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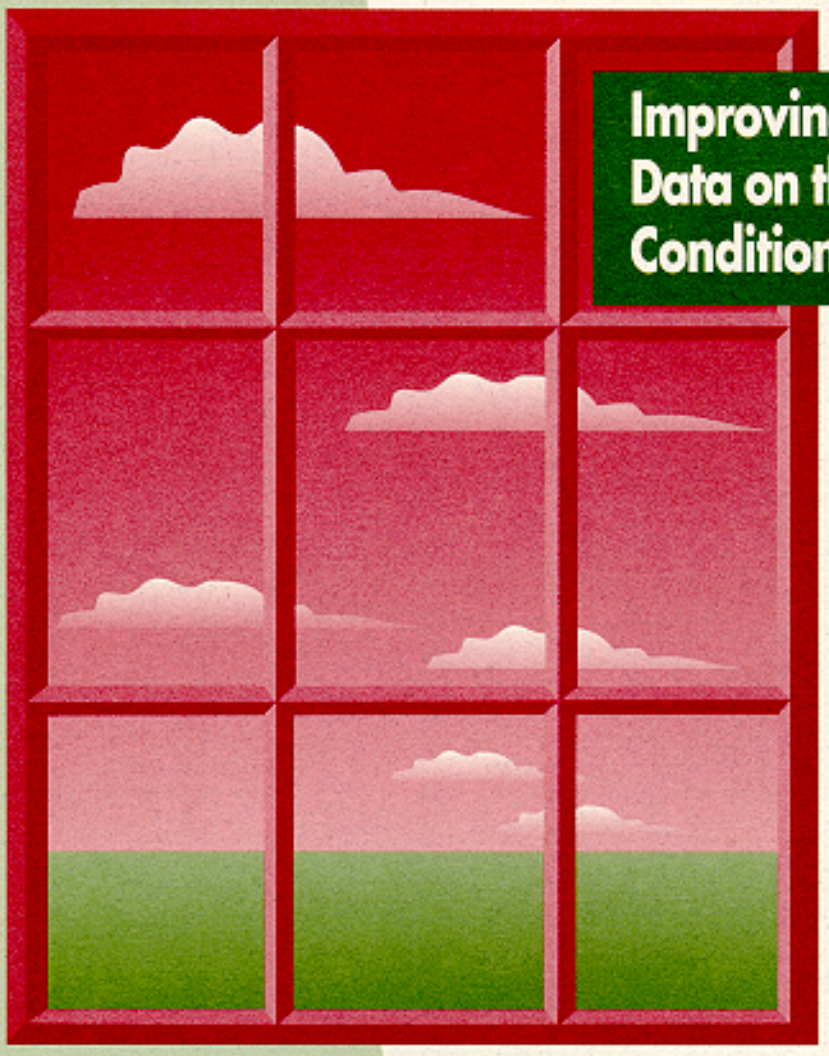

Improving Site-Specific Data on the Environmental Condition of Land

National Round Table on the Environment and the Economy

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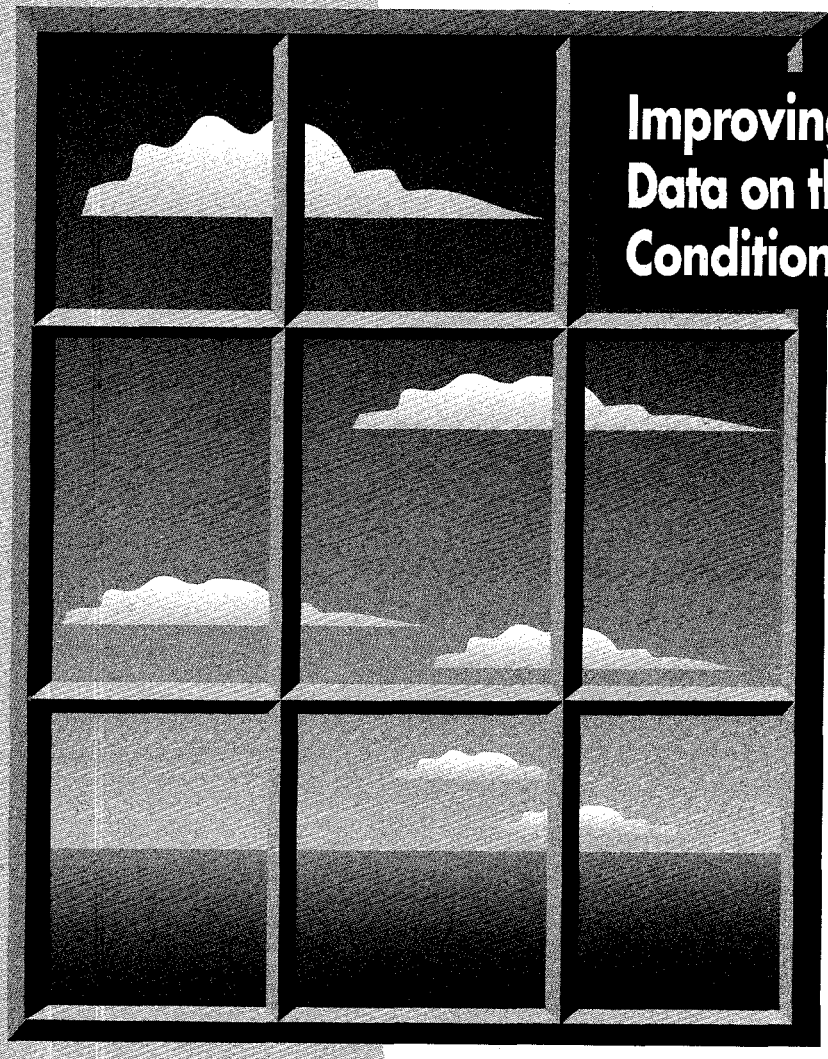
Backgrounder



Improving Site-Specific Data on the Environmental Condition of Land

Prepared by the National Accounts and Environment Division of Statistics Canada under the direction of the NRTEE's Financial Services Task Force.

Mandate

The National Round Table on the Environment and the Economy (NRTEE) was created to "play the role of catalyst in identifying, explaining and promoting, in all sectors of Canadian society and in all regions of Canada, principles and practices of sustainable development." Specifically, the agency identifies issues that have both environmental and economic implications, explores these implications, and attempts to identify actions that will balance economic prosperity with environmental preservation.

At the heart of the NRTEE's work is a commitment to improve the quality of economic and environmental policy development by providing decision makers with the information they need to make reasoned choices on a sustainable future for Canada. The agency seeks to carry out its mandate by:

- advising decision makers and opinion leaders on the best way to integrate environmental and economic considerations into decision making;
- actively seeking input from stakeholders with a vested interest in any particular issue and providing a neutral meeting ground where they can work to resolve issues and overcome barriers to sustainable development;
- analyzing environmental and economic facts to identify changes that will enhance sustainability in Canada; and
- using the products of research, analysis and national consultation to come to a conclusion on the state of the debate on the environment and the economy.

The NRTEE's state of the debate reports synthesize the results of stakeholder consultations on potential opportunities for sustainable development. They summarize the extent of consensus and reasons for disagreement, review the consequences of action or inaction, and recommend steps specific stakeholders can take to promote sustainability.

Members of the National Round Table on the Environment and the Economy

The NRTEE is composed of a Chair and up to 24 distinguished Canadians. These individuals are appointed by the Prime Minister as opinion leaders representing a variety of regions and sectors of Canadian society including business, labour, academia, environmental organizations, and First Nations. Members of the NRTEE meet as a round table four times a year to review and discuss the ongoing work of the agency, set priorities, and initiate new activities.

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Acronyms

ASTM	American Society for Testing and Materials
CBA	Canadian Bankers' Association
CCME	Canadian Council of Ministers of the Environment
CIBC	Canadian Imperial Bank of Commerce
CIHB	Canadian Inventory of Historic Buildings
CMHC	Canada Mortgage and Housing Corporation
CSA	Canadian Standards Association
DESRT	Demonstation and Evaluation of Site Remediation Technology
DGAIS	Dangerous Goods Accident Information System
ESA	environmental site assessment
FSC	Federal Sites Component
GIS	Geographic Information System
MINSYS	Mineral Deposits Information System
MISA	Municipal/Industrial Strategy for Abatement
MNR	Ministry of Natural Resources (Ontario)
MOEE	Ministry of Environment and Energy (Ontario)
NATES	National Trends in Emergencies
NCSRP	National Contaminated Sites Remediation Program
NRTEE	National Round Table on the Environment and the Economy
PATS	Property Assessment Tax System
PETSTOR	Petroleum Storage
PIR	Pollution Incident Report Records Collection
RUST	Registry of Underground Storage Tanks
SIC	Standard Industrial Classification

Preface

Contaminated sites, because of their potential impacts on health, the environment and the economy, are a prime target for environmental action. Recognizing the need for research and discussion in this area, the National Round Table on the Environment and the Economy (NRTEE) has undertaken a Financial Services Program. The aim of the Program is to identify the issues relating to the redevelopment of brownfields and other contaminated sites, to propose solutions to current impediments to redevelopment, and to improve site-specific data.

Site-specific information on the environmental condition of land is an important management tool for identifying and assessing existing contaminated areas, and for preventing future contamination. However, there is currently a shortage of land-related environmental information available. Moreover, existing databases use varying standards and criteria for collecting and cataloguing information, and are not always comparable.

As part of its work, the Task Force for the Financial Services Program is exploring ways in which the financial services sector can help to improve site-specific data on the environmental condition of land. This backgrounder report examines current sources of information in the federal, provincial and territorial governments, as well as relevant work done in the private sector and in non-government and inter-governmental organizations.

This report also identifies possible strategies for improving site-specific information — including such initiatives as developing a prototype for a province or municipality, strengthening registry requirements in one province to encompass a broader variety of sites, supporting the production of municipal Contaminated Site Reports across the country, creating an ongoing national registry of site assessments, and establishing a self-funding program to assemble high-priority data for selected urban sites.

Three additional reports produced by the NRTEE's Financial Services Program complement this backgrounder: *Contaminated Site Issues in Canada, The Financial Services Sector and Brownfield Redevelopment* and *Removing Barriers: Redeveloping Contaminated Sites for Housing*. It is hoped that these background reports will promote debate and discussion among key stakeholders. As a follow-up, the NRTEE Program on Financial Services will sponsor workshops and prepare a state of the debate report on key issues.

This report was prepared by the Environmental Information and Spatial Accounts Section of the National Accounts and Environment Division of Statistics Canada. The content of the report does not necessarily represent the position of the NRTEE.

Angus Ross
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Task Force for the Financial Services Program
National Round Table on the Environment and the Economy

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Executive Summary

The Task Force of the Financial Services Program of the National Round Table on the Environment and the Economy has identified site-specific information on the environmental condition of land as a priority for discussion. Prepared as background for five multistakeholder workshops held in the last quarter of 1996 and the first quarter of 1997, this report provides a basis for development of a state of the debate report on contaminated land.

Brownfields are a subset of contaminated sites that can be economically remediated. This paper looks more broadly into the issue of contaminated sites in general, and suggests options that could make better use of information to identify, manage, and, hopefully, prevent *contamed situes*. It distinguishes between contaminated sites and potentially contaminated sites. Contaminated sites are known to exceed certain environmental quality standards. Potentially contaminated sites are those that have not yet been subjected to scientific measurement, but because of some indirect evidence, such as former use, have a higher probability of showing contamination if subjected to scientific measurement.

To reflect the priorities of the Task Force, this paper investigates the sources of information and possible strategies that would contribute to improving site-specific information for Canadians including business, governments, non-governmental organizations, academic institutions and the general public. The uses of a contaminated site registry with information on potentially contaminated sites would be varied. Immediate benefits can be seen for developers; purchasers; owners wishing to obtain loans and insurance; municipal and provincial planning departments; local health offices assessing sources of risk; and federal departments developing or evaluating policies related to land development.

The paper considers existing databases in the federal, provincial and territorial governments as well as work being done in the private sector and by non-governmental and intergovernmental organizations. There is a rich variety of data available at all these levels to support a program of identifying and inventorying potentially contaminated sites. The most useful and most immediate data are often maintained at the provincial or municipal level. For example, to assess the potential for contamination, information on current and former land use of a given site is critical. Some provinces have already standardized and compiled the municipal registry data that would be required.

The quality and quantity of these data vary between provinces and municipalities. Many federal programs could provide valuable input. Programs include National Trends in Emergencies (NATES), Pollution Incident Report Records Collection (PIR), the National Pollutant Release Inventory (NPRI), ENVIRODAT and Statistics Canada's environment statistics program. Federal departments with either information or interest in the results of a contaminated site registry include Environment Canada, Industry Canada, Canada Mortgage and Housing Corporation (CMHC), and Health Canada.

Provinces with active contaminated site registries include Newfoundland, Nova Scotia, New Brunswick, Quebec, British Columbia and the Yukon. The types of sites requiring registration, the amount of information on the site and the public accessibility of this information vary.

Several municipalities in Ontario have completed historical land use reviews with the purpose of identifying potentially contaminated sites. These include the City of Niagara Falls, the City of Ottawa, the City of Toronto and the Region of Waterloo.

Five strategies are discussed. Four would require some level of start-up funding from the public or private sector. The strategies are:

- **Regional Prototype:** This strategy would develop a working prototype for one small province or large municipality. Background data would be collected, harmonized and integrated into a map-based interface on the Internet.
- **Provincial Registry with Mandatory Site Assessments:** This would involve strengthening the registry requirements in one of the provinces with an existing contaminated site registry to encompass a broader variety of sites.
- **National Site Assessment Registry:** This strategy would create an ongoing national registry of site assessments for those provinces with mandatory site assessment requirements. This would be augmented with secondary data compilation for provinces without these requirements.
- **Independent National Contaminated Site Inventory:** This would be a self-funding program that would assemble high-priority data for selected urban areas.
- **A Collection of Municipal Registries:** This approach would support the production of municipal contaminated site reports. There are more than 5,000 urban and rural municipalities in Canada.

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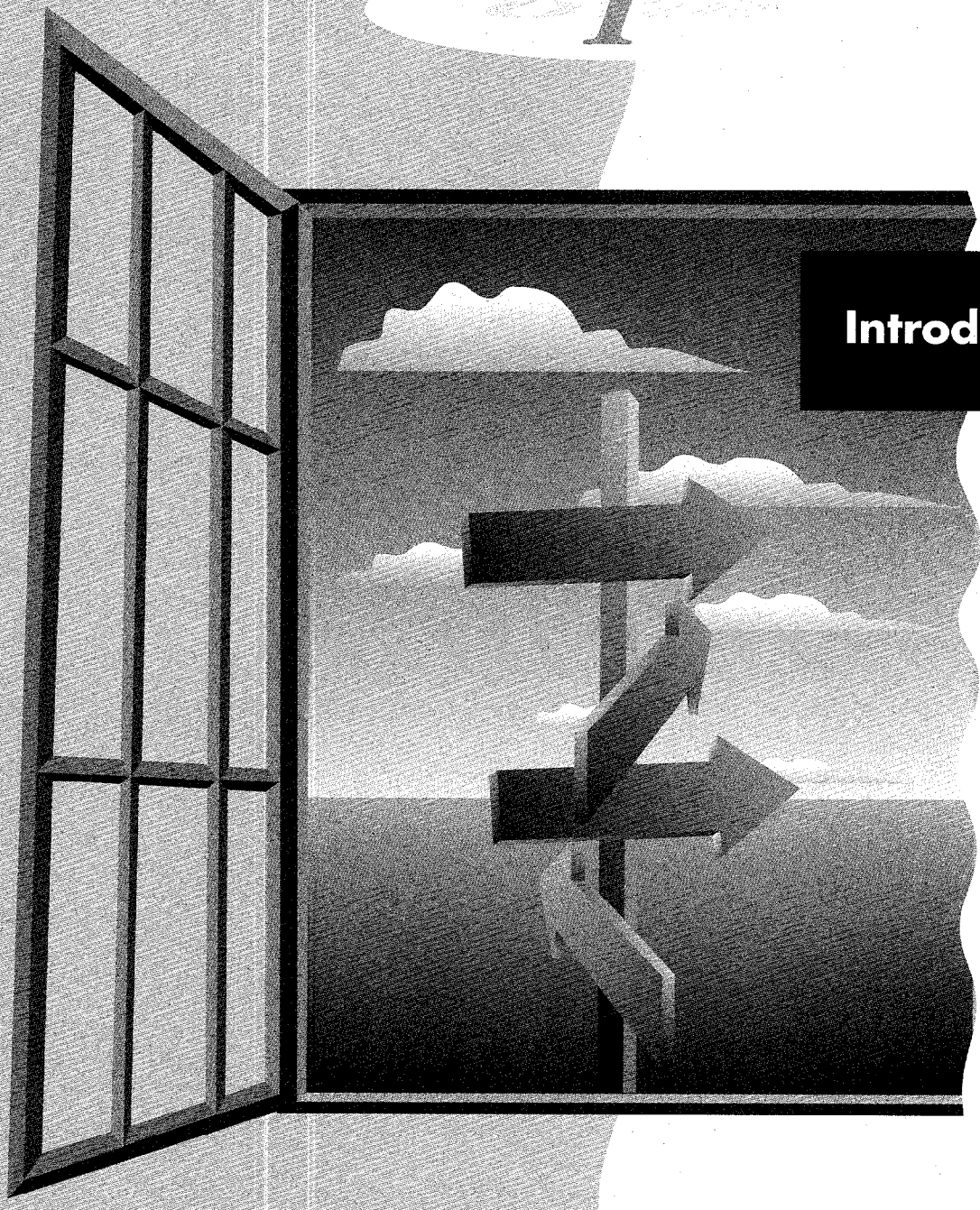


Introduction

Background

The Task Force of the Financial Services Program of the National Round Table on the Environment and the Economy (NRTEE) has identified site-specific information on the environmental condition of land as a priority for discussion. It sees better information on land as a management tool that would not only identify the contamination of the past, but also help to prevent future contamination. The Task Force recognizes that the land base provides the foundation for most human activity, and that pressures on it are increasing rapidly. Information of better quality is required to improve the management of the land resource. As the financial services sector supports many human activities, one of the questions raised by the Task Force is: "How can the financial services sector help to improve site-specific data on the environmental condition of land?" This question reflects the overall focus of the Financial Services Program, which is: "To come up with solutions by the financial services sector, not for the financial services sector."

The Chair of the Program, Mr. Angus Ross, is a member of the NRTEE and President of SOREMA Management Inc., the Canadian arm of the large French reinsurance company, SOREMA. His joining the NRTEE in 1995 provided an opportunity to address issues of the environment and the economy of importance to people in financial services. The issues selected for the Financial Services Program were derived from a survey of the financial services sector conducted for the NRTEE in late 1995. The issues highest on the list related to contaminated land.

Recognizing that the whole range of issues under the heading "contaminated land" was beyond the limited budget for the Program, the Task Force decided to focus on two issues of particular interest to the financial services sector: (a) improving site-specific data on the environmental condition of land, and (b) the redevelopment of brownfields. As a foundation for these specific studies, a more general background paper has been commissioned on issues pertaining to contaminated sites in Canada, the evolution of policy, issues still outstanding, and some of the possible consequences of not dealing with them. The background paper acknowledges the extensive effort and good work that has been done by the Canadian Council of Ministers of the Environment (CCME) and many of the senior governments in Canada.

