse impacts on land, water, and ecosystems.

Scope and Approach

We examined the data in the Federal Contaminated Sites Inventory, internal departmental documentation, and reports to Parliament on actions taken in managing federal contaminated sites for selected federal entities. We also examined the overall management created to provide strategic direction to and oversight of the administration, monitoring, and remediation of contaminated sites.

The entities examined for the audit were

- Environment Canada,
- Treasury Board of Canada Secretariat,
- Aboriginal Affairs and Northern Development Canada,
- Fisheries and Oceans Canada, and
- Natural Resources Canada.

We did not examine management of the Nuclear Legacy Liabilities Program or shared contaminated sites. We did not visit sites, nor did we conduct detailed file reviews to determine if contaminated sites had been remediated or if sites had been properly closed in the federal inventory.

Criteria

Criteria	Sources
To determine whether federal entities have appropriate systems in place to manage and report the financial impact of environmental damages arising from federal contaminated sites, we used the following criteria:	
Federal entities have processes and procedures in place to identify, assess, and mitigate the financial impact of environmental damage. (Sources: 2, 7, 9, 10)	1. <i>Canadian Environmental Protection Act, 1999</i> 2. <i>Financial Administration Act</i> 3. <i>Federal Accountability Act</i> 4. <i>Federal Sustainable Development Act</i>
Risk management procedures include initiation, preliminary analysis, risk estimation, risk evaluation, risk control or mitigation, and action or monitoring. (Sources: 1, 2, 7, 9, 10, 11, 12, 14)	5. <i>Federal Real Property and Federal Immovables Act</i> 6. <i>Canadian Environmental Assessment Act</i> 7. Policy on Management of Real Property, Treasury Board, 2006
Parliament receives information on the financial impacts associated with environmental damage. (Sources: 1, 11, 12)	8. Expenditure Management System, Treasury Board, 1995 9. Framework for the Management of Risk, Treasury Board, 2010
Generic sources for all criteria: 3, 4, 5, 6, 8, 13	10. CSA Risk Management: Guideline for Decision Makers, Canadian Standards Association, 2009 11. Policy Framework for Financial Management, Treasury Board, 2010 12. Directive on Contingencies, Treasury Board, 2009 13. Enterprise Risk Management and Internal Control Frameworks, Committee of Sponsoring Organizations of the Treadway Commission 14. Recommended Principles on Contaminated Sites Liability, Canadian Council of Ministers of the Environment, 2006

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

The audit covered the period between 1 April 2008 and 31 March 2011. Audit work was substantially completed on 6 March 2012.

Audit team

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Appendix List of recommendations

The following is a list of recommendations found in Chapter 3. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

Recommendation	Response
Financial implications	
<p>3.69 In collaboration with custodians and the Treasury Board of Canada Secretariat, Environment Canada should conduct an integrated risk review of federal contaminated sites. Based on this review and determination of priorities, a consolidated plan should be developed by Environment Canada to ensure that inventoried sites are satisfactorily addressed within specified time frames and in accordance with established requirements. (3.54–3.68)</p>	<p>Environment Canada’s response. Agreed in principle. As the Secretariat of the Federal Contaminated Sites Action Plan program, Environment Canada has already conducted an integrated risk review of federal contaminated sites as part of the program’s renewal, in collaboration with custodian organizations and Treasury Board of Canada Secretariat. As a result of the review, a consolidated plan that included all custodian departments was developed and approved by Cabinet for the second phase of the Federal Contaminated Sites Action Plan, which began in 2011–12. The plan directs funding to the highest priority federal contaminated sites within approved resources available under the program.</p> <p>As Secretariat, Environment Canada administers and coordinates the Federal Contaminated Sites Action Plan across the federal government. However, the responsibility for managing contaminated sites, as well as ensuring that they are addressed within the plan time frames and approved resources available under the program, rests with each custodian organization.</p> <p>Treasury Board of Canada Secretariat’s response. Agreed in principle. As indicated by Environment Canada, the integrated risk review of federal contaminated sites was undertaken, priorities were established, and a consolidated plan was developed and approved by Cabinet for the second phase of the Federal Contaminated Sites Action Plan, which began in 2011–12. The Treasury Board of Canada Secretariat (TBS) provided data from the Federal Contaminated Sites Inventory to support the integrated risk review. TBS also notes that the responsibility to ensure inventoried sites are addressed within the plan time frames and within the approved resources available under the program rests with each custodian organization.</p>

Recommendation	Response
	<p>Aboriginal Affairs and Northern Development Canada's response. Agreed. The Department supports sound risk management and will continue to monitor and manage the sites under its authority with a view to updating the Department's Federal Contaminated Sites Action Plan (FCSAP) management plan on an annual basis. We will also support Environment Canada in its response to the recommendation.</p> <p>Fisheries and Oceans Canada's response. Agreed. The Department agrees, with the caveat that the plan must be developed on the basis of available resources. We will support Environment Canada and the Treasury Board of Canada Secretariat to implement the recommendation.</p> <p>Natural Resources Canada's response. Agreed. As a custodian, Natural Resources Canada concurs with and supports Environment Canada's response.</p>
<p>Management and accountability</p> <p>3.93 In collaboration with custodians and the Treasury Board of Canada Secretariat, Environment Canada should periodically issue a publicly available consolidated report on the progress made by the Federal Contaminated Sites Action Plan program in addressing all federal contaminated sites. This report should differentiate between sites covered by the program and not covered by the program. (3.83–3.92)</p>	<p>Environment Canada's response. Agree with the intent of this recommendation to improve reporting on federal contaminated sites. Environment Canada, as part of its role as Secretariat for the Federal Contaminated Sites Action Plan (FCSAP) program, and in collaboration with custodians and the Treasury Board of Canada Secretariat, will continue to publish annual reports on progress achieved by the program. Starting with the 2011–12 annual report, reporting will be enhanced by including information about the program's progress in addressing sites in the Federal Contaminated Sites Inventory, with the understanding that the FCSAP program is intended to address the highest priority sites.</p> <p>Treasury Board of Canada Secretariat's response. Agreed. As part of its regular business, the Treasury Board of Canada Secretariat provides data from the Federal Contaminated Sites Inventory for input into the Federal Contaminated Sites Action Plan (FCSAP) annual report prepared by Environment Canada.</p> <p>Aboriginal Affairs and Northern Development Canada's response. Agreed. The Department recognizes the importance of transparency and accountability and will work with Environment Canada on a consolidated report on the progress made by the FCSAP beginning in 2011–12.</p>

Recommendation	Response
	<p>Fisheries and Oceans Canada's response. Agreed. Fisheries and Oceans Canada will support Environment Canada and the Treasury Board of Canada Secretariat to implement the recommendation.</p> <p>Natural Resources Canada's response. Agreed. As a custodian, Natural Resources Canada concurs with and supports Environment Canada's response.</p>