The five multistakeholder workshops held in the last quarter of 1996 and early 1997 devoted most of their time to examining the two specific issues. The report emanating from these meetings will reflect the "state of the debate."

The requirement for site-specific data on the environmental condition of land goes beyond an inventory of known contaminated sites to include those that might have the potential for some contamination for example, many residences and farms have small above-ground or underground storage tanks that are not always carefully monitored and may be leaking. Some land has natural levels of contamination, and this information would be useful for many users. As planners and regulators become more aware of the intricacies of ecosystems, many other aspects of the land could be woven into a database to provide a more comprehensive capacity to assess the environmental and economic impacts of any proposed uses.

The problem is not simply that there is a shortage of land-related environmental information, but that the various databases that do exist often do not relate to one another. Much money is being spent, but, with a different way of organizing the information, the impact could be much greater. The digitizing of land titles/land registry systems across the country appears to open the door to new opportunities for cross-referencing site-specific data on the environmental condition of land. This raises a host of questions relating to what information is available; how best to integrate the information; whether this be done cost-effectively; who the users are; and, what users are willing to pay for such an information service. This paper begins to address these issues and opens the debate.

Contaminated sites, because of their potential for impacts on environmental and human health, have always been one of the prime environmental issues. In the past, information collection on the environmental condition of land has either focused on specific types of known contaminated sites (such as underground storage tanks or orphaned sites) or on specific sites (such as the Hagersville, Ontario, tire fire site.) Due to the variety of sources of contamination, types of contaminants and jurisdictional responsibility, mounting a comprehensive national program to deal with contaminated sites has been difficult. There has been to date no national comprehensive inventory of contaminated or potentially contaminated sites. The 1995 Auditor General's Report in a section entitled "Environment Canada: Managing the Legacy of Hazardous Wastes" states that:

> A national inventory of contaminated sites, including orphan sites, does not exist. Among the intended activities of the National Contaminated Sites Remediation Program were the development of a national inventory and the assessment of potentially contaminated sites in Canada for the purpose of prioritizing clean-up of problem sites. In 1990, the Department [Environment Canada] developed requirements and identified possible provincial sources of information for an inventory. However, we have been advised that the members of the Canadian Council of Ministers of the Environment were unable to reach an agreement on the scope and potential use of such an inventory.[1]

Abandoned sites are of special concern since it is more difficult to hold the original owners responsible for damages or cleanup. In 1990, Ontario enacted its *Environmental Protection Act*, which extends responsibility for sources of contaminants to "past and present owners, occupiers and persons in charge."[2] Furthermore, "An order or approval is binding upon the successor or assignee of the person to whom it is directed."[3] This includes financial institutions that assume control of abandoned properties. According to the Greater Toronto Area (GTA) Task Force:

> The unwary purchaser of land can acquire with it the legal liability for any contaminants on the property, and the Ministry of Energy and the Environment (MOEE) can order the new owner to clean up (or pay for the clean up of) the property. As a result, environmental risk assessment is now a standard practice for developers in selecting a site and for the lenders in evaluating financing applications. The problem, however, is that such risk assessments can be very expensive and in the end may serve only to discourage the developer from buying the property.[4]

Other provinces have subsequently strengthened their regulations concerning liability for contaminated sites. Banks and insurance companies are in the process of developing environmental risk management strategies. Real estate companies, developers, land owners and potential purchasers are becoming increasingly aware of the potential problems of not knowing the environmental condition of properties. Improved site-specific data on the environmental condition of land would help in the determination of risk and assignment of responsibility.

Purpose and Outline

Many previous activities have focused on particular types of sites (orphaned, landfill, storage tanks, etc.). This approach, in some cases, has solved immediate local problems but not necessarily contributed to a general national solution or to the establishment of national priorities. This paper takes as broad as possible an approach at the outset to consider a variety of existing and potential contaminated site types. These are prioritized in terms of the level of risk associated with them and the feasibility of obtaining information on them.

This paper reflects the organization of the project. There are three main components:

- assessment of information (availability and quality);
- assessment of current and potential needs and uses; and
- possible strategies for improving the availability of information.

Assessment of Information

There are two main approaches to obtaining information on the environmental quality of land. The first is to assemble existing data at a national or regional level, organize that information and use it to infer some properties of the quality of the land. Useful information might include the activities that occurred on a site in the past (such as a site that housed a gasoline station 30 years ago but now is the location of a parking lot), current parameters of the site (such as its nearness to a sewage outfall), or ambient air quality.

The second approach is to collect new information on the properties of the specific sites of interest. This approach includes historical information as well as results of recent monitoring of the soil, water or air. Given this approach, there would be less of a focus on assembling comprehensive national-level databases. A resulting database would contain information only on a subset of potentially contaminated sites.

So as not to preclude either approach, this project has assessed a rich sampling of the available information on contaminated sites as well as information that would be useful in assessing the environmental condition of specific sites.

Existing programs in the government and private sector were assessed to provide an overview of other potential sources of information, related activities (such as the development of guidelines and the monitoring of compliance with them) and potential users of site-specific information.

Appendix B contains details on data sources seen to be especially important to these discussions.

Needs and Current Uses

Contaminated sites are dealt with in several federal, provincial and municipal programs. Intergovernmental and non-governmental organizations, as well as private companies and land owners, also have interests in obtaining site-specific information. Exhibit 1.1 provides a listing of the primary users of site-specific data and outlines some of the uses.

Some financial and insurance institutions have already established means of managing risk associated with specific sites. This section will provide an overview of both government and private initiatives including legislation, guidelines and remediation programs.

Exhibit 1.1

Potential Users of Site-Specific Data on the Environmental Condition of Land

Potential User	Activity	Impact
Lenders		
Banks Canada Mortgage and Housing Corporation	Require applicants for property loans to submit environmental site assessment before approval.	To better assess the credit risk of the borrowers.
Credit Unions		To reduce risk of liability through future litigation.
Trust Companies Institutional Investors		To flag changes in circumstances of land.
Insurers		
Property and Casualty Insurers Business Insurers	Require applicants for property insurance to submit environmental site assessment before approval. Require businesses involved in land development or excavation to assess risks of work being conducted before approval.	To reduce risk of liability through claims.
Government Administrators		
Federal	Reporting and analysis. Establishment of priorities.	National summary reports and reports to international organizations. To ensure healthy environment for Canadians. To avoid future liability.
Provincial		
Land Use Planners Registrars of Land Titles Managers of Land-related Databases	Provincial land use planning process could benefit from improved site-specific information.	Reduce risks associated with own developments. Improve compliance with contaminated site reporting. Avoid future liability.
Municipal		
Land Use Planners	Land use planning.	Could benefit from improved site-specific information.
Health Departments	Risk assessment, reports of potential health hazards.	

Potential User	Activity	Impact
Others		
Land Developers	Developing land.	Better access to information would: • avoid some unforeseen costs for remediation • assist in deciding appropriate use for land
Land Owners	Selling land. Obtaining approvals.	Better access to information would: • assist in purchase decisions • reduce costs of completing site assessment.
Environmental Non-governmental Organizations, Community Activist Groups	Lobbying for remediation.	Site-specific information would support setting priorities.
Purchasers of Property	Land purchase.	Site information would reduce cost of site assessments before purchase.
Professional Environmental Assessors	Conducting environmental site assessments.	Better site information would: • improve quality and reduce cost of assessment • create consulting opportunities.
International Standards Organization/Canadian Standards Association	Developing standards for site assessments.	Evaluating and adapting standards to evolving needs.
Organizations dedicated to regeneration of contaminated sites	Supporting remediation of specific sites.	Improved site-specific information would: • support decisions on approach • support establishing priorities.

Source: Modified from the NRTEE and CMHC report, *Removing Barriers: Redeveloping Contaminated Sites for Housing* (1997).

Discussions concerning needs and current strategies were held with members of the financial services community, industry associations, non-governmental organizations and government agencies including:

- Insurance — Sorema Management Inc.
- Finance — CIBC, Risk Management Division
- Industry Associations — Insurers Advisory Organization
- Non-governmental Organizations — Canadian Urban Institute
- Intergovernmental Organizations — Canadian Council of Ministers of the Environment
- Government:
  - Environment Canada, Office of Waste Management
  - Health Canada
  - Natural Resources Canada (Mineral Sector)
  - Ontario Ministry of Municipal Affairs
  - Ontario Ministry of Environment and Energy
  - Ontario Ministry of Finance, Property Assessment
  - New Brunswick, Municipalities Culture and Housing
  - Ottawa-Carleton Regional Planning Department
  - City of Ottawa, Planning Department Library

These discussions also provided additional detail on the nature of information currently being used in environmental site assessments.

Strategies

Based on discussions with potential users, information providers and members of the Task Force, the authors have developed five possible strategies for improving access to information on the environmental condition of land. These strategies provide a sample of the types of approaches possible given sufficient policy support, funding and cooperation.

Previous and Current Activities

The CCME has produced several key background studies and is promoting improved information on wastes in general. The Council initiated the National Contaminated Sites Remediation Program in (NCSRP) 1989 and the program continued under the administration of Environment Canada until 1995. The CCME subsequently developed criteria for assessing sites[5] and guidelines for classifying them.[6] The *Subsurface Assessment Handbook for Contaminated Sites*[7] contains detailed technical guidelines. The Contaminated Site Remediation Task Group is currently developing detailed soil quality criteria and has recently published an Annual Report (National Contaminated Site Remediation Program and CCME, 1996).[8]

The Government of Ontario[9] and the Canada Mortgage and Housing Corporation[10] have prepared guidelines on the identification of contaminated sites. These sets of guidelines both make reference to the Canadian Standards Association (CSA) standard Z768-94, *Phase I Environmental Site Assessment.*[11]

The CMHC has also funded studies to help find ways to remove barriers to developing housing on contaminated sites.[12] The rationale behind this paper is that much more land would be made available for housing development if contaminated lands were properly assessed and rehabilitated.

British Columbia has enacted legislation (the *Waste Management Amendment Act*, 1993 S.B.C., c. 25) that requires persons to submit "site profiles if seeking approval of a subdivision, for the zoning of land, a development permit or variance permit, a temporary commercial or industrial permit, for the removal or deposit of soil, a building permit, a demolition permit for a structure that has been used for commercial or industrial purposes, or an activity prescribed by regulation which may be brought to the attention of a manager." The Government of British Columbia intends to compile the resulting information into a publicly accessible database.

Definition of Potentially Contaminated Site

The distinction is made between contaminated sites and potentially contaminated sites. Contaminated sites are known to exceed certain environmental quality standards. Potentially contaminated sites are those that have not yet been subjected to scientific measurement but, because of some indirect evidence such as former use, have a higher probability of showing contamination if they were to be subjected to scientific measurement.

Types of Contaminated and Potentially Contaminated Sites

Exhibit 1.2 contains a list of the major kinds of sites that could be considered potentially contaminated. The table outlines three types of site, designated sites, non-designated sites and brownfield sites.

The "designated site" group contains sites that have been set aside for disposal of wastes, including municipal and hazardous wastes and dredge spoils. The risks associated with these sites are generally known and, recently, controlled. Current designated sites are of less interest to this study than past sites that may have been forgotten and redeveloped.

It is sometimes difficult to link a source of contamination with the affected site. For example, an oil slick on water can contaminate a portion of a coastline, or a hazardous spill at one location can result in well-water contamination at another location. It is therefore important to consider the space and time dimension that can be applied to some sources of contamination.

"Non-designated sites" are properties that have not been set aside for waste disposal but because of their past or present land use are possibly contaminated. Contamination of these sites may also occur from nearby or distant sources.

The term "brownfield site" can be applied to a wide-range of potentially contaminated sites, but generally refers to under-used or abandoned industrial and commercial sites.

Exhibit 1.2

Types of Potentially Contaminated Sites

Type of Site	Examples	Types of Wastes
Designated Sites		
Municipal/city dump sites	Outside or within town. Rural or urban municipalities.	Household and construction wastes. Possibility of some industrial wastes.
Landfill sites	Lasalle, Quebec.	PAH, PCB, organic compounds.
Disposal sites for industrial chemicals and wastes	Sainte-Marie Salomé, Quebec.	Refinery and other industrial wastes.
Ocean dump sites	Selected offshore locations.	Dredge spoils (sand and rock) with some metals or toxics depending on location.
Toxic and hazardous waste disposal sites	Ville Mercier, Quebec.	Waste oils and solvents.
Injection wells for disposal of liquid wastes		Hazardous wastes.
Tire burning and storage facilities	Tyre King fire site, Hagersville, Ontario; tire fire site, Saint-Amable, Quebec.	Oils and heavy metals.
Bio-hazard storage or incendiary sites	Hospital waste disposal sites.	Hospital bio-wastes including blood and blood products containing potential toxins.
Radio-active waste disposal/storage sites		Radioactive hospital wastes.
Non-Designated Sites		
Primary Industries (Agriculture, Fishing, Forestry and Mining)		
Sites affected by livestock wastes	Farms, slaughterhouses, cattle transport stations.	Sewage (could contaminate surface and ground water).
Sites affected by fertilized fields	Downstream from fertilized fields.	Organic and inorganic fertilizers.
Sites affected by pesticide application/spillage	Downstream from fertilized fields.	Organic and inorganic pesticides.
Mining sites	Deloro Mine Site, Deloro, Ontario; Weedon Mine, Fontainbleau, Quebec.	Arsenic, acid water, heavy metals, waste rock and mill tailings.
Manufacturing Industries		
Manufacturing sites (general)	Cooksville Quarry, Mississauga, Ontario; Le Vidangeur de Montréal Ltée, Montréal, Quebec; Pacific Place, Vancouver, British Columbia; Linear Park, Montreal, Quebec.	Petroleum by-products, hazardous industrial wastes; heavy metals, creosote, benzene, copper, lead, oil and mineral greases, PAHs, xylene and zinc, fly ash.

Type of Site	Examples	Types of Wastes
Creosote processing sites	Canada Creosote, Calgary, Alberta.	Creosote.
Chemical processing and transport sites	Plant sites, train stations, truck loading stations, harbours.	General hazardous materials that accumulate over time.
Wood preservation facilities	Peerles Wood Preservers, Cayley, Alberta.	Pentachlorophenol (PCP)
Former coal gasification plants	Pacific Place, Vancouver, British Columbia; The West Don Lands, Toronto, Ontario; Lees Avenue Transit Station, Ottawa.	Heavy metals and coal tar.
Asphalt production and equipment cleaning sites		Petroleum products, solvents.
Oil refinery sites	Port Credit, Mississauga, Ontario.	Organic compounds, petroleum.
Transportation, Communications, Services		
Road salt storage areas		Road salts (could contaminate surface and ground water).
Scrap metal sites	Associated Electronics and Metal Salvage Ltd. Site, Five Island Lake, Nova Scotia.	Metals, petroleum, solvents.
Automobile wreckers		Petroleum and petroleum by-products.
Gas stations		Petroleum and petroleum by-products.
Dry cleaners/commercial laundry facilities		Solvents.
Non-designated Sites Not Associated with Specific Industry		
Armed Forces sites	Weapons testing and storage sites.	Various hazardous wastes.
Locations of one-time spills	Generally on transportation fuel spills to corridors: highways, railway tracks, rivers, harbours, coastline.	Range from residential tank trucks and oil well spills.
Underground storage tanks	Gas stations, trucking depots.	Gasoline.
Sites affected by severely contaminated water or air	Downstream (surface or ground water) or downwind from.	Various hazardous wastes.
On-site septic systems	Rural residences.	Sewage (could contaminate surface and groundwater).
Land spreading of sewage or sewage sludge	Within municipal sewage treatment plants.	Sewage (could contaminate surface and groundwater).
Sites affected by leaky sewer lines	Urban municipalities with older sewer lines.	Sewage (could contaminate surface and groundwater).
Sludge farming and sludge disposal areas at petroleum refineries	Crude Oil Separation Site, Weldon, New Brunswick.	Hydrocarbon wastes.

Type of Site	Examples	Types of Wastes
Sites affected by fly ash from coal-fired power plants	Downwind from coal-fired power plants.	Fly ash.
Sites with leaky tanks or pipelines containing petroleum products	Canadian Waste Management Ltd. PCB Spill Site, Smithville, Ontario; Furnace Oil Spill Site, Rogersville, New Brunswick.	Polychlorinated biphenyls (PCBs), hydrocarbon wastes.
Sites affected by contaminants in rain	Susceptible lakes and rivers with low buffering capacity.	Increased acidification (harmful to lake wildlife).
Sites affected by snow and dry atmospheric fallout		Past fallout (may have accumulated in soils in certain areas).
Sites affected by runoff of salt and other de-icing chemicals from roads and highways	Downstream from municipal storm sewer outfalls; ground water tables near roads and highways.	Salt (could affect soil and water, especially in later winter and spring).
Sites used illegally for dumping of wastes	Blackbird Holdings site, Rednersville, Ontario.	Solvents and other hazardous wastes.
Liquid waste lagoons	Sewage treatment plants.	Sewage.
Sites containing building materials	Construction sites.	Various hazardous wastes.
Residences		Fuel oil from persistent leakage.
Sites affected by high levels of naturally occurring substances	Residences, school buildings, commercial and office buildings.	Radon gas.
Brownfield Sites		
Abandoned or under-used commercial facilities	Former gas station sites, laundries.	Gasoline, cleaning fluids.
Abandoned or under-used industrial sites	Abandoned mines, industrial sites, oil wells.	Mine tailings, hazardous chemicals.

PAH = Polyaromatic hydrocarbons.

Source: Compiled from various sources.

2

Assessment of Information

Useful information exists at most government levels. This is relatively easy to locate using *Databases for Environmental Analysis: Federal, Provincial and Territorial Governments.*[13] Information in non-governmental organizations, municipalities, academic institutions and private companies is more difficult to find, since a comprehensive inventory of their data holdings is not available.

Several databases found in federal, provincial and territorial governments would be important components of an inventory of potentially contaminated sites. However, the methods used to collect the information, the database standards and the database format are often very different. Although some information is held in electronic databases, it is often not in a format that can be easily applied to other uses. Important historical information may be difficult to access if it is on paper or microfiche or if it depends on old software or hardware. In addition, shifting priorities and downsizing of government has, in some cases, led to the discontinuation of several potentially useful datasets.

Potential Sources

There is a variety of fixed sources of potential contaminants: residences, manufacturing industries, institutions (such as hospitals and schools), service establishments, mine sites and storage facilities. Each of these has its own unique historical record. The following section describes the most important databases that provide information on contaminated and potentially contaminated sites. It also describes databases that contain land use information that can indicate contamination potential. More detail on many of the databases described is included in Appendix B.

Federal

The federal government maintains several potential sources of information that could be useful in compiling a site-specific database. Because of the unique conditions in the provinces, these national programs often have a different relationship with each province. This sometimes results in uneven coverage between regions.

Statistics Canada

Census of Agriculture — The Census of Agriculture contains data on farm activity in Canada. The data are derived from the Census of Agriculture that takes place every five years in conjunction with the Census of Population. Information available includes land tenure and use, and pesticide, herbicide and fertilizer use.

Census/Survey of Manufacturers — Historical information on manufacturing establishments exists in many places and is not often easily harmonized. In its study,[14] the City of Ottawa began its search with Statistics Canada's Census of Manufactures (now Survey of Manufactures) for selected industries.[15] Exhibit 2.1 provides a list of the industries and their Standard Industrial Classification (SIC)[16] (1980) that were found in the Ottawa historical record.

Statistics on the location and nature of manufacturing industries have been collected since 1850. Publications from the 1940s to 1960s provide the actual address and SIC of each establishment surveyed.[17] More recent publications provide only the name of the establishment, the SIC and city.[18] There are approximately 52 different publications of this nature. Each has its own specialized industry (such as "Fabricated Metal Products Industries") and period of publication. Over the years certain classifications have been dropped, added or combined with others. *The Guide to Managing Statistics Canada Publications in Libraries*[19] provides a reference to all the Departments' historical publications.

The Census/Survey of Manufactures is based on a survey questionnaire targeting manufacturing establishments in Canada. The last full coverage (census) was done in 1986. Coverage is more complete for some provinces than others. Information in the principal statistics database includes number of employees, production, operating costs, value added, inventory, address and SIC code.

Business Register — The Business Register database contains establishment data for most businesses in Canada. Included in the database are name, address (mailing), telephone and fax numbers, contact and SIC indicator. The number of employees and revenue information are also available but not complete. Some SICs are not recorded completely. This database is for internal Statistics Canada use only.

Coal Mines — This annual survey collects the financial data of major Canadian mining establishments. Variables include production summary, inventory and selected mining and non-mining outputs. The data have been collected since 1972.

Exhibit 2.1

Industries Identified as Potential Sources of Contamination

Industry (SIC)
Leather and Allied Products (17) • Tanneries (1711)
Primary Textile Industries (18)
Textile Products Industries (19) • Carpet, Mat and Rug Industry (192)
Clothing Industries (24) • Hat and Cap Industry (249)
Paper and Allied Products (27) • Pulp and Paper Industries (271)
Printing, Publishing and Allied Industries (928)
Primary Metal Industries (29) • Iron Foundries (294) • Brass Foundries (295) • White Metal Alloys (299)
Fabricated Metal Products (30) • Boiler Making (301) • Stamped, Pressed and Coated Metal Products (304) • Wire and Wire Products (305)
Transportation Equipment and Industries (32) • Railway, Rolling Stock Industry (326)
Electrical and Electronic Products Industries (33) • Battery Industry (3391)
Non-metallic Mineral Products Industries (35) • Carbide Manufacturing (359)
Refined Petroleum and Coal Products Industries (36) • Manufactured Gas Works (369) • Tar Distillation (369)
Asphalt/Tar Paving Industries (272 and 369)
Chemical and Chemical Products Industries (37) • Paint and Varnish Industry (375) • Cleaning Compounds (376) • Printing Ink Industry (3971)
Other Manufacturing Industries (39) • Processing and Production of Commercial Isotope Products
Other Non-manufacturing Activities • Bulk Fuel Storage and Transfer Facilities
Railway Workshop and Roadhouses
Large Cleaning and Dyeing Works (9721)

Source: Adapted from City of Ottawa, 1988.

Environment Canada

Registry of Underground Storage Tanks — (RUST) — This database contains data on the characteristics of underground tanks (including their contents) on federal property maintained by Environment Canada. Variables found in the database include type of facility, ownership, location, site sensitivity, tank characteristics and leak record. Data are collected by questionnaire/registration forms for individual tanks. The period of record is 1987 to the present.

National Pollutant Release Inventory (NPRI) — The National Pollutant Release Inventory (NPRI) is an electronic database of companies and facilities with 10 or more employees that manufacture, process or otherwise use 10 tonnes or more per year of a number of substances listed under section 16(1) of the *Canadian Environmental Protection Act*. These companies are required to report to the NPRI. The first reporting to the NPRI was 1993, and is continuing annually. Coverage is often uneven since several companies do not report for reasons of industrial confidentiality. Data for 1994 are available; data for 1995 are not yet released.

National Trends in Emergencies (NATES) — The NATES database covers all major spills and many of the minor spills occurring on land and on water between 1968 and the present. Information recorded includes location, date, nature of the spill and quantity spilled. Incident reports are provided by regional offices or provincial agencies annually. Coverage is better for some provinces (such as British Columbia, Ontario and the Maritimes) than the others. There is a delay of at least two years between an event and the time it is registered in the NATES database. Databases in the contributing regions are normally more detailed than those at the national level. Some regional databases, such as the one maintained by the Pacific and Yukon Region Office, contain details on the state of clean-up and final results (e.g., fines, successful litigation, etc.).

Pollution Incident Report Records Collection (PIR) — This database contains pollution incidence reports and other information on significant and environmental emergencies in Canada and Canadian offshore waters. This is a compilation of high-priority verbal reports that are submitted by all agencies within 24 hours of occurrence of an incident. Once further investigated, the data are incorporated into the NATES database. The database began its coverage in 1973.

National Inventory of PCBs in Use and PCB Wastes in Storage in Canada — This database contains an inventory of polychlorinated biphenyls (PCB) waste storage sites and in-use PCBs, which also provides information on askarel and contaminated mineral oil in equipment.[20] Variables include owner information, address, geocode, equipment and waste type. Information is available for all of Canada from 1988 to the present.

Department of Indian and Northern Affairs

Northwest Territories Toxic Spills Management System — This database contains an inventory of hazardous spills in the Northwest Territories. Variables include material and quantity spilled, location and area affected. Information is available from 1984 to the present.

Natural Resources Canada

Mineral Deposits Information System (MINSYS) — MINSYS is a database of general information filed under the National Mineral Inventory for Canada. Variables include mineral commodities, geological data, location and a cross-reference to provincial inventory systems. The geographic coverage is all of Canada with a period of record from the late 1800s to 1991. This database is no longer being updated. Mining data from 1988 to the present are found in SoftAccess from the Census of Mines.

Transport Canada

Dangerous Goods Accident Information System (DGAIS) — DGAIS is a database of dangerous goods accidents reported under Section IX of the Transportation Dangerous Goods Regulations. The database is designed to support risk assessment and regulatory amendments. Variables include an accident description (location, date, amount of product released) and commodity description. The geographic coverage includes all provinces and territories from 1985 to the present.

Heritage Canada

Historical Manufacturing Centres Project — This database contains information on Canadian manufactures that existed between 1850 and 1939 and whose buildings exist in whole or in part today. Fire insurance records are one source of information for this database. Variables include geographic location, names of companies having occupied a particular building and date of construction. Sixty cities are covered for the period of record. The database is not up-to-date.

Canadian Inventory of Historic Buildings (CIHB) — This database contains architectural, historic and geographical information on buildings. Variables include geographic location, historical data and evaluation of federally owned buildings. The database contains detailed information on buildings up until 1914, and general data to the present. It is continually updated.

Provincial

Much of the responsibility for assessing and regulating activities on contaminated sites rests in the hands of provincial governments. Each province has established its own priorities and approach.

Newfoundland

Annual Census of Mines, Quarries and Sandpits — This database contains the results of questionnaires completed by mining companies operating in the province. Information includes mine site locations for a period of record from 1953 to the present.

Prince Edward Island

Petroleum Storage Tank Management System — This database contains information on underground storage tank systems and sites. Variables include location, ownership information, sensitivity classification and tank system information. The period of record began in 1986 and the database is updated continually.

Spills — This database contains information on petroleum spills, including location, property owner, source, product spilled and clean-up status. This is a relatively new database (1991 to the present) and is in both hard copy and diskette format.

Property Assessment Tax System (PATS) — This is an on-line database containing building permit information by parcel number collected for new construction inspections. This program has operated since 1984. This system is a component of a province-wide Geographic Interpretation System (GIS) system being developed by the Real Property Records Division of the Department of Finance.

Building and Disposal Permits — This database is used to control building construction and sewage disposal in rural areas. Variables include applicant information, septic systems details and proposed structure. This database dates back to 1960 and is available in dBase format.

Crown Land Inventory — This database contains information on Crown land used to guide property management. Information on all Crown land is included and dates back to 1860 (the database was initiated in 1970). This database is a component of a province-wide GIS system being developed by the Real Property Records Division of the Department of Finance.

Nova Scotia

PCB Inventory System — This is a computerized inventory of PCB wastes in storage for disposal. Information includes inventory, owner, site PCB type and level of contamination. This dBase program contains information from 1991 to the present.

Petroleum Storage Applications — This is a computerized inventory of petroleum storage tanks that includes installation information, product stored and tank information. Information has been collected since 1988 and is updated as required.

Salvage Yards Licensing Application — This database contains an inventory of all licensed salvage yards. Variables include owner information and lot location and description. The database contains information from 1964 to the present and is updated as required.

Nova Scotia Property Database — This database contains information on parcel boundaries linked to attribute files that include land ownership information and addresses. This database is a GIS database and is continually updated.

New Brunswick

Active Disposal Sites — This is a list of active municipal solid waste disposal sites, updated as required in a word processing format. The period of record is not known.

Closed Dumps — This is a hard copy document identifying the location, size and use of closed or abandoned land disposal sites. This document accompanies a map of the sites and was prepared by a consultant.

Hazardous Waste Management System — This electronic database contains information on the generation, transportation and disposal of hazardous wastes. Information includes generator, carrier and receiver information, hazardous waste state and quantity. The update frequency is continual and data are available from 1992 to the present.

PCB Inventory System — This system maintains an inventory of PCB wastes stored at sites within the province. The dBase file contains company information (name, address, storage site address) and inventory information (PCB item, quantity and type). This database has been updated annually since 1989.

Petroleum Management System — This system compiles data on above-ground, underground and portable petroleum storage tanks. This electronic database contains a variety of information on petroleum storage tanks such as new construction, abandonments, leaks and spills). This database has been updated daily since 1988.

Property Taxation Assessment System — This database provides information on land use and building permits but is restricted to information collected since 1993.

New Brunswick Land Ownership or Parcel Indexing System — This database contains information on parcel boundaries, owner information and deed references. The period of record is ongoing with historical information dating back to the early 1970s. The database is within a GIS system.

Quebec

Industrial Depollution Program Incident Monitoring System — This database contains an inventory of Quebec industries as part of an industrial incident program. Variables include identification of industries, responsible persons and technical data. The period of record is limited to 1980-1991.

Industrial Waste Reduction Program — This program identifies site operations or establishments, industry and owner. Variables include information on site operations or firm.

Cadastre Information System — This database contains information on registered lots, for all land under the cadastre system. Some of the database has been incorporated into a GIS. The period of record is 1981 to the present and the update frequency is ongoing.

Inventory of Dangerous Waste Sites — This inventory[21] is part of a series of publications describing the locations of dangerous waste sites, as well as the nature of the wastes and their potential impact.

Ontario

Municipal/Industrial Strategy for Abatement (MISA) Program — Industrial Monitoring Information System — This information system contains effluent data form Ontario's direct discharger industrial plants. Relevant information includes plant location. The period of record began in 1986, but is no longer being updated.

Ontario Waste Disposal Site Inventory — This database contains location, name, classification and waste type. This electronic database contains information collected from 1979 to the present and is updated every two to three years.

Land Index System Database — This inventory contains all lands disposed of by the Ontario Crown, a list of all land surveys of Crown land and the current holders of Crown leases and licences of occupation. Variables include land status, dispositions, title and grants, as well as mining information. The geographic units are referenced by lot and concession. Information in this database dates from 1793 to the present.

Manifest and Generator Registration — Ontario maintains a hazardous waste manifest registry wherein all hazardous waste generators (i.e., companies and institutions that are required by law to register any transportation of hazardous waste), carriers and individual movements are recorded. Each time wastes are transported, a manifest registering the origin, nature and quantity of the waste, and the destination is recorded in a publicly accessible database. The data are available from 1986 to the present.

Air Photo Library — This is a repository of the Ministry of Natural Resources (MNR) air photo original negatives. The supporting database includes flightlines, scale, date and topographic map. The library is updated continually and has photographs dating back to 1931.

CD-ROLL — This is a CD-ROM application available from the Ministry of Finance. The database contains information on tax assessment rolls including location, owner/tenant name, tax liability, tax class and area of property.

Manitoba

PETSTOR (Petroleum Storage) — This is an inventory of information split into three parts: history, inspect and sites. It contains information on the installation and removal of tanks, inspection information, owner/operator and address, and the location of petroleum storage tanks. This database has information from 1976 to the present and is updated daily.

Hazardous Waste Register — This registry contains site information for companies registered as hazardous waste generators, carriers and/or receivers. Company detail as well as waste detail and volume are included. The period of record is 1986 to the present and the database is updated as needed.

Manitoba Land Related Information System — This is an integrated GIS database of land-related information including farming practices, crops, property assessments and soils. The database is used to determine the possible location of hazardous material or to determine sewage treatment from private homes.

Manitoba Assessment Computer System — This database contains assessment values for buildings as well as the classification for each property for taxation purposes. Building and land characteristics are included. The period of record dates back to 1987, and the database is updated as required.

Saskatchewan

Petroleum Production Disposition System — This system maintains information from all producing oil, gas and water source wells including location, volumes and production. Wells are geographically coded by meridian, township and range. The update frequency is monthly and data are available back to 1935.

HAL — HAL is a database that contains a list of spills and the level of clean-up following a dangerous goods spill. Information includes date, type of spill, volume, remediation measures and disposal. The period of record is 1981 to the present.

Provincially Regulated PCB Storage Sites — This database contains information on the movement of PCB material as it is removed from service. This database is in electronic format, is updated every six months and contains information from 1989 to 1993.

Storage Facility Management Program — This program maintains an inventory of all hazardous substances and dangerous goods (including waste) storage facilities. Information includes type and quantity of substance stored as well as the storage medium. This database has been updated daily since 1989.

PCB Storage Facility Database — This database contains an inventory of PCB and PCB-contaminated material produced by SaskPower (Province of Saskatchewan power authority). Variables include container type, location and PCB concentration. This database is available electronically and contains information dating back to 1989; it is updated daily.

Alberta

Aerial Photo Mapping Catalogue — This database holds aerial photographs for survey control and mapping. This database covers all of Alberta from 1974 to 1991.

Land Status Automated System — This is a computerized system that provides access to status information on public land. Information includes land description and size, client name and address, and administrative data. The period of record is 1983 to the present.

HELP End Landfill Pollution Data Tracking and Control System — This database contains an inventory of landfills and plant sites for the management of potentially contaminated sites. Sites are geocoded using legal land descriptions. Information in the database includes company information, location and waste types. This database is limited by the period of record (1986 to 1988).

Environmental Information System — This database contains information on pipeline and non-pipeline releases of potentially harmful substances. Variables include event information (location, date, source), georeferenced by legal land location or township and range. The period of record is 1975 to the present and records are updated weekly.

British Columbia

Emergency Incident Database — This database contains information on spills of dangerous goods, floods, landslides, air emissions and effluents. Variables in this database include incident location, time and type, cause, response taken and material spilled. Geographic reference includes latitude and longitude. The database is limited to a period of record dating back to 1992. The database is updated daily.

Environmental Legislation Charges and Convictions Database — This database contains information on violators of environmental protection laws in the province. Variables include violator's name and location, charge, offence and *Act* violated. The geographic units are limited to six regions and the period of record is 1989 to 1993.

Site Information System — This system tracks information on contaminated sites. This electronic database contains information on site location, contaminant levels and remedial actions taken. Geographic reference is latitude and longitude with a period of record dating back to 1988. This database is updated as information is received.

Northwest Territories

Hazardous Materials Spills Database — This is a database of hazardous material spills reported to the Northwest Territories 24-hour Spill Report Line Service. Information includes spill location and date, and type, volume and quantity of material. The period of record is 1981 to the present. The database is updated monthly.

Municipal

Many municipalities have performed or commissioned reports on contaminated sites. Concern about contaminated sites is often prompted by an incident that forces awareness that other such sites are likely awaiting an unfortunate discovery. In the City of Ottawa, in 1986, excavation for a transit station in the downtown core uncovered a deposit of coal tar left there by a former occupant. As a result, extensive clean-up was required before the work could continue. The incident prompted the city planning department to commission a study on other such potentially contaminated sites.[22] The study found 177 sites that had been used for activities that were deemed to have been potential generators of hazardous wastes.

Similarly, in 1991, the Regional Municipality of Ottawa-Carleton (RMOC) planning department became aware of the potential for damages due to contaminant leakage. Drinking water contamination in the village of Manotick was traced to the site of a former dry-cleaning operation. Leakage from improperly stored solvents had led to pollution of the ground water. As a result, the RMOC installed pipelines to the village from the central water treatment plants. A study was commissioned to identify other potential sources of contamination in the villages surrounding Ottawa.[23] This study found 91 sites where gasoline storage tanks had existed or were in use.

According to the Canadian Urban Institute,[24] historical land use inventories have also been completed for the City of Niagara Falls, the Region of Waterloo and the City of Toronto.

Municipal Land Registries — There are over 5,000 municipalities in Canada: 120 of these are cities, 800 are towns, over 1,000 are villages and almost 3,000 are rural municipalities.[25] The ownership and use of most private land is recorded in municipal registry offices. This information is used for registering legal ownership and for tax assessments. Registry offices normally hold a substantial amount of historical records including maps and site plans.

Until recently, most of this information was maintained on paper or microfiche and standardization across a province was minimal. Several provinces have seen the need to standardize and computerize the information held by the registry offices:

- The Nova Scotia Property Database (Nova Scotia Department of Municipal Affairs) is in the process of completing its holdings, which include maps in digital format.
- New Brunswick Land Ownership or Parcel Indexing System (New Brunswick Geographic Information Corporation) has also recorded and systemized much of that province's land registry information. The information in this registry dates back to the 1970s.
- Ontario's Ministry of Finance has developed a Land Assessment System on CD-ROM (CD-ROLL, described above).
- Manitoba Assessment Computer System (Manitoba Rural Development) contains assessment values as well as legal descriptions and ownership information for properties.

Other sources of information at the municipal level include:

Site plans — Municipal files containing site plans will provide information on building type and structure, such as pipelines and storage tanks.

Fire Insurance Plans — Fire insurance maps are common for industrial and manufacturing facilities from the mid-1800s to mid-1900s. The Historical Manufacturing PIBJ 3161E01 Centres Project at Heritage Canada is one example of the information contained in fire insurance plans. These plans often contain detailed information on buildings and structures.

Private and Other

Conservation Authorities — Conservation authorities are mainly responsible for floodplain management. The Rideau Valley Conservation Authority, in Ontario, was contacted to determine what kind of data holdings might be of use in assessing the environmental condition of land. The Conservation Authority has limited information, the most comprehensive being the Flood Plain Management database. It has limited land use and water quality data in map and printed format, and has recently taken over a septic approval program once maintained by the Ontario Ministry of the Environment and Energy.

Site Owner Files — If a site has changed hands recently, there may be a brief environmental evaluation. Most modern sites should have surface-related information. A review of shipment information would give an indication of what types of materials were handled at a site.

Corporate Archive Records — Corporate records may be available for a site if the site has been owned by the same company over an extended period. These records could give an indication of past activities as an indicator of potential contaminants. Corporate files may also contain engineer's drawings detailing geotechnical and foundation engineering for subsurface conditions.

Priorities

The most essential information that would give an indirect indication of the environmental quality of a site would be its current and previous uses. Land use can be inferred from previous ownership through historical land records and manufacturing surveys. Some provinces are well advanced in compiling current ownership data but none have completed a complete historical land database. Several municipalities have conducted studies that yield this information.

Many provinces have inventoried specific sites of concern, such as underground storage tanks. None have complete inventories of all the sites that would be considered potentially contaminated.

Spills databases in general would be useful in determining potential impacts from one-time spills of hazardous materials.

Information on the location of current and past waste storage sites could provide insight into the potential for risks from nearby sources. Exhibit 2.1 summarizes the authors' initial estimate of the number of sites, the relative risk, the availability of information and the feasibility of assembling the information at a national level. The sites are graded as low, medium or high for the four areas. Sites scoring "high" in all four areas would be the highest priorities since there would be a high number of high-risk sites and information would be readily available and relatively simple to compile.

Exhibit 2.1

Initial Estimate of Information Availability and Risk Associated with Contaminated Sites

Type of Site	Number of Sites	Relative Risk	Information Availability	Feasibility of Assembling National Data
Designated Sites				
Municipal/city dump sites	High	Medium	Medium	Low
Landfill sites	High	Medium	Medium	Low
Disposal sites for industrial chemicals and wastes	Low	Medium	Medium	Medium
Ocean dump sites	Low	Low	High	High
Toxic and hazardous waste disposal sites	Low	High	High	High
Injection wells for disposal of liquid wastes	Low	Medium	Medium	Medium
Tire burning and storage facilities	Low	Medium	High	High
Bio-hazard storage or incendiary sites	Low	Medium	Medium	High
Radioactive waste disposal/storage sites	Low	Medium	High	High
Non-Designated Sites				
Primary Industries (Agriculture, Fishing, Forestry and Mining)				
Sites affected livestock wastes	Low	Low	Low	Low
Sites affected by fertilized fields	Medium	Low	Low	Low
Sites affected by pesticide application/spillage	Medium	Medium	Low	Low
Mining sites	Low	Medium	Medium	Medium
Manufacturing Industries				
Manufacturing sites (general)	High	Medium	Medium	Medium
Creosote processing sites	Low	Medium	Medium	Medium
Chemical processing and transport sites	Medium	Medium	Medium	Medium
Wood preservation facilities	Low	High	Medium	Medium
Former coal gasification plants	Low	Medium	Medium	Medium
Asphalt production and equipment cleaning sites	Low	Medium	Medium	Medium
Oil refinery sites	Low	Medium	High	Medium

Type of Site	Number of Sites	Relative Risk	Information Availability	Feasibility of Assembling National Data
Transportation, Communications, Services				
Road salt storage areas	Low	Low	Low	Low
Scrap metal sites	Medium	Medium	Medium	Medium
Automobile wreckers	Medium	Medium	Low	Low
Gas stations	High	Medium	Medium	Medium
Dry cleaners/commercial laundry facilities	High	Medium	Medium	Medium
Non-designated Sites Not Associated with Specific Industry				
Armed Forces sites	Low	Medium	High	Low
Locations of one-time spills	High	Low	High	Medium
Underground storage tanks	High	Medium	Medium	Medium
Sites affected by severely contaminated water or air	Medium	Medium	Low	Low
On-site septic systems	High	Low	Low	Low
Land spreading of sewage or sewage sludge	Low	Medium	Low	Low
Sites affected by leaky sewer lines	Low	Medium	Medium	Low
Sludge farming and sludge disposal areas at petroleum refineries	Low	Medium	Medium	Medium
Sites affected by fly ash from coal-fired power plants	Low	Medium	Low	Low
Sites with leaky tanks or pipelines containing petroleum products	Low	Medium	Low	Low
Sites affected by contaminants in rain	Medium	Low	Low	Low
Sites affected by snow and dry atmospheric fallout	Medium	Low	Low	Low
Sites affected by runoff of salt and other de-icing chemicals from roads and highways	Medium	Low	Low	Low
Sites used illegally for dumping of wastes	Medium	Medium	Low	Low
Liquid waste lagoons	Medium	Low	Medium	Medium
Sites containing building materials	Medium	Low	Low	Low
Residences	High	Low	Low	Medium
Sites affected by high levels of naturally occurring substances	Low	High	Medium	Medium

Type of Site	Number of Sites	Relative Risk	Information Availability	Feasibility of Assembling National Data
Brownfield Sites				
Abandoned or under-used commercial facilities	Medium	Medium	Medium	Low
Abandoned or under-used industrial sites	Medium	Medium	Medium	Medium

Source: Compiled from various sources.

3

Current Users and Uses

A national inventory of site-specific land use and land quality information could provide a central source of information for a wide range of clientele including government, business and land owners. A central source would provide an opportunity for clients to obtain more information for less effort than otherwise possible. Government departments at the municipal, provincial and federal levels involved in land use planning require access to site information. The private sector could also benefit from a comprehensive source of site-specific land use and land quality information as input to planning and development. Any organization involved in environmental reporting would also benefit from this inventory.

Government Programs

Besides the administrative and reporting activities summarized in Chapter 2, several agencies are involved in or have performed studies, have developed guidelines or have participated in the remediation of contaminated sites.

The National Contaminated Site Remediation Program (NCSRP)

The NCSRP was a five-year, $250 million program initiated in October 1989 by the CCME. The program was officially terminated March 31, 1995. A limited one-year sunset program was initiated in fiscal year 1995/96.

The NCSRP had three primary objectives:

- to identify high-risk contaminated sites and carry out remedial action through a "polluter pays" principle;
- to provide resources to clean "orphaned" high-risk sites;[26] and
- to work with private industry to develop and demonstrate new and innovative remediation technologies.

Three components were developed to fulfil the primary objectives:

- **Orphan Site Component:** The federal government entered a bilateral agreement with provincial environment departments to clean up orphan sites. The costs were to be shared between Environment Canada and provincial environment departments. The federal government committed $100 million to the program, divided among the provinces and territories.

- **The Demonstration and Evaluation of Site Remediation Technology (DESRT) Component:** This component was designed to encourage industry to develop new methodologies to remediate contaminated sites. The federal government contributed $25 million to be matched by the provinces. Third-party funding was also encouraged.

➤ **Federal Sites Component (FSC):** The FSC involved a Memorandum of Intent between Environment Canada and other government departments. Environment Canada allocated $25 million toward assessment of contaminated sites on federal land. Assessment costs were shared 50/50 with the provinces.

The CCME

The CCME has been instrumental in establishing contaminated sites as a national priority. Although the NCSRP is no longer active, the CCME is still active in establishing standards for contaminated site assessments.

Provincial Programs

British Columbia's *Waste Management Amendment Act* (*Bill 26*) is not yet in effect, but it promises to establish requirements for site assessment and easy access to information on contaminated sites. A site registry is planned that will provide public access to basic site characteristics (British Columbia Environment, Contaminated Site Remediation and Assessment Section).

The Government of Ontario has recently released a set of voluntary guidelines for assessing contaminated sites.[27] According to the Canadian Urban Institute, the province's Ministry of Health has been developing "directives to local boards of health requiring the identification of public health risks, which included contaminated sites."[28]

Other provinces also have varying degrees of regulations of contaminated sites. Reporting and registration requirements for each province for contaminated sites, fuel tanks and waste generators are shown in Exhibit 3.1. This survey indicates that all provinces have mandatory registration of hazardous wastes but only some require the registration of contaminated sites and fuel tanks.

Exhibit 3.2 contains a summary of the overall approach in selected provinces (replies from Newfoundland, Prince Edward Island and Saskatchewan had not been received at the time of writing) concerning information on contaminated sites as well as the degree of interest in linking this information to land registries and other environmental data. All provinces responding showed interest in a cost-effective means of cross-referencing land registry and site-specific environmental data.

Exhibit 3.1

Provincial Programs for Contaminated Sites, Fuel Tanks and Waste Generators

Province/Territory	Contaminated Sites	Fuel Tanks	Waste Generators
British Columbia	Voluntary reporting. Voluntary Ministerial letter often used for land sale.	No registry.	Mandatory registration and filing.
Alberta	Reporting requirement for spills (may not get included in registry if cleaned up), voluntary reporting for other events.	Mandatory registration (Petroleum Tank Management Association).	Mandatory registration and filing.
Saskatchewan	Voluntary reporting.	Mandatory registration and filing.	Mandatory registration.
Manitoba	No mandatory disclosure, voluntary reporting registration may be required by Minister.	Mandatory registration.	Mandatory registration and filing.
Ontario	Voluntary reporting, although mandatory reporting of spills each district office maintains its own database.	Mandatory registration (Fuel Safety Branch, Consumer and Commercial Relations).	Mandatory registration and filing.
Quebec	Mandatory registration (permission required to demolish or build on a contaminated site).	Small tanks exempt, mandatory registration for large commercial tanks.	Mandatory registration and filing.
New Brunswick	Mandatory reporting (no formal registry).	Mandatory registration of tanks >2000L (licensed). Mandatory registration of waste oil tanks (not licensed).	Mandatory registration filing.
Nova Scotia	Mandatory notification of pollutant release, but not contaminated sites.	Mandatory reporting for underground tanks >2000L, for bulk above ground tanks >4000L.	Mandatory registration filing.
Prince Edward Island	Mandatory reporting (no formal registry).	Mandatory reporting for underground tanks, but only for bulk above ground tanks.	Mandatory registration and filing.
Newfoundland	Mandatory registration.	Mandatory registration and filing.	Mandatory registration.
Yukon Territory	Pending (will be voluntary reporting, unless change in land use proposed).	Pending (will be madndatory, but phased in); Fire Marshall will enforce.	Mandatory registration and filing.
Northwest Territories	List for Commissioner's lands.	Mandatory registration (Fire Marshall).	Mandatory registration and filing.

Source: Consulting and Audit Canada, untitled correspondence between Consulting and Audit Canada and the NRTEE (1996).

Exhibit 3.2

Site Specific Activities and Information in Provinces

	NF	NS	PE	NB	PQ	ON	MB	SK	AB	BC	YT	NWT
1. Is there a comprehensive, accessible public registry with respect to contaminated sites?		Yes		No	Yes	No	Yes		Yes[f]	No[b]	Yes[c]	No[a,b]
2. Does your jurisdiction register underground storage tanks? If so, which ones?		Yes		Yes	Yes	Yes	Yes		Yes	No	No	Yes, All
3. What estimated percentage of underground storage tanks are known and have been identified?		100%		100%	Unknown	100%	90%		Unknown	Unknown	90%[d]	90%
4. Are the registries (in numbers 1 and 2 above) cross-referenced to the land titles/land registry system? How is this cross-referencing done?		No		Yes	No	No	No		No	Yes[b]	No[b]	No
5. Is the land titles/land registry system digitized? Are there plans to do so? If so, when?		No		Yes	Yes[b]	No			No	No	No[e]	No[b]
6. Is land-related environmental information in your jurisdiction cross-referenced from one database to another, for example, GIS to the public registry of contaminated sites to the land titles/land registry system?		No		Yes[b]	No	No	Yes[b]		No	Yes[b]	No	No
7. Are there plans to cross-reference more of this land-related environmental information found in various databases in your jurisdiction?		Yes		Yes	No[h]	No	Yes		No	Yes	Yes	No
8. Has your jurisdiction considered the creation of a database of all environmental information associated with land as an entity separate from the provincial land titles/land registry systems, by cross-referenced to them? Would your jurisdiction be receptive to some cost-effective options to achieve this?		Yes Yes		Yes	No Yes	No Yes	Yes Yes[g]		Yes Yes	Yes Yes	Yes Yes	No Yes

[a] There is a paper filing system.
[b] Under development.
[c] Public registry is awaiting contaminated site regulation.
[d] Percentage of existing tanks cited. Percentage of abandoned sites unknown.
[e] Pilot projects have been conducted.
[f] For officially designated sites only.
[g] Manitoba has an ongoing program to cross-reference provincial databases.
[h] The plans are being considered.

Source: NRTEE background materials for multistakeholder workshops (1996).

The Financial Services Sector

The financial services sector, including banks, trust companies and insurance companies, requires land use information, both past and present, in day-to-day decision making. In the case of many banks, the standard credit risk assessment process now includes criteria on whether or not an environmental site assessment (ESA) is required. Generally, ESAs are requested for:

- sites that are currently used for activities that have a potential for contamination;
- sites that have within recent history been used for activities that have a potential for contamination; or
- sites where the credit requested is above a guideline threshold.

Site assessments are performed at the expense of the owner or potential purchaser. The charge for simple Phase I ESAs (according to CSA[29] and/or the American Society for Testing and Materials (ASTM)[30] standards) may range between $500 and $7,500. The assessment review process consists of a historical search of the site, a site visit and interview(s) with "knowledgeable" persons. There do not appear to be mechanisms in place for capturing the information collected for dissemination. Site assessments are normally retained at the local branch office that is managing the account.

There is no certification procedure for environmental consultants. That means that anyone, regardless of experience, may be hired to perform environmental site assessments. Major businesses, though, will sometimes reject an ESA that does not conform to their own expectations of quality.

The Canadian Bankers' Association[31] has suggested (a) that there be a certification program for environmental professionals to ensure a minimum level of competence, and (b) that there be regular updates of Phase I ESAs.

Non-governmental Organizations

The Canadian Urban Institute has published guidelines[32] for municipalities wishing to perform historical land use inventories for the purpose of locating potentially contaminated sites. The paper outlines the major stages of creating a historical land use inventory as:

- **defining the scope of the inventory:** identifying potential users and their requirements and using that information to design the content of the inventory;
- **designing the inventory and presentation format:** designing a flexible content and presentation format consistent with the user needs;
- **collecting the information:** compiling relevant materials from municipal, provincial, historical, environmental and rural sources; and
- **maintenance:** updating the inventory as new information becomes available.

Three types of land use inventories are outlined:

- **area of interest:** restricting inventory to specific areas of potential current contaminant generation within the municipality;
- **historical land uses:** includes more detailed information on past land uses; and
- **potential environmental concerns:** includes "area of interest" and "historical land uses" information plus past information on the location of storage tanks, the scale of the past industry and information on physical features.

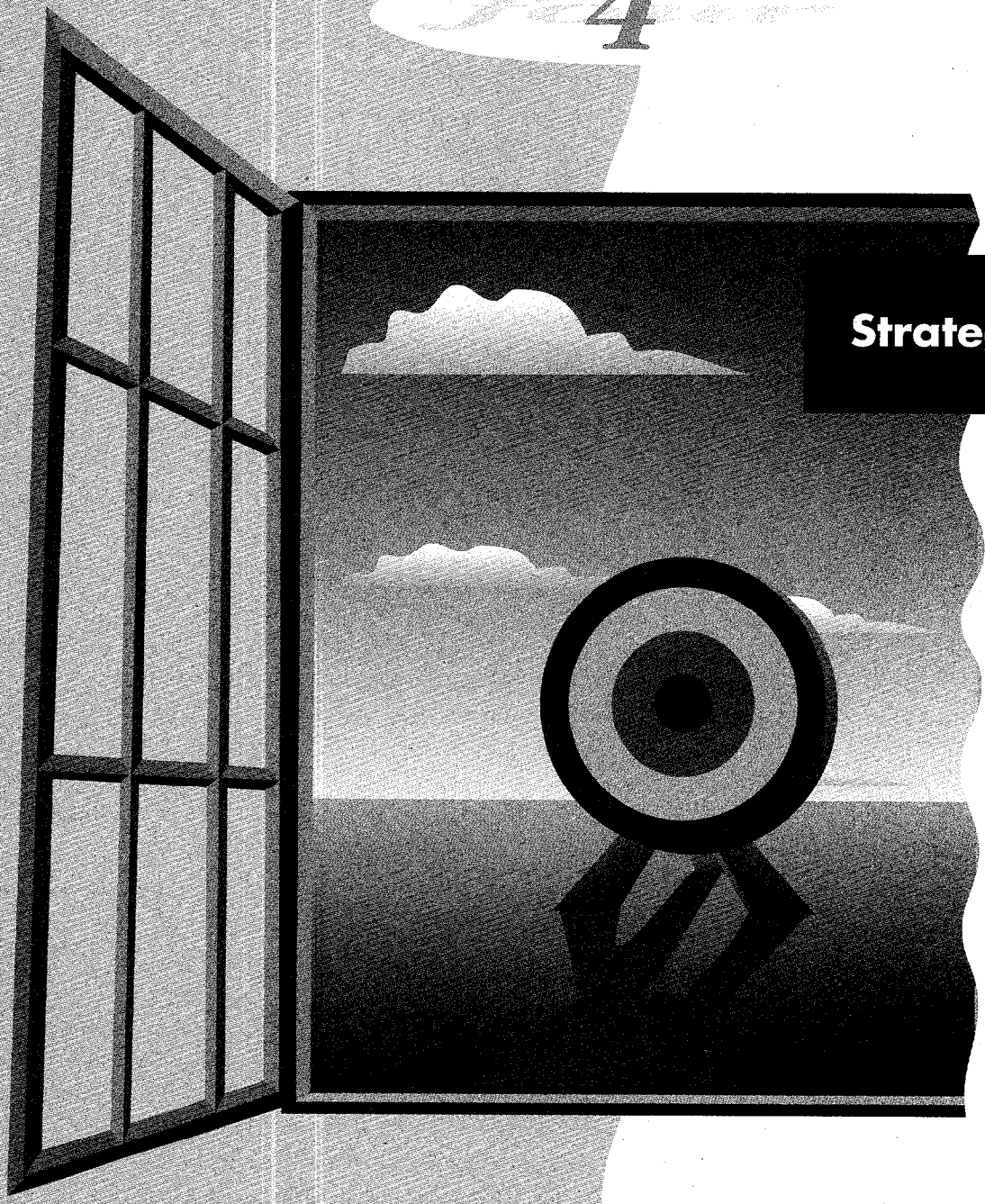
Guidelines

Several jurisdictions have instituted requirements or recommendations for environmental site assessments. Banks that require a site assessment generally follow the Canadian Standards Association's *Phase I Environmental Site Assessment*[33] standard. This standard establishes principles and practices for Phase I ESAs covering records search, site visits and interviews with knowledgeable personnel. The CSA has drafted standards for Phase II ESAs that involve sampling, analytical and remedial measures.

Some practitioners follow the standards established by the American Society for Testing and Materials.[34] The ASTM's *E 1527/Standard Practice for Environmental Site Assessments: Phase I Environment Site Assessment Process* and *E 1528/Standard Practice for Environmental Site Assessments Transaction Screen Process* are often used when an American company is involved.

The CMHC[35] and the Ontario Ministry of Environment and Energy[36] have built upon these guidelines to establish their own more specific approaches to conducting site assessments. Both of these guidelines have taken the CSA standards into account.

4



Strategies

Components

Each strategy needs to consider alternatives in terms of policy, institutionalization, scope, scale, target client and timing. These components are discussed individually below so that the reader may "mix and match" strategies. The five selected strategies described in detail below are built from feasible combinations of the alternatives for each group.

Policy Support

One of the most important factors in improving site-specific information on the environmental condition of land is the support that can be summoned from legislators and company managers. What appears to be required is a national set of standards and a consistent means of applying them. Furthermore, the information would have the greatest benefit if it were consistent and available to the public. There are several possible approaches to accomplishing this:

- the federal government could enact legislation specifying the standards and requiring their application;
- provincial governments could enact similar legislation;
- municipalities could participate in the development of standards and build requirements for applying site assessments into their by-laws; or
- businesses could agree to adopt standard practices that would include (a) land owners conducting ESAs and (b) lenders, insurers and developers using the information from ESAs in their decisions.

Since Environment Canada has recently discontinued its contaminated site program, it is unlikely that the department would lead the development of federal legislation in that area. Other departments and agencies (e.g., the Office of the Auditor General, Health Canada, CMHC, etc.) have an interest in supporting the management of contaminated site information at the national level.

Several provinces already have some form of contaminated site registration. Some others have plans for registries. None of the provincial registries are comprehensive. Many lenders and insurers have environmental assessment requirements but the requirements are not universally applied. Standards exist but they also are not universally applied. Some municipalities have already conducted historical contaminated site inventories and the Canadian Urban Institute is encouraging more municipalities to do so. The options discussed here will focus on provincial governments, municipalities and the private sector.

Provincial Legislation — Provincial governments could follow British Columbia's lead and enact legislation that would require the registry of an environmental assessment in a public database. This could be combined with a broadening of the scope to include properties not covered by British Columbia's current legislation. This information could then be used by the public to determine risks and whether or not a more detailed assessment is required.

Municipal — Municipalities could, with minimal federal and provincial involvement, participate in the development and adoption of a standard historical land use inventory such as the one recommended by the Canadian Urban Institute.[37] Since the financial situation and perceived need for such an inventory would vary between municipalities, a mechanism would need to be found to encourage participation.

Industry Standards — It would be possible for banks, insurance companies and other businesses, especially land developers, to support the development and adoption of a standard assessment reporting process. Such a process could require owners to provide information on the condition of land before transferring ownership or obtaining insurance. The information required could be as simple as a title search with some provision for potential impacts from nearby sources — for example, what is the potential for ground water contamination from former establishments? Most of this information could be obtained from the local registry office and from municipal studies where they exist.

Depending on the detail and nature of information required, this reporting process could impose a significant financial burden on the owner. Given current restrictions on sharing client information, the reporting process would also require additional provisions to make this information public.

No Change — Many provinces are instituting stricter controls on development by requiring site assessments for approvals for development and sale of land. In other provinces, site registration is voluntary. With no further changes in the current situation, it is possible that the expenditures by land owners and businesses on performing environmental assessments will increase. With no national standards and no national registry, varying policies could influence business decisions regarding the choice of location, lender and insurer.

Institutionalization

Given that a new capacity for information management is required, several approaches are possible for institutionalizing it. Much of the information is held by federal, provincial and municipal government agencies. Some of it is available for a fee, but these fees are normally geared to specific title searches. Furthermore, this particular application may require access to the raw data for extracting additional information. Purchasing these data from governments would likely be beyond the capability of a small private operation.

Federal Government — Government agencies have access to much information that is considered confidential. For example, tax records, census forms and raw survey data cannot be released to the public. These data, however, are routinely aggregated (by province or by income category) and released in a format that will not allow the identification of any individual person or establishment. Another approach to rendering data non- confidential is to remove any identifiers that would single out an individual person or company.

No federal agency would be likely to undertake such an operation alone. There is some potential for cost-recovery, but the costs are likely high and the revenues are uncertain. There is also the difficulty of mandate and federal-provincial cooperation. Such an operation would require substantial cooperation with provincial governments in the area of environment and land — two areas that are often disputed.

Statistics Canada is Canada's national statistical agency. This is distinct from being a federal agency. As a national agency, it is of service to provincial and municipal governments as well as federal departments. For example, justice information, which is similar to environmental information in its jurisdictional complexities, is managed by the Canadian Centre for Justice Statistics. This centre operates as a Statistics Canada division but its work is uniquely guided by a board of directors that represents federal and provincial departments. This model may be applied to contaminated site information.

Environment Canada has been focusing on critical programs as the size of the department is being decreased. The priority appears to be the support of existing national and international commitments. There is little likelihood that new programs would be adopted without a clear federal mandate.

Health Canada has assembled its own inventory of contaminated sites for health research purposes. This inventory is not available outside the department but the department may wish to participate in a more general initiative to improve site-specific data.

Provincial Governments — At least one provincial government, British Columbia, has established a means for maintaining contaminated site information in a consistent manner across the province. In this case, the information is limited to current environmental assessments. A similar approach may be feasible in other provinces but it is unlikely that all provinces would adopt it. Ontario, for example, has established guidelines for assessing the environmental quality of contaminated sites but the reporting of this information is voluntary.

Municipal Governments — Several municipalities have taken the initiative to compile their own contaminated site reports. Many of these are based on historical land use. The Canadian Urban Institute has provided recommendations on how municipalities could perform their own historical land use inventories.[38] There is no obligation for municipalities to perform an inventory or to follow the Institute's guidelines.

Intergovernmental Agencies — The CCME has shown initiative in the area of contaminated sites and has proposed the creation of a national inventory. As reported by the Auditor General,[39] this was not pursued due to the lack of agreement among the provinces and federal government on the scope and use of the information. Regulating land use has been a point of disagreement between federal and provincial governments. In 1988, Environment Canada's Canada Land Use Monitoring Programme was cancelled, largely due to perceived mandate conflicts with the provincial governments.[40]

The involvement of Statistics Canada and non-governmental organizations could diffuse some of the mandate difficulties.

Non-governmental Organizations — The Canadian Urban Institute has already shown some interest and expertise in the issues of contaminated sites. It could play an important role in a national contaminated site registry.

Private — A totally private, for-profit operation would experience difficulties with data access, start-up funding and compliance. Information held by government agencies would often be expensive or confidential. Without support from government legislation, the information collected would be limited.

Southam News has reportedly initiated a compilation of contaminated site information with the intent of supplying this information to the public. At the time of writing, further details were unavailable.

Joint Ventures — Many opportunities exist for joint ventures wherein a government agency would form a partnership with a private corporation. In this case, the government agency could ensure access to government information while retaining confidentiality. The private corporation would take the lead in marketing and disseminating the information.

Business Plan: Funding, Costs and Revenues — Information on contaminated sites is of interest to many users: potential purchasers, planners, construction operations, banks, insurance companies and government agencies. Three funding models are apparent: (a) government or private core funding; (b) a self-financing information service; or (c) government or private start-up funding for a public database.

Cost estimates given for the strategies are preliminary and based on Statistics Canada's experience. Other departments or private enterprises may require more or fewer resources to complete similar tasks.

Core Funding — With this option, start-up and long-term operational funding is guaranteed and access to the information would be free of charge.

Although Environment Canada has been reducing its general waste management operations as a result of downsizing, it may see contributing to the funding of a general information collection initiative as a low-cost means of maintaining a presence in this area. Other federal departments that could potentially participate include CMHC and Health Canada.

Several provincial departments of municipal affairs, health and environment have an interest in improving site-specific information on environmental conditions. Some may be willing to participate in and help fund a national initiative or to harmonize their information with the other provinces.

Private companies that now perform environmental assessments could reduce the cost of these assessments through standardization and cooperation. It is clear that improved general information (e.g., a historical land use database for all of Canada) would reduce the number of Phase I ESAs required as well as the cost of individual assessments.

Land developers would clearly benefit from better information on the environmental condition of land. As well, lenders and insurers that require environmental site assessments would benefit from having a consistent basis for all assessors. Better assessments would provide a better estimate of risk.

Start-up Funding — With this option, funding would be guaranteed for a limited time and the operation would be expected to generate long-term operational requirements from revenues or other sources. In this case, there would need to be a charge for access to the information.

If, as in British Columbia, an increasing number of land owners and potential purchasers were obliged to perform environmental evaluations, a central information service could possibly be made financially self-sustaining or profitable after the initial start-up. The question that remains is whether the cost of starting such an operation could be recovered from profits. It may be possible to obtain start-up funding from governments or private sources.

Self-funding — This would not be significantly different from the current situation. If an environmental assessment is required, a consultant is hired and the information is collected from the original sources. Typically, the cost of information is not a major component of the consultant's expenses. A pay-as-you-go information service would simplify and standardize the process of performing ESAs and potentially improve the quality of the information available.

In certain cases, the information service could provide an alternative to hiring a consultant. For example, a small municipality would be able to purchase historical land use information for less than the cost of a full study.

Scope

"Scope" refers to the range of data to be considered. An operation with the broadest scope would include most of the data items discussed in Chapter 2 (federal, provincial, municipal, environmental quality, spills, etc.). These may not all be necessary to provide a reasonable indication of the risk of negative impacts from the environmental condition of the land.

Too narrow a scope (e.g., focusing only on previous ownership or only on abandoned sites or underground storage tanks) could result in poor assessments of risk. Between the two extremes would be a selection of information derived from various sources. This information could be selected for its utility in assessing risk, its quality, coverage and availability.

Scale

"Scale" refers to the geographic coverage of such an information compilation initiative. The broadest-scale program would cover all parts of the country and types of land equally. Given that much of the critical information rests in the hands of 5,000 municipalities and dozens of provincial agencies, a national-scale program would be the most ambitious.

Several provinces are more advanced in standardizing their land information. The provinces also vary in their degree of proactivity toward environmental issues. Ontario, for example, is adopting an approach to land use wherein owners are expected to comply with recommended guidelines. There is also a broad range of land area among the provinces (Quebec is 28 times the size of Prince Edward Island). If a single province were chosen as a prototype, the ideal candidate would be a smaller province with good data and an enlightened attitude toward the environment.

Another even more local approach would be to develop a prototype in one municipality. As with the provinces, there is a great variety in size, data quality, history and attitude. Of Canada's larger cities, Ottawa, Halifax and Winnipeg would be candidates. If a prototype were to be conducted on the municipal level, a more detailed assessment of cities would be required.

Target Clients and Confidentiality of Data

The intended client for the information will influence the scope and scale of any compilation exercise. Satisfying a clientele with varied interests (including policy makers, businesses and the general public) would require a broad selection of data that are publicly available or made publicly available.[41]

Clients with more specific requirements, such as lenders, insurers and developers, would benefit most from a selection of information such as historical land use data and earlier environmental assessments for specific sites.

Access to information currently held may be restricted by government or company policies. Some government information, such as the NPRI, is collected with the understanding that it will be made public. Other information, such as income tax records, cannot be made public in its original form.

Size and Timing

The size and timing of the implementation of a program for compiling information on contaminated sites will affect the likelihood of its success.

Starting quickly with a small prototype, restricting either the scope or the scale of the program would allow the establishment of standards and procedures while also proving the concept. The risk in starting too small is that the program could suffer from limited utility, lack of visibility or absence of immediate results. A large program, while being visible and capable (but not guaranteed) of producing results over the short term, would be expensive.

Between the two extremes would be a program large enough to produce effective results with the capacity to grow depending on its success. The work program would need to be tailored to ensure visible, frequent and effective outputs.

Technical Options

Delivery Mechanism — There are three main means of making large quantities of information available to users:

- A phone-in information service would provide the most appropriate service for clients with no access to other technologies. It would also provide a buffer between the user and the technology, which is sometimes required to make appropriate use of the information.
- Databases can be distributed on diskette or CD-ROM, which gives users with the appropriate computers and software the ability to query databases themselves. This would require at least annual updates.
- The World Wide Web is becoming a universal and inexpensive means of transporting information. Powerful search engines support the selection of data from large databases. GIS applications are being developed that would allow users to zoom in continuously on a site from a map and then ask for data on a specific site.

Any of these approaches could be adapted for free public access, access by subscription or pay-as-you-go.

Format and Structure — The main database in all cases would be based on relational database software with linkages appropriate to the nature of the data. Attention will need to be paid to the coding of locations and the interchangeability of various codings. For example, some data may be available with latitude/longitude providing the location. Other data may be georeferenced by Census Enumeration Area or municipal-property site codes. This argues for the use of GIS technology in the creation and operation of the database.

GIS technology could be part of the delivery mechanism as well. This could be incorporated into CD-ROM or Internet products as an option to select information based on its location on a map.

Strategy 1: Regional Prototype

This approach would develop a working prototype contaminated sites registry for one small geographic area, for example, New Brunswick, Ottawa-Carleton, the Greater Toronto Area. Initially, background data would be collected, harmonized and integrated with a GIS delivery mechanism on the Internet. In its second year of operation, with regulatory support, the project could work in conjunction with a regional contaminated site registry. A consortium of government and private interests would provide start-up funding. At a cost of $100 per request, the project would need to receive about 1,200 requests per year to be self-sufficient.

Policy Support — This level of project could work with participation of local banks and insurance companies. Banks would require that all land transactions be supported by an initial site assessment that would entail a common historical search of the registry. For some purposes, the information could replace the historical portion of a Phase I ESA. Mandated site registration could be a benefit in the second or third year of operation. At this stage, the results of Phase II ESAs would be entered into the database.

Institutionalization — A local agency, the NRTEE, the CCME and national industry associations would cooperate to establish a two-year program to develop the prototype regional contaminated site registry. A local consultant, familiar with the data and the clients, would be engaged to take the lead. Provincial and local governments would participate as part of a steering committee.

Business Plan — The private sector and provincial governments would provide start-up funding. The operation would be designed to be self-supporting through subscriptions and a pay-as-you-go service. Sponsors and large clients would take out annual subscriptions and be given open access to the data.

At the level of one province, for example, New Brunswick, initial gathering and coding of the data would require about two person-years. Developing an appropriate interface would require about one person year. Once these tasks were complete, another person-year would be required to maintain and update the database and provide support to users.

Start-up expenses would include office space, equipment, software, communications costs, reference materials and staff overhead. For this size of operation, start-up costs would be in the order of $80,000. Annual operating costs after the first year would be about $50,000.

This gives an estimate of about $260,000 for the first year of operation (3 x $60,000 per person-year and $80,000 in operating expenses). In the second and following years, this would be reduced to about $110,000 per year. If this were to become part of a regional or provincial registry process, an additional person year for data entry would be required.

Scope — Initially, the project would obtain a broad variety of background data: municipal registries, contaminated site inventories, historical reviews and Statistics Canada historical data. In subsequent years, the project would integrate with a local site registry program and incorporate data from site assessments as well.

Scale — The geographic scale would be limited to one large municipality or one small province. Ottawa-Carleton, the Greater Toronto Area, New Brunswick or Nova Scotia would be suitable areas.

Target Clients — The larger clients that would benefit from this database include provincial governments (ministries of environment, housing, municipal affairs, etc.), municipal offices (health, planning), banks (risk assessment), insurance companies and real estate companies. In the absence of a formal site registry of Phase I ESAs, the database could be used to determine the extent of the risk at any given site.

Given a more formal site registry, this database would then be of use to land owners, potential land purchasers as well as consultants performing more detailed site assessments.

Size and Timing — This project would set an example for the rest of the country. It would start with high-priority information for a large municipality or small province. Lessons learned could be applied to a national version or to further linked medium-scale projects.

The process would contain the following steps:

- meet with interested parties to determine priorities;
- perform a complete inventory of available data;
- develop framework for database, software environment, delivery mechanism;

- determine priority data;
- obtain priority data, validate and integrate into framework (conversion and recoding);
- develop interface (e.g., GIS, Internet or other software);
- test prototype with potential users;
- release prototype to general public.

Delivery Mechanisms — The data are inherently geographic and the most appropriate means of access would be through a GIS interface. The interface could allow the user to point at an area on a map rather than entering site codes.

Strategy 2: Provincial Registry with Mandatory Site Assessments

This approach would develop a working program for a large province such as British Columbia. Eventually, this program would be applied in other provinces. Initially, it would require policy support in terms of additional site assessment regulations. The database would hold current site assessment information only but be supported by a regulation for mandatory site assessments under certain conditions.

Policy Support — In this approach, owners of all commercial or industrial property and builders of residential properties would be required to maintain an equivalent of a Phase I ESA on public record. Banks would require that all land transactions be supported by a formal Phase I ESA. Insurance companies could also require this information as a prerequisite to loans.

Institutionalization — The need, in this case, for federal government involvement would be minimal. For example, in British Columbia, the provincial Ministry of Environment could take the lead and expand the scope of its current site registry program to include all sites. A local consultant, familiar with the data and the clients would be engaged to provide support. Other federal, provincial and local agencies would participate as part of a steering committee.

Business Plan — In British Columbia, part of the work has already been done by the provincial Ministry of Environment Contaminated Site Remediation and Assessment Section. Additional start-up funding could be obtained from the private sector. The database is already established as being available to the public free of charge.

Augmenting British Columbia's site assessment process would require far fewer resources than setting up a new process. Two to three technical persons could enter and validate additional site assessments as they became available. The entire operation could be seen as a moderate increase in current activities. Start-up costs would be limited to the cost of additional equipment (perhaps $50,000). Ongoing costs would be mainly staff salary and overhead ($120,000 per year for two persons).

Since the British Columbia site registry would be a public database, access to it would be free of charge. Since there is little opportunity for cost-recovery, the ongoing costs could be met through a registration fee from land owners (on the order of $50) or through continuing funding from government and private sources.

Scope — The database would hold site assessment data only. Phase I ESAs would be completed regularly for commercial, industrial and new residential properties.

Scale — The geographic scale would be limited to the province. Lands that do not fall into the scope mentioned above (industrial, commercial, new residential) should also be included. These lands include federal and provincial crown lands and reserve lands.

Target Clients — The main beneficiaries of this program would be land owners, potential purchasers and land developers. By requiring mandatory site assessments, all property decisions could be made with an understanding of the environmental risks. Potential purchasers would benefit in that they would be aware of any environmental problems with a site before purchasing it.

Size and Timing — This program would set an example for the rest of the country. In the case of British Columbia, it is facilitated by the existence of site assessment regulations. Other provinces would require similar regulations to benefit from such a program.

The process of conducting the program would include:

- obtaining necessary cooperation from the provincial government to expand coverage of the contaminated site registry;
- obtaining agreements from banks and insurance companies to require site assessments;
- developing a standard Phase I ESA form and making it available on the Internet;
- informing land owners of additional reporting requirements;
- evaluating current capacity to process additional site assessments and hiring additional personnel (if necessary) to process site assessments;
- validating and encoding technical information on site assessments.

Delivery Mechanisms — Ideally, this program would use the same delivery mechanism as the planned site registry, likely through the Internet.

Strategy 3: National Site Assessment Registry

This approach would create a national ongoing registry of site assessments. The result would be a process similar to the one proposed for British Columbia (above) but with provisions for different provinces. Historical information would be provided by property owners. Policy support would be given by banks and insurance companies, the federal government and provincial governments. Statistics Canada would play a major role by providing background data, establishing reporting formats, and providing data validation and coordination.

Policy Support — This program would be simpler to execute if all provincial governments had similar reporting requirements for environmental site assessments. This could possibly be supported by a national protocol. For provinces with less stringent reporting requirements, the information could be obtained from other sources (e.g., a national historical review).

Banks and insurance companies would also need standard policies for requiring site assessments before proceeding on loan or coverage applications. The participation of this sector is also essential in the establishment of national standards.

Institutionalization — A national agency would be responsible for coordination and setting standards. Statistics Canada could play this role. The department has performed similar functions in the development of a national crime reporting system and cancer registry. The CCME could provide the general steering function. Environment Canada would participate as part of the CCME steering committee. It is important that Environment Canada assume the role of an impartial advisor to the process and focus on the treatment of federal lands. The jurisdictional conflicts that might arise if Environment Canada were seen to be strengthening its mandate over the regulation of contaminated sites would likely abort the process.

An alternative to the CCME as the steering body for the program would be the new Commissioner for Sustainable Development in the Office of the Auditor General. Operational participation would be required from an agency in each province. In some cases, the Ministry of Environment would take the lead; in others, this could be through the Department of Lands or Municipal Affairs.

Business Plan — Financial commitment would be required from all levels of government. It is possible that Treasury Board could be lobbied by a consortium of departments, the CCME and the Commissioner for Sustainable Development to provide federal funding outside departmental budgets. Provinces could allocate sufficient funds to establish additional data collection centres if required. Additional support could be solicited from relevant businesses directly or though the business associations (e.g., land developers or regional chapters of the Urban Development Institute).

Such a program would need in the order of 10 persons working for two years to harmonize historical information and to develop a GIS-based Internet search tool. Four or five persons would be required to maintain and update the database. This would translate into costs of approximately $1.2 million per year for the initial two years ($60,000 per person per year in salary plus 50 percent overhead and an additional $300,000 per year for equipment and other expenses including software development). Long-term expenses would be in the order of $500,000 per year (five persons plus $50,000 per year in additional operating expenses).

Costs to the provinces would vary. British Columbia and the smaller provinces would likely require only one or two additional persons to code data and contribute it to the national database. Alberta, Saskatchewan, Manitoba, Ontario and Quebec would likely require a more substantial contributions to standardize and report their data.

Access to the database could be by subscription or pay-as-you-go. The general public could be charged in the order of $20 per query. Subscription fees in the order of $2,000 per year would be appropriate for companies that had not provided start-up funding. The income generated could sustain an ongoing program of five persons with 200 subscribers and 5,000 paid queries per year.

Scope — The scope at this stage would be limited to Phase I ESAs. For provinces where this information is already available, no additional information would be required. For provinces where there are no plans for mandatory site assessments, the database could be built up from the historical record.

Scale — The scale of this program would be national. All lands regardless of ownership (federal, provincial, private) would require the equivalent of a Phase I ESAs by a specific deadline.

Target Clients — Banks and insurance companies would be major beneficiaries of such a program. Provincial governments, municipalities and potential property purchasers would also benefit.

Size and Timing — The program could begin as a small project to gather historical information for all of Canada. Links with provinces that have site registries would provide updated information for those provinces. Additional information from municipalities, banks and insurance companies would provide current information for much of the country.

Stages of implementation would include:

- obtaining CCME participation in the process;
- obtaining funding commitments from federal, provincial and private sources;
- determining the needs and roles of each province;
- developing a common site reporting format;
- encoding and validating historical data (from Statistics Canada, municipal studies, property assessments);
- developing the delivery application and importing existing data;
- setting up the delivery application and updating the database.

Delivery Mechanisms — Delivery would be through an Internet application that would allow the user to select a site by zooming into a location on a map or entering a municipality and site code.

Strategy 4: Independent National Contaminated Site Inventory

This strategy looks at the implications of a program in which provincial participation was minimal. The objective would be to establish a fully self-funding inventory of key data without augmenting or establishing provincial site registry programs. In provinces where site registry data are public and adequate, these data would be used. In other cases, an extensive historical database would be built from available data.

Policy Support — This approach would require no particular public policy support. It would require some agreement among public and private sector users on the nature of the information required. It would also require some agreement as to the use of such as database. This agreement could be obtained through the participation of the relevant industry associations.

For example, banks and insurance companies could agree to require land owners to query this database as part of the approval process.

Institutionalization — The operation could be housed in a national agency, industry association or private company. The preferred approach would be a joint venture between a national agency and a private company.

Business Plan — Venture capital could be obtained from the national agency and potential clients. The agreement would be to return the investment in terms of service or from profits.

Since the focus would be on priority data for major municipalities, the program would require approximately five persons for the initial two years of operation. Maintenance and updating could be performed by two or three persons. This translates into costs of about $600,000 for the first two years of operation and $350,000 per year afterwards.

With a subscription fee of $2,000 and an access fee of $20, revenues of about $450,000 per year would be required to pay for the initial investment within 10 years (non-discounted). This level of revenues would require about 150 subscribers and 7,500 queries per year.

Scope — The program would incorporate priority data on historical land use, ownership, spills and any public site assessments.

Scale — The scale would be national, but priority would given to types of sites for which clients would pay: industrial, commercial and new residential sites. This would exclude most federal lands, park land, farmland, etc. A focus on major municipalities would ensure the highest profitability.

Target Clients — Clients would be land owners who would be obliged by the banks and insurance companies to access the database and provide the resulting report as part of their ESA. Another approach would be for banks to make the queries and charge the client for making the query.

Size and Timing — A small program of four to five persons could encode key data for priority areas within about two years.

Delivery Mechanisms — Delivery of the information could be through a GIS-based Internet search tool or by telephone.

Strategy 5: A Collection of Municipal Registries

This strategy involves the coordination of Canada's 5,000 municipalities in creating and maintaining their own municipal-level historical contaminated site inventories. The objective is to obtain national leadership to establish standards, solicit participation and provide a common access point.

Policy Support — This approach would require policy support from provincial and municipal governments. Common standards between provinces could be established through the CCME, but the discussion would need to include provincial ministries that administer municipal affairs. Municipalities would also need to be solicited to participate and to integrate the use of environmental quality information into their planning, zoning and development policies.

Institutionalization — The operation could be housed with the Canadian Urban Institute or another national non-governmental organization. The host organization would be charged with coordinating responses from the municipalities and ensuring their integration in to a common database, accessible though the Internet.

Business Plan — For municipalities that have not yet completed historical land inventories, the process could be expensive. Start-up funding would need to be obtained from municipal budgets and provincial governments.

Resources required to participate would vary widely depending on the nature of the municipality. It would not be unusual for a contract for conducting an inventory for a medium-sized city to be in the order of $100,000. Smaller towns might be able to complete an inventory for under $10,000. Nevertheless, some municipalities would require funding support. This could possibly be provided in the form of a loan from the provincial government to be paid back from future savings.

At the national level, one to two persons would be required to coordinate inputs, provide technical support to municipalities and to harmonize the information. Subscription and user fees could possibly generate sufficient funds to pay for the integration and distribution of the information.

Scope — The program would focus on current and historical land use and on existing site assessments. Municipalities would provide a regional map and a database containing historical and current land use information.

Scale — The resulting database would be a national collection of municipal inventories. Coverage could be uneven if municipalities decline to participate.[42]

Target Clients — Clients would include the municipalities themselves, the general public, land owners, developers and provincial agencies (especially planning, environment, health).

Size and Timing — Several municipalities have already completed historical land use inventories. These could be encoded and set up on the Internet almost immediately. It would likely take several years before most municipalities in Canada are covered.

Delivery Mechanisms — Delivery of the information could be though a GIS-based Internet search tool.

5

Conclusions

The need for better information on the environmental condition of land is evident in many sectors. Active support and interest appears to be greatest in the financial services sector, certain provincial governments and some municipal governments.

Nationally accepted standards exist for the conduct of environmental site assessments.[43] Whether or not these standards are applied depends on the individual approval procedures in municipalities, provincial governments, banks and insurance companies.

Several possibilities exist for improving site-specific information. The following principles are common to all the approaches discussed:

- Any national approach will require cooperation between government and the private sector.
- Direct beneficiaries include provincial and municipal governments and the private sector.
- Other parties, while not being direct beneficiaries, have an interest in the improvement of information on the environmental condition of land. These include banks, insurance companies, trust companies, the CCME, the CSA, the Canadian Urban Institute, CMHC and the Office of the Auditor General.
- The variety of approaches in provincial governments to managing contaminated sites and in applying information on potentially contaminated sites imposes additional complexities on any effort to create a harmonized national site registry.
- A national forum for discussing requirements for a national site registry would promote the development of common approaches to recording information.
- This national forum could also serve to establish a national standard for information on the environmental condition of land that is applicable to the range of approval procedures.

Endnotes

1 Auditor General of Canada, "Environment Canada: Managing the Legacy of Hazardous Wastes," *Report of the Auditor General of Canada* (Ottawa, 1995).

2 Government of Ontario, *Environmental Protection Act*, R.S.O. 1990, c. E-19.

3 Ibid.

4 Greater Toronto Area (GTA), *Greater Toronto: Report of the GTA Task Force* (Toronto, 1996).

5 Canadian Council of Ministers of the Environment (CCME), *Interim Canadian Environmental Quality Criteria for Contaminated Sites* (Winnipeg, 1991).

6 Canadian Council of Ministers of the Environment (CCME), *The National Classification System for Contaminated Sites* (Winnipeg, 1992).

7 Canadian Council of Ministers of the Environment (CCME), *Subsurface Assessment Handbook for Contaminated Sites* (Winnipeg, 1991).

8 Canadian Council of Ministers of the Environment (CCME), *Contaminated Site Remediation Task Group Annual Report* (Winnipeg, 1996).

9 Government of Ontario, *Guideline for Use at Contaminated Sites in Ontario* (Toronto, 1996).

10 Canada Mortgage and Housing Corporation (CMHC), *Phase I Environmental Site Assessment Interpretation Guidelines* (Ottawa, 1994).

11 Canadian Standards Association (CSA), *Phase I Environmental Site Assessment* (Toronto, 1994).

12 National Round Table on the Environment and the Economy (NRTEE) and Canada Mortgage and Housing Corporation (CMHC), *Removing Barriers: Redeveloping Contaminated Sites for Housing* (Ottawa, 1997).

13 Statistics Canada and Canadian Council of Ministers of the Environment (CCME), *Databases for Environmental Analysis: Federal, Provincial and Territorial Governments* (Ottawa, 1995).

14 City of Ottawa, *Mapping and Assessment of Former Industrial Sites* (Ottawa, 1988).

15 Statistics Canada, *Census of Manufactures: Primary Metal Industries* (Ottawa, 1956).

16 This classification describes the industrial structure of the Canadian economy in terms of the principal activities of establishments. It follows the traditional sectoring of the economy into extraction, e.g., agriculture and mining; transformation, e.g., manufacturing; and services, e.g., transportation,

communications and other services. It has a four-tiered structure in which 861 industries are delineated at the four-digit level. The most recent revision of the SIC was in 1980. Another revision will be in place in 1997.

17 For example, see ibid.

18 For example, see op cit., endnote 13.

19 Statistics Canada, *Guide to Managing Statistics Canada Publications in Libraries* (Ottawa, 1991).

20 Askarel is a highly concentrated form of PCB sometimes found in transformers.

21 Gouvernement du Québec, Ministère de l'Environnement, *Inventaire des lieux d'élimination de déchets dangereux au Québec* (Québec, 1990).

22 Op cit., endnote 14.

23 Regional Municipality of Ottawa-Carleton (RMOC), *Mapping of Existing and Former Industrial and Commercial Sites in Villages in Ottawa-Carleton* (Ottawa, 1996).

24 Canadian Urban Institute, *Historical Land Use Inventories: A Guide to Their Creation* (Toronto, 1995).

25 Those sites where the polluter cannot be found or is unable to complete the required remedial action.

26 Statistics Canada, *The Canada Year Book* (Ottawa, 1994).

27 Government of Ontario, *Guideline for Use at Contaminated Sites in Ontario* (Toronto, 1996).

28 Op cit., endnote 22.

29 Op cit., endnote 11.

30 American Society for Testing and Materials (ASTM), *ASTM Standards on Environmental Site Assessments for Commercial Real Estate*, E1527-94 and E1528-93 (1994). Descriptions available on the Internet at http://www.astm.org/COMP/environm.html.

31 Canadian Bankers' Association, *Sustainable Capital: The Effect of Environmental Liability in Canada on Borrowers, Lenders and Investors* (Toronto, 1991).

32 Op cit., endnote 22.

33 Op cit., endnote 11.

34 Op cit., endnote 27.

35 Op cit., endnotes 10 and 12.

36 Ontario Ministry of Environment and Energy, *Guideline for Use at Contaminated Sites in Ontario* (1996). Available on the Internet at www.ene.gov.on.ca/envision/decomm/backg_e.html.

37 Op cit., endnote 22.

38 Op cit., endnote 22.

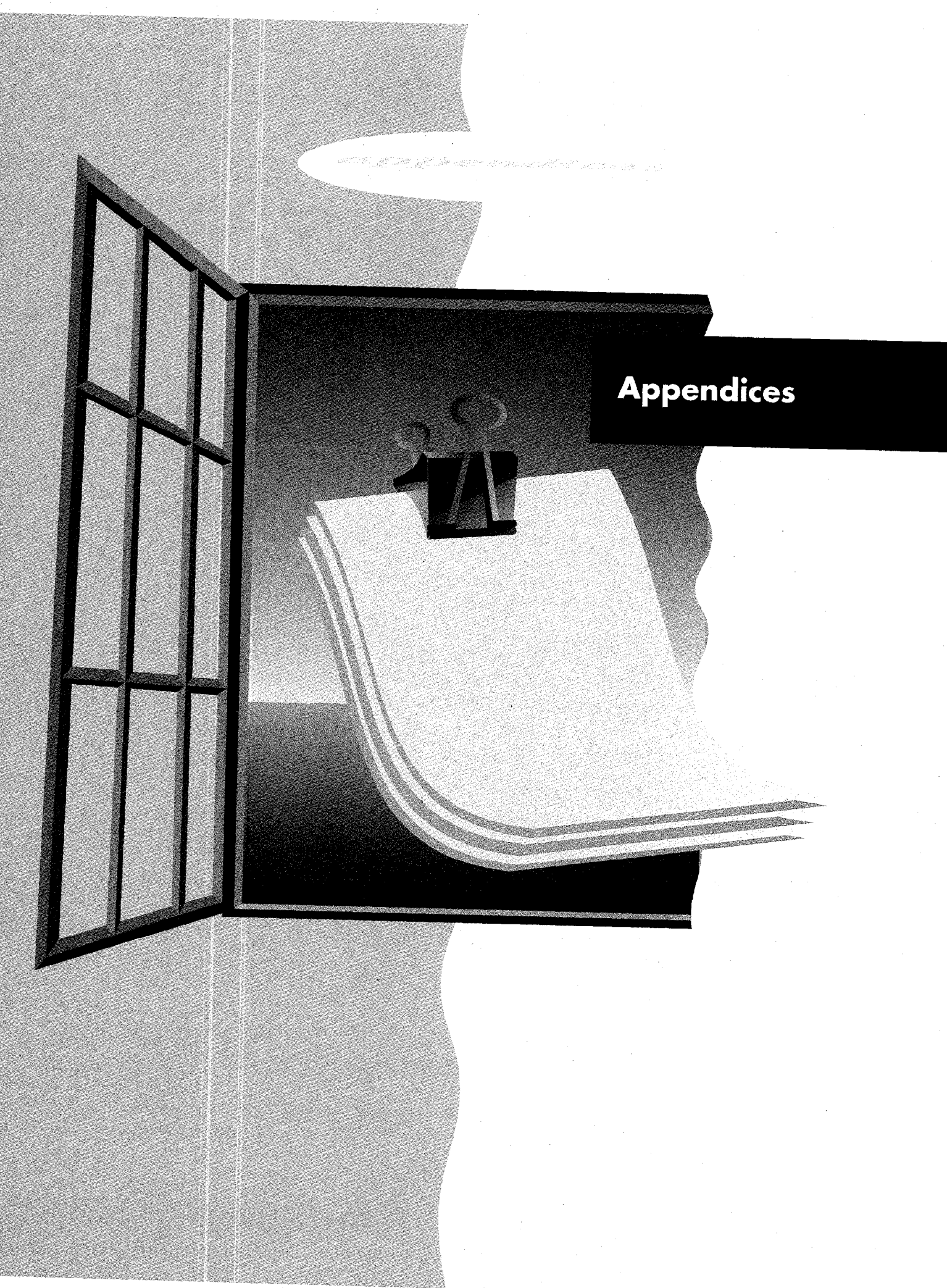
39 Op cit., endnote 1.

40 Statistics Canada, *Land Statistics for Canada, "Environmental Perspectives 3"* (Ottawa, 1996).

41 Confidential data can often be made non-confidential by aggregation or deletion of unique identifiers.

42 It is assumed that all land area in Canada is included in a municipality.

43 Op cit., endnote 11.



Appendices

Appendix A

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Statistics Canada and Canadian Council of Ministers of the Environment (CCME). *Databases for Environmental Analysis: Federal, Provincial and Territorial Governments.* Ottawa: Statistics Canada and CCME, Cat. No. 11-532-OXDE, 1995.

Appendix B

Detailed Information on Relevant Federal, Provincial and Territorial Databases

The following database descriptions were taken from Databases for Environmental Analysis:

Federal, Provincial and Territorial Governments (Statistics Canada and CCME, 1996). The databases described include known contaminated sites as well as background information that would be useful in assessing the potential for contamination. Note that the Statistics Canada inventory does not cover municipal or private sources.

Federal Government Databases

Canada Mortgage and Housing Corporation

CA-HMI-0025: Housing Market Information System (HMIS)

Summary description: A national database on housing including structures, distribution, price and financing designed to direct the program development of Canada Mortgage and Housing Corporation, assess gross national product and provide housing data for business use.

Responsible organization: Canada Mortgage and Housing Corporation.

Database contact: Jane Carruthers, Statistical Services Division, 682 Montreal Rd., Ottawa, ON K1A 0P7, (613) 748-2355, Fax (613) 748-2156.

Access mechanisms: Through the responsible organization.

Variables included:

- location, address
- dwelling type
- date started
- number of units
- finance type (national housing assistance, other)
- date completed
- price
- optional information (contacts, builder's name, rents)

Data acquisition methods: Data are collected by CMHC personnel across Canada.

Geographic coverage: Canada.

Geographic units of measure: Housing structures referenced by province, country, municipality using standard geographic codes.

Period of record: 1940 to present.

Update frequency: Quarterly or monthly, depending upon financing and community size.

Database storage format: Tables, text.

Database computer environment: IBM PC with custom software.

Restrictions and conditions: Data on individual structures are not available but summaries are accessible.

Price information: Data compilation charges depend on request. There is a charge for publications.

Corresponding printed sources:

1. *Canadian Housing Statistics* — produced annually with monthly supplements.
2. *Housing Information Monthly* (H.I.M.) — produced monthly for each municipality and covers starts, completions, price.
3. *Starts and Completions* — annual report prepared by CMHC.

Languages: English.

User aids available: None.

Keywords: construction; environmental restructuring; housing

Additional information:

1. The early records were collected by Statistics Canada and exist in hard copy format.

Indian and Northern Affairs

CA-NWT-0193: Northwest Territories Land Use Regional Planning Databases

Summary description: A GIS set of databases providing historic, present and projected land use in the Northwest Territories for facilitating the development and monitoring of regional land use plans.

Responsible organization: Indian and Northern Affairs Canada.

Database contact: Brian Herbert, Land Use Planning, P.O. Box 2280, Yellowknife, NT X1A 2P7, (403) 920-8535, Fax (403) 669-9914.

Access mechanisms: Through the responsible organization.

Variables included:

- natural resources distribution (renewable, non-renewable)
- community use areas (hunting, fishing)
- other uses (government, private)
- period (historic, current, projected)
- land status
- use descriptions
- location (latitude, longitude, UTM)

Data acquisition methods: Data are provided by regional land managers following database inventory.

Geographic coverage: Northwest Territories.

Geographic units of measure: Areas designated by latitude and longitude or UTM grid.

Period of record: Historical and current data; database initiated in 1986.

Update frequency: As information becomes available.

Database storage format: Tables, graphs, maps.

Database computer environment: PC with SPANS.

Restrictions and conditions: None.

Price information: Currently no charge; policy will depend upon demand; media at cost.

Corresponding printed sources: Lancaster Sound Proposed Regional Land Use Plan. Interim Report Land Use Planning Commission [Mackenzie Delta — Beaufort Sea Region].

Languages: English.

User aids available: None.

Keywords: GIS; land; land use; Northwest Territories; planning

Additional information:

1. This database is under development. Currently some information is computerized in the GIS and some is in reports or on magnetic tape.
2. The status of this database is described below by region: (a) Lancaster Sound region — inventory complete, computerization beginning; (b) Mackenzie-Beaufort Sea region — complete inventory, partly computerized; (c) Other regions — inventory beginning and will be computerized at the same time.

CA-LAS-0158: Land Administration System (LAS)

Summary description: A database containing information on licences for oil and gas exploration and production in the Yukon Territory, Northwest Territories and offshore areas of Canada north of 60° latitude. It is used to monitor compliance with, and terms and conditions of, licences related to oil and gas operations.

Responsible organization: Indian and Northern Affairs Canada.

Database contact: George Booth, 10 Wellington Street, Hull, PQ K1A 0H4, (613) 953-8490, Fax (613) 953-5828.

Access mechanisms: Through the responsible organization.

Variables included:

- licence type (exploration, significant discovery, production), date of issue/expiry and location
- (latitude, longitude)
- financial information
- licence ownership

Data acquisition methods: Licence documents and information are submitted by industry.

Geographic coverage: Yukon Territory, Northwest Territories and offshore Canada, north of 60° latitude.

Geographic units of measure: Land parcels of various sizes located by latitude and longitude.

Period of record: 1920s to present.

Update frequency: As new licences are issued or terms of agreement are changed or fulfilled.

Database storage format: Tables, maps, reports.

Database computer environment: Data on PC with DBASE software.

Restrictions and conditions: Under the *Canada Petroleum Resources Act* detailed information on ownership, finances and compliance is confidential.

Price information: No charge.

Corresponding printed sources: Indian and Northern Affairs Canada Annual Report.

Languages: English, with capability to produce bilingual reports.

User aids available: None.

Keywords: energy; exploration; hydrocarbons; minerals; non-renewable resources; Northwest Territories; petroleum

Additional information:

1. This database supports the land registration system (Rights Registration Division) which holds the supporting licence documents; this database is primarily a management tool, not a public information source.

CA-YNL-0204: Yukon Northern Land Use and Transactions Database

Summary description: A database containing permit and lease data for crown land use in the Yukon Territory used to monitor and minimize the environmental impact of activities on crown land.

Responsible organization: Indian and Northern Affairs Canada.

Database contact: Joe Ballantyne, Land Use Section, Northern Affairs Program, 200 Range Rd., Whitehorse, YT Y1A 3V1, (403) 667-3100, Fax (403) 667-5811.

Access mechanisms: Through the responsible organization.

Variables included:

- permits information (holder name, activity information, location)
- lease information (purpose of lease, parcel size, location)

Data acquisition methods: Compliance under territorial regulations for permits and leases.

Geographic coverage: Yukon Territory.

Geographic units of measure: Individual permits/leases referenced by latitude, longitude and mapped at 1:50, 000.

Period of record: 1972 to present.

Update frequency: As information accumulates.

Database storage format: Tables.

Database computer environment: Paper files and some DBASE III and files.

Restrictions and conditions: Permits — none; specific lease contents are not available.

Price information: Depends on the size and nature of the request.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: construction; environmental restructuring; land; mining; Yukon

Additional information:

1. This database is similar to that for the Northwest Territories, but the activities monitored in the database vary slightly between the two territories. For example, mineral claims are included in the Northwest Territories database but are not in the Yukon database.

CA-DIA-0186: DIAND Northwest Territories Environmental Database

Summary description: A database combining environment and water quality data associated with industrial projects on land and offshore for the Northwest Territories. It is used to perform environmental assessments and to monitor industrial projects for compliance with water quality requirements under the following Acts: *Northern Inland Waters, Arctic Waters Pollution Prevention, Territorial Lands*, and the Federal Environmental Assessment and Review Process/Order in Council.

Responsible organization: Indian and Northern Affairs Canada.

Database contact: Ranjit Soniassy, Northern Affairs Program, P.O. Box 1500, Yellowknife, NT X1A 2R3, (403) 920-8233, Fax (403) 920-4669.

Access mechanisms: Through the responsible organization.

Variables included:

- site location (latitude, longitude, town)
- pollutant concentration (mg/l)
- heavy metals (copper, nickel, mercury, zinc, iron; 30 metals are monitored)
- major elements (calcium, magnesium)
- microbiological characteristics (total coliform, faecal coliform)
- industrial pollutants (cyanide, sulphide)
- oils/hydrocarbons
- organic chemicals (PCBs, pesticides)
- radionuclides (uranium, radon gas)
- rare earth elements

Data acquisition methods: Data are submitted under act compliance by industry, collected by the Department or collected by consultants.

Geographic coverage: About 40 projects in the Northwest Territories.

Geographic units of measure: Monitoring stations located by latitude, longitude, town.

Period of record: 1970s to present.

Update frequency: Monthly/annually, depending upon project.

Database storage format: Tables, maps.

Database computer environment: WANG computer with custom software.

Restrictions and conditions: The data are generally available.

Price information: No charge.

Corresponding printed sources: Custom reports are prepared as required.

Languages: English.

User aids available: Forms describing the database.

Keywords: contaminants; effluents; emissions; environmental assessment; industry; mining; Northwest Territories; pollutants; water quality

Additional information:

1. This database contains information on background water quality as well as the quality of effluent discharged from drilling and mining operations.

CA-NTT-0196: Northwest Territories Toxic Spills Management System

Summary description: An inventory of accidents involving spills of hazardous materials in the Northwest Territories used for monitoring and management purposes.

Responsible organization: Indian and Northern Affairs Canada.

Database contact: Manager, Water Resources Division, Northern Affairs Program, P.O. Box 1500, Yellowknife, NT X1A 2R3, (403) 920-8240, Fax (403) 873-9318.

Access mechanisms: Through the responsible organization.

Variables included:

- material spilled and quantity
- location (description or latitude and longitude)
- significance (major, minor)
- industry type
- lead enforcement agency and lead follow-up agency
- area impacted
- party responsible
- hazards (persons, property, environment, multiple or none reported)

Data acquisition methods: Spills are reported through compliance under various acts or licences/permits.

Geographic coverage: Northwest Territories.

Geographic units of measure: Individual spills referenced by description or latitude and longitude.

Period of record: 1984 to present.

Update frequency: Twice per month.

Database storage format: Tables only.

Database computer environment: Some data on IBM compatible PC with ZIM software, other data in paper file.

Restrictions and conditions: Summary information is available but some source data are restricted.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: *The Toxic Spills Management System User's Manual* (1989).

Keywords: accidents; hazardous materials; monitoring; Northwest Territories; spills; toxics

Additional information:

1. Custom reports summarizing the data by any of the parameters can be prepared.
2. There are plans to prepare a five-year summary report.
3. All the data in this database are sent to Environmental Protection, Environment Canada, Yellowknife. However, they have not been forwarded to Ottawa for inclusion in the National Analysis of Trends in Emergencies System database (NATES) held by Environment Canada.

CA-NMR-0198: Northern Mining Records System

Summary description: A database containing data on mining claims and subsequent leases for the Northwest Territories, which is used to maintain records for the administration of mining claims under the *Territorial Lands Act.*

Responsible organization: Indian and Northern Affairs Canada.

Database contact: Regional Manager, Mining Recorder Office, Northern Affairs Program, P.O. Box 1500, Yellowknife, NT X1A 2R3, (403) 920-8235, Fax (403) 920-8581.

Access mechanisms: Through the responsible organization.

Variables included:

- claims (name, tag number, location (NTS), registered holder, claim history)
- client (name, including individual and company, address, phone number, prospector's licence number)
- lease (number, owner, expiry date, location [NTS], annual rental, encumbrances [documents registered against lease])

Data acquisition methods: Information reported to Department office.

Geographic coverage: Northwest Territories.

Geographic units of measure: Individual claims, leases referenced by NTS.

Period of record: 1910 to present.

Update frequency: Daily.

Database storage format: Tables.

Database computer environment: All data on IBM-compatible PC with modified FOXPRO software.

Restrictions and conditions: Reports of work on claims are confidential for three years.

Price information: No charge for an information search; $1 per page for printed information; very small requests may be free.

Corresponding printed sources:

1. *Mines and Minerals Statistics* (monthly, annually).
2. *Activity Reports* (weekly, monthly, annually).

Languages: English; pamphlet in English and Inuktituk.

User aids available: Pamphlet describing claim staking and general information.

Keywords: Arctic; extraction; minerals; mining; Northwest Territories; non-renewable resources

Additional information:

1. This database is an index to claims and leases. Further data are held in paper files.
2. The entire database, including details of claims and leases, is in the process of being computerized. On-line access by the public is proposed.

Agriculture and Agri-Food Canada

CA-CAN-0008: Canada Soil Information System (CANSIS)

Summary description: A database on the physical, chemical, biological and mineralogical properties and distribution (spatial variability) of the major soils of Canada. It is designed to assess biological productivity, to identify areas that have actual or potential problems affecting land use, and to locate areas or parcels of land that may be suitable for particular types of land use.

Responsible organization: Agriculture and Agri-Food Canada.

Database contact: Bryan Monette, Research Branch, Centre for Land and Biological Resources Research, K.W. Neatby Bldg., Ottawa, ON K1A 0C6, (613) 995-5011, Fax (613) 995-7283 E-mail: monette@ncccot2.agr.ca.

Access mechanisms: Through the responsible organization.

Variables included:

- landscape area parameters (slope, stoniness, drainage, rooting depth, soil taxonomy)
- layer or horizon properties (pH, organic matter content, bulk density, moisture retention, hydraulic conductivity, electrical conductivity, calcareousness, cation exchange capacity, base saturation)

Data acquisition methods: Detailed soil inventory data are compiled by field surveys aided by air photo interpretation; soil landscape data are prepared by interpretation and aggregation from existing sources.

Geographic coverage: Canada, with greatest detail in the agricultural regions.

Geographic units of measure: Soil areas or map polygons consisting of up to three soil and landscape combinations.

Period of record: Essentially a static record of the basic land resource with individual map areas surveyed at different dates going back to 1940.

Update frequency: Irregular; mainly in response to needs for additional or detailed information.

Database storage format: Computer-generated and printed maps, tabular reports and original data on magnetic media (tapes or diskettes).

Database computer environment: Hardware: HP700 series workstations and X terminals, CALCOMP plotters, GENTIAN digitizing tables.

Restrictions and conditions: None.

Price information: Fee for service.

Corresponding printed sources: Published soil survey reports and soil landscape maps.

Languages: English and French.

User aids available: User guides and manuals are in preparation.

Keywords: agriculture; Geographic Information System (GIS); land; landscape; soil classification; soils

Additional information:

1. The datafiles are intended to be used either on their own or in conjunction with other spatial data such as climate, land use, etc. (a) to assess the biological productivity of land areas; (b) to identify areas that have actual or potential problems affecting land use, such as salinity or susceptibility to erosion, and to assess severity; (c) to locate areas or parcels of land that may be suitable for particular types of land use for more detailed investigations; and (d) to assess other land use and environmental quality issues.
2. The CANSIS database resides on a computer system owned by Agriculture Canada and located in Ottawa.
3. Variables are not necessarily available for all areas of Canada.
4. Detailed soil survey data are compiled at various scales ranging from 1:10,000 to 1:125,000.

CA-HMC-0011: Heavy Metal Concentrations in Fertilizers and Fertilizer Materials

Summary description: A national database on heavy metal concentrations in fertilizer materials designed for monitoring and to avoid soil contamination and subsequent plant uptake.

Responsible organization: Agriculture and Agri-Food Canada.

Database contact: Margaret Kenny, Fertilizer Section, Plants Products Division, Plant Industry Directorate, 59 Camelot Dr., 3rd Floor East, Nepean, ON K1A 0Y9, (613) 952-8000, Fax (613) 992-5219.

Access mechanisms: Through the responsible organization.

Variables included:

- location (producer, town)
- fertilizer material composition
- heavy metals (arsenic, cadmium, cobalt, mercury, lead, zinc, nickel, selenium, molybdenum)

Data acquisition methods: Data are from random surveys and specific case studies.

Geographic coverage: Canada.

Geographic units of measure: Individual producers, nearest town.

Period of record: Mid-1970s to present.

Update frequency: Annual.

Database storage format: Not applicable.

Database computer environment: Paper file.

Restrictions and conditions: Data on individual producers are restricted.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: agriculture; contamination; fertilizers; heavy metals; plants; soils

Additional information: None.

Environment Canada:

CA-DID-0218: Effluent Discharge Inventory Database

Summary description: A database providing information on effluent discharges permitted by provincial permits and licences pursuant to the provincial *Waste Management Act* and the British Columbia *Provincial Lands Act* and based upon source classifications include sewage, food processing, fish processing, agriculture and aquaculture but not industrial discharges.

Responsible organization: Environment Canada.

Database contact: Sharon Larson, Referral Registrar, Pollution Abatement Division, Environmental Protection Branch, 6th Floor, 224 West Esplanade, North Vancouver, BC V7M 3H7, (604) 666-7643, Fax (604) 666-9107.

Access mechanisms: Through the responsible organization.

Variables included:

- site name
- location
- latitude and longitude
- category (e.g., pulp and paper)
- provincial region
- discharge type (e.g., freshwater)
- discharge description (e.g., logging camp)
- discharge flow
- discharge treatment(s) (e.g., septic tank)
- receiving water (if any)
- shellfish area (if any)
- shellfish survey(s) (if any)
- provincial permit number and date of issue
- Environment Canada File Number
- site contact
- source classification (e.g., sewage)

Data acquisition methods: Provincial permit referral system, other agency referrals and field information.

Geographic coverage: British Columbia.

Geographic units of measure: Not applicable.

Period of record: 1968 to present.

Update frequency: Daily.

Database storage format: Listing using searches and sortings.

Database computer environment: Mainframe DATAPOINT to be converted on DOTS (ORACLE).

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: User friendly.

Keywords: British Columbia; effluents; industry; liquid wastes; mining; municipal waste; pulp and paper; rivers; wastes.

Additional information:

1. Effluent data are available from the Environmental Protection Division of the British Columbia Ministry of Environment, Lands and Parks or from Environment Canada (see database contact).

CA-GWD-0213: Atlantic Canada Ground Water Data (G W DAT)

Summary description: A database containing physical and administrative data on water wells drilled, aquifer testing and aquifer parameters in Atlantic Canada. It provides physical data for groundwater resource management for federal facilities, CEPA and joint federal/provincial studies.

Responsible organization: Environment Canada

Database contact: John Gibb, Environmental Conservation Strategies Division, Environmental Conservation Branch, Atlantic Region, 4th Floor, 45 Alderney Dr., Dartmouth, NS B2Y 2N6, (902) 426-1698, Fax (902) 426-4457 E-mail: gibbj@holmes.bed.ns.doe.ca.

Access mechanisms: Through the responsible organization.

Variables included:

- depth
- casing construction
- location
- owner, driller
- purpose (domestic, industrial, exploratory)
- geological strata
- whether pumping tests were performed (start time, duration, end)
- whether geophysical tests were conducted
- whether water quality data are available

Data acquisition methods: Information obtained from field surveys; provincial waterwell records; federal, provincial and industry files.

Geographic coverage: Atlantic Canada.

Geographic units of measure: Individual wells referenced by UTM grid, province, county, nearest community.

Period of record: 1965 to present (data); 1991 to present (database).

Update frequency: As required.

Database storage format: Tables.

Database computer environment: VAX, ORACLE.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Atlantic Canada; ground water; New Brunswick; Newfoundland; Nova Scotia; Prince Edward Island; stratigraphy; water; wells

Additional information:

1. This database is designed to link with SPANS groundwater models, STATGRAPHICS and HARVARD GRAPHICS.
2. Corresponding chemical data for water wells can be found in the National Water Quality Database in Ottawa, which can be downloaded to or uploaded from GWDAT.

CA-MCD-0277: Mine Compliance Data

Summary description: A national database on liquid effluent for base metal, iron ore, uranium, gold and silver mines which is used to determine compliance with mining effluent regulations.

Responsible organization: Environment Canada.

Database contact: Bill Wong, Mining, Mineral and Metallurgical Processes Division, Industrial Programs Branch, Environmental Protection Service, 13th Floor, 351 St. Joseph Blvd., Hull, PQ K1A 0H3, (819) 997-2294, Fax (819) 953-5053.

Access mechanisms: Through the responsible agency.

Variables included:

- mine (name, company, location, mining method, capacity, ore tonnage and grade)
- minerals in ore (mainly gold, silver, zinc, lead, copper, nickel, iron)
- cyanide removal method (natural degradation, no cyanide, sulphur dioxide/air, hydrogen peroxide)
- type of waste treatment (tailings pond, settling pond, drainage)
- effluent characteristics
- contaminant concentrations (lead, cyanide, zinc, copper, nickel, arsenic, pH, total suspended matter)

Data acquisition methods: Mines under compliance report monthly to the provinces or territories.

Geographic coverage: Canada, including all provinces and territories.

Geographic units of measure: Individual mines.

Period of record: 1986 to 1987.

Update frequency: Irregular.

Database storage format: Tables.

Database computer environment: COMPAQ DESKPRO 286 with DBASE III + software for base metal mines, SYMPHONY software for gold mines.

Restrictions and conditions: Some data may be restricted; contact responsible organization.

Price information: No charge for reasonably sized requests.

Corresponding printed sources: Periodic reports are produced; See Additional information for the most recent report

Languages: Reports are bilingual.

User aids available: None.

Keywords: effluents; industry; liquid wastes; mining; pollutants; wastes

Additional information:

1. Regulation limits for effluent are provided in *Status Report on Water Pollution Control in the Canadian Metal Mining Industry* (1986), Environment Canada.
2. Gold and silver mines are not regulated.
3. Publications are available from EP Publications, Conservation and Protection, Environment Canada, 12th Floor, 351 St. Joseph Blvd., Hull, PQ K1A 0H3.

CA-MPS-0270: Maritime Provinces Strategic Land Use Database

Summary description: A database containing a 20-year update of land use in the Maritime provinces based on an expanded Canada Land Inventory classification (circa 1967-1987) derived from interpreted Landsat Thematic Mapper and SPOT Imagery. It is used for the resource management documentation of potential environmental concerns and for monitoring data to link cause to effect, as required in the environmental assessment process.

Responsible organization: Environment Canada.

Database contact: Dave Wilson, Environmental Conservation Branch, Canadian Wildlife Service, 4th Floor, 45 Alderney Dr., Dartmouth, NS B2Y 2N6, (902) 426-4197, Fax (902) 426-4457.

Access mechanisms: Through the responsible organization.

Variables included: 21 classes of land activity and cover (urbanization, institutions, row crop agriculture, rough pasture, mines, waste disposal sites, clearcuts, productive forest, recreation and conservation areas).

Data acquisition methods: Interpreted Landstat Thematic Mapper and SPOT Imagery; Landsat Thematic Mapper Imagery with PROCOM device to project images onto 1:50,000 NTS map sheets.

Geographic coverage: New Brunswick, Nova Scotia, Prince Edward Island.

Geographic units of measure: Latitude and longitude.

Period of record: Circa 1968, 1987.

Update frequency: Undetermined.

Database storage format: Maps, tables, graphs.

Database computer environment: IBM PC with SPANS GIS and SPANS MAP.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: CLDS/CGIS catalogue of reports.

Keywords: Atlantic Canada; Geographic Information System (GIS); land; land use; New Brunswick; Nova Scotia; Prince Edward Island; satellite imagery

Additional information:

1. Land use change overlays have been used to provide data on environmental response to human activity for the five-year regional state of the environment report.
2. This database is being packaged with other data sets for use by Atlantic Coastal Action Program groups in developing environmental quality assessments for a dozen communities. It also supports regional environmental assessment activities.

CA-ODP-0295: Ocean Disposal Permit Database

Summary description: A database of permits for ocean dumping including load and dump sites monitoring for Canada, which is used to regulate ocean disposal and loading for the purpose of ocean disposal, and to monitor compliance with the ocean dumping provisions of the *Canadian Environmental Protection Act* (*CEPA*), Part IV.

Responsible organization: Environment Canada.

Database contact: Paul Topping, Marine Environment Division, Environmental Protection Service, 12th Floor, 351 St. Joseph Blvd., Hull, PQ K1A 0H3, (819) 953-0663, Fax (819) 953-0913.

Access mechanisms: Through the responsible organization.

Variables included:

- permit type
- loading details, dump sites
- quantity of material
- type of material dumped

Data acquisition methods: Individual permit applications.

Geographic coverage: Waters within Canadian jurisdiction under the ocean dumping control provisions of *CEPA*.

Geographic units of measure: Site-specific details.

Period of record: 1975 to present.

Update frequency: Permits weekly, regional data as required.

Database storage format: Tables.

Database computer environment: IBM PC-compatible.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: *CEPA* annual reports and report to the London Convention Disposal Site Inventory.

Languages: Annual reports are bilingual.

User aids available: None.

Keywords: contaminants; dumping permits; marine; ocean dumping; oceans; waste disposal; wastes

Additional information:

1. Plans are under way to replace ODUMP files with a national computer database (see Ocean Dumping Database System Pacific and Yukon Region). Analytical data gathered after 1989 are being held in regional offices until the new database is operational.
2. All permits are published in the *Canada Gazette*.
3. The most recent annual report is available from the responsible organization.

CA-RUS-0311: Register of Underground Storage Tanks and Systems on Federal Property (RUST)

Summary description: A database containing data on the characteristics of underground tanks (including their contents) on federal property used in support of effective management (maintenance, inspection, upgrading).

Responsible organization: Environment Canada.

Database contact: Brian Melbourne, Prevention Division, Environmental Emergency Branch, National Programs Directorate, Environmental Protection Service, 17th Floor, 351 St. Joseph Blvd., Hull, PQ K1A 0H3, (819) 953-1697, Fax (819) 997-5029.

Access mechanisms: Through the responsible organization.

Variables included:

- type of facility, ownership
- location, site sensitivity
- tank characteristics (capacity, contents, volume, year of installation, construction material, internal and external protection)
- piping, pumping system
- leak record, monitoring program

Data acquisition methods: Questionnaire/registration forms.

Geographic coverage: Canada, all federal property.

Geographic units of measure: Individual tanks.

Period of record: December 1987 to present.

Update frequency: Regular schedule to be determined.

Database storage format: Tables.

Database computer environment: PC, DBASE III + software.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: An annual report.

Languages: The report will be available in English and French.

User aids available: Register of underground storage tank systems on federal property software package user's guide, 1988 (under review).

Keywords: contamination; federal properties; leaks; oil spills; storage tanks; spills; underground storage

Additional information:

1. The annual report and the user's guide are available from the responsible organization.
2. The database is composed of separate databases held and maintained by each federal department with underground storage tanks. All have the same software configuration. The majority of tanks are on the property of the departments of Transport, National Defence and Public Works.

CA-PIR-0301: Pollution Incident Report Records Collection

Summary description: A database containing pollution incident reports and other information on significant spills and environmental emergencies in Canada and Canadian offshore waters. These reports are usually filed within 24 hours of incident occurrence and are therefore preliminary in their assessment.

Responsible organization: Environment Canada

Database contact: Luke Trip, National Environmental Emergency Centre, Environmental Protection Service, 15th Floor, 351 St. Joseph Blvd., Hull, PQ K1A 0H3, (819) 997-3742, Fax (819) 953-5361.

Access mechanisms: Through the responsible organization.

Variables included: The report is a verbal account of the incident, typically providing:

- material spilled
- reporting agency
- location
- site type (air, underground, river, bay)
- cause (collision, sinking, leak)
- reason (intent, error, ice)
- source (tanker, train, aircraft)
- sector (petroleum, pulp and paper, metallurgy)
- environmental impact
- clean-up undertaken

Data acquisition methods: Incident reports are forwarded to Ottawa by all reporting agencies usually within 24 hours of incident occurrence.

Geographic coverage: Canada.

Geographic units of measure: Individual spills referenced by province, place name and date.

Period of record: 1973 to present.

Update frequency: As incidents occur.

Database storage format: Text.

Database computer environment: Paper file.

Restrictions and conditions: Contact responsible organization.

Price information: No charge.

Corresponding printed sources: None.

Languages: English and French.

User aids available: None.

Keywords: environmental accidents; marine; oil; pollution; spills; transportation

Additional information:

1. This database provides verbal accounts of significant spills within 24 hours of occurrence. The National Analysis of Trends in Emergencies System database consists of coded variables, and may provide more accurate information resulting from subsequent incident investigations.
2. Each regional office sends pollution incident reports to Ottawa for significant spills only and retains information on other spills.
3. Periodic summary reports are available from regional offices (e.g., *A Summary of Trends Relating to Spills of Oil and Hazardous Materials in the Atlantic Region*).

CA-NAT-0282: National Analysis of Trends in Emergencies System (NATES)

Summary description: An inventory of accidents involving spills of hazardous materials (including hydrocarbons) in Canada and offshore to the 320 km limit, which includes data on the cause of the accident, industry sector concerned, site type, material spilled, consequences, etc. The inventory is used to analyze accident trends and the distribution of hazardous material spills and to assess contingency plans, equipment requirements, prevention programs and regulation effectiveness.

Responsible organization: Environment Canada.

Database contact: Lynn Provost, Environmental Emergencies Branch, Environmental Protection Service, 17th Floor, 351 St. Joseph Blvd., Hull, PQ K1A 0H3, (819) 997-3053, Fax (819) 997-5029.

Access mechanisms: Through the responsible organization.

Variables included:

- material spilled, amount
- reporting agency
- location (geographic area, latitude, longitude)
- site type (air, underground, river, bay, harbour)
- cause (collision, sinking, leak)
- reason (intent, error, ice)
- source (tanker, train, aircraft)
- sector (petroleum, pulp and paper, metallurgy)
- clean-up (who, percentage recovery)
- Acts invoked (none, *Arctic Waters Pollution Prevention Act*, municipal bylaw)
- consequences (fish kill, human casualty)

Data acquisition methods: Data are reported to regional offices directly from the incident sites or obtained from provincial agencies.

Geographic coverage: Canada, all provinces, territories and offshore to the 320 km limit.

Geographic units of measure: Individual spills referenced by latitude and longitude

Period of record: 1968 to present.

Update frequency: Ongoing.

Database storage format: Lists of incidences by constraints (defined parameters). Tables of incident numbers by type and geographic area.

Database computer environment: Digital, ORACLE.

Restrictions and conditions: Some information may be restricted.

Price information: Cost recovery for organizations outside government. No charge within government (all levels).

Corresponding printed sources: Ten-year summary report: *Summary of Spill Events in Canada, 1974-1983.*

Languages: Reports and database are bilingual.

User aids available: None.

Keywords: accidents; hazardous materials; oil spills; spills

Additional information:

1. The database is being expanded to add more parameters.
2. The database contains information for significant spills. Information pertaining to other spills is held in each regional office of Environmental Protection.

CA-NIP-0226: National Inventory of PCBs in Use and PCB Wastes in Storage in Canada

Summary description: An inventory of polychlorinated biphenyls (PCB) waste storage sites and in-use PCBs, which also provides information on askarel and contaminated mineral oil in equipment (transformers, capacitors, etc.). It is used by the Canadian Council of Ministers of the Environment (CCME) in support of PCB phase out and destruction.

Responsible organization: Environment Canada.

Database contact: Dr. John Hilborn, Environmental Protection Service, 12th Floor, 351 St. Joseph Blvd., Hull, PQ K1A 0H3, (819) 997-2314, Fax (819) 953-0509.

Access mechanisms: Through the responsible organization.

Variables included:

- owner information
- site information (address, postal code, geocode, contact person)
- equipment/waste information
- equipment/waste type (transformer, capacitor; plus barrels of soil, debris, light ballasts, oil, water, sludge)
- equipment status (in use, in storage for future use, in storage for disposal, disposed of)
- capacity (litres or kg)
- number of units
- total volume or weight (capacity x no. of units)
- PCB type (askarel, contaminated mineral oil)
- PCB concentration in contaminated mineral oil (ppm)
- PCB contamination level of other wastes (ppm or H/M/L/)
- manufacturers serial number (in-use only)
- EP PCB label number (in-use only)

Data acquisition methods: Reports from private or government agencies under compliance with PCB storage regulations; voluntary reporting on and inspections of in-use PCB registration by federal and provincial environment departments.

Geographic coverage: Canada, all provinces and territories.

Geographic units of measure: By province, by site.

Period of record: 1988 to present.

Update frequency: Every six months, annual summary also prepared.

Database storage format: DBF Database files.

Database computer environment: PC.

Restrictions and conditions: Annual summary is public (see additional information).

Price information: Possible cost recovery.

Corresponding printed sources: Annual reports.

Languages: Reports are bilingual.

User aids available: Description of fields and codes.

Keywords: contaminated sites; contaminated wastes; contaminants; hazardous materials; PCBs; polychlorinated biphenyls; waste disposal; waste inventory; wastes

Additional information:

1. Waste information for areas under federal jurisdiction is available from the responsible organization. Other information on waste is available from provincial environment ministries.
2. Each regional office of Environment Canada maintains a database and forwards regional PCB information to Headquarters for inclusion in this database.
3. Detailed information is public with the exception of a few categories of PCB owner.

CA-RIS-0314: Restricted Information System for Chemicals Quebec Region (RISC — QRPCB)

Summary description: An inventory of PCB-containing equipment in use or in storage by companies in Quebec, which is used to support enforcement of PCB regulations and the PCB phaseout strategy.

Responsible organization: Environment Canada.

Database contact: Guy Martin, Environmental Protection, Quebec Region, 1179 de Bleury St., 2nd Floor, Montreal, PQ H3B 3H9, (514) 283-6930, Fax (514) 283-4423.

Access mechanisms: Through the responsible organization.

Variables included:

- company (code, location, industrial sector)
- type of equipment (transformer, capacitor)
- PCB type (askarel, pyranol, inerteen) and amount
- location of PCBs within company
- use (in use, in storage)

Data acquisition methods: Information from companies provided pursuant to the *Canadian Environmental Protection Act* and obtained through inspections and voluntary submissions.

Geographic coverage: Quebec.

Geographic units of measure: Individual companies.

Period of record: 1980 to present.

Update frequency: Irregular.

Database storage format: Tables.

Database computer environment: HP minicomputer with IMAGE 1000 and RTE — IVB (will be changing) operating system software.

Restrictions and conditions: Contact agency responsible for release of data, which is possibly protected.

Price information: No charge.

Corresponding printed sources: Summary data from Quebec were published as part of two national summaries (see additional information) in 1985 and 1986; there are no plans for additional publications.

Languages: National reports are bilingual; database is in French.

User aids available: None.

Keywords: contaminants; hazardous materials; PCBs; pollution control; polychlorinated biphenyls; Quebec; storage

Additional information:

1. This database is slated for redevelopment. It will be on a PC, probably with DBASE IV software and maintained in the regional office. Updates will periodically be sent to headquarters in Ottawa. As well, it will form part of a national PCB database currently under development (see Canadian Council of Resource and Environment Ministers — National PCB Inventory Database).
2. The most recent annual report is *National Inventory of Concentrated PCB (Askarel) Fluids* (1985 Summary Update), 1986.
3. Reports are available from EP Publications, Environment Canada, 12th Floor, Place Vincent Massey, Ottawa, ON K1A 0H3.

CA-HMC-0252: Historical Manufacturing Centres Project

Summary description: A database of information on Canadian manufacturers that existed between 1850 and 1939 and whose buildings exist in part or in whole today. It is designed to identify, for the Commission on Historic Sites and Monuments of Canada, candidate sites to commemorate the history of Canadian manufacturing.

Responsible organization: Canadian Heritage.

Database contact: Jean-Claude Parent, Historical Research Branch, National Historic Parks and Sites Directorate, Parks Canada, Jules Léger Bldg., 25 Eddy St., 5th Floor, Hull, PQ K1A 0M5, (819) 997-0530, Fax (819) 953-4909.

Access mechanisms: Through the responsible organization.

Variables included:

- geographic location
- names of the different companies that have occupied a particular building
- manufacturing information
- date of construction

Data acquisition methods: Historical research into fire insurance records, use of other secondary sources, on-site research.

Geographic coverage: Canada; 60 cities are covered.

Geographic units of measure: Not applicable.

Period of record: 1850 to 1939.

Update frequency: Not up-to-date.

Database storage format: Lists and tables.

Database computer environment: PC, Digital DEC, FOXPRO 2.5.

Restrictions and conditions: No restrictions.

Price information: No charge for reasonably sized requests.

Corresponding printed sources: None.

Languages: Reports are in English; entries are in English or French.

User aids available: None.

Keywords: historic sites; industry

Additional information: None.

CA-CIH-0228: Canadian Inventory of Historic Buildings (CIHB)

Summary description: A database of architectural, historical and geographical information on buildings in Canada. It is designed to provide support for the Historic Sites and Monuments Board of Canada (HSMBC), *Railway Stations Act* and Federal Heritage Buildings Review Office (FHBRO) and to serve the general public. The FHBRO reviews and protects other federal buildings that meet heritage criteria.

Responsible organization: Canadian Heritage.

Database contact: Richard Martineau, Parks Canada, 5th Floor, Jules Léger Bldg., 25 Eddy St., Hull, PQ K1A 0M5, (819) 994-2867, Fax (819) 953-4909.

Access mechanisms: Through the responsible organization; link up through modem for special requests.

Variables included:

- architectural features
- historical data
- geographical location
- evaluation of federally owned buildings
- designations of federal heritage buildings

Data acquisition methods: Field surveys (220,000 records), volunteer survey information exchange, extraction from researched sources, recommendations of HSMBC, FHBRO and railway stations.

Geographic coverage: Canada.

Geographic units of measure: Not applicable.

Period of record: Main: up to 1914; general: to present.

Update frequency: On going as information and research is received; the focus is on the period 1914-1950 for new information and 1880-1914 for updated.

Database storage format: Printed reports information encoded or verbalized; also, photographs, maps, plans, research documents, etc.

Database computer environment: IBM desktops, MICROCOMPAQ and TOSHIBA-FOXPRO, FOXBASE, WORDPERFECT, SYMPHONY. A new LAN system is being installed for 1995-1996 with a window environment.

Restrictions and conditions: Some restrictions may apply.

Price information: Information exchange agreement; no charge for reasonably sized requests; photographic information is charged at reproduction costs. A fee structure for personal use may be in place by April 1995.

Corresponding printed sources: HSMBC — Catalogue of Extant Buildings in Canada (buildings on National Historic Sites). Buildings of Canada, How to Evaluate Historic Buildings and Researching Heritage Buildings.

Languages: English and French.

User aids available: Exterior Recording Training Manual, selection form.

Keywords: architecture; historic sites

Additional information:

1. Several of the microcomputer applications are extended subsets with additional researched information, e.g., the Data Verification (DV) System relating to research documents and the National Parks Building Database. Also, a database on Heritage Contacts and Industrial/Manufacturing Complexes in Canada is available.

Transport Canada

CA-DGA-0366: Dangerous Goods Accident Information System (DGAIS)

Summary description: A database of dangerous goods accidents reported under Section IX of the Transportation Dangerous Goods Regulations. It catalogues accidents, the products involved and accident particulars in support of risk assessment and regulatory amendments.

Responsible organization: Transport Canada.

Database contact: Jonathan Rose, Transport of Dangerous Goods Directorate, 14th Floor, Canada Bldg., Minto Place, 344 Slater Street, Ottawa, ON K1A 0N5, (613) 990-1142, Fax (613) 993-5925.

Access mechanisms: Through the responsible organization.

Variables included:

- accident description (including date, location, time of day, amount of product released, mode and initiating event)
- commodity description (including shipping name, UN number, amount shipped, packaging)
- brief narrative describing accident in plain text

Data acquisition methods: Reports are filed by the employer of the person having charge, management or control of the dangerous goods at the time of the accident.

Geographic coverage: Canada.

Geographic units of measure: Standard geographic codes.

Period of record: 1985 to present.

Update frequency: Daily, as new reports are received.

Database storage format: Tables, charts or on diskette.

Database computer environment: IBM-compatible PC using DBASE III+ software.

Restrictions and conditions: Company name and address information is protected as confidential. There are no restrictions as to accident particulars.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: A listing of the meaning of codings and a file structure is provided with data when provided on diskette.

Keywords: accidents; dangerous goods; spills; transportation

Additional information: None.

CA-OIR-0002: Operational Incident Reporting System (OIRS)

Summary description: A computerized database that gives Transport Canada the ability to report on, analyse and investigate all irregular operations and incidents at all Transport Canada owned/operated/subsidized airports.

Responsible organization: Transport Canada.

Database contact: Dale Lahey, Airports Group, Tower "C", 20th Floor, Ottawa, ON K1A 0N8, (613) 990-3718, Fax (613) 996-7037.

Access mechanisms: Through the Transport Canada Network.

Variables included:

- incident number, site
- local date and time
- reportable type, location, details
- type of spill, material, amount
- area affected
- on-scene commander
- spill source, cause, clean-up

Data acquisition methods: Data recorded by site/region/headquarters personnel.

Geographic coverage: Canadian airports, regional offices.

Geographic units of measure: Incident specific.

Period of record: 1986 to present.

Update frequency: As incidents occur.

Database storage format: Generic forms.

Database computer environment: Transport Canada Network.

Restrictions and conditions: Access given to Transport Canada employees.

Price information: None.

Corresponding printed sources: None.

Languages: English and French.

User aids available: OIRS User's Manual — TP10734E/F.

Keywords: airports; aviation; environmental impact; spills

Additional information: None.

CA-CCG-0365: Canadian Coast Guard Pollution Incident Reporting System

Summary description: An inventory of pollution incidents from ships investigated by Canadian Coast Guard (CCG) Pollution Prevention officers. It is used to produce annual reports concerning incidents, support prosecution of offenders and to analyze causes of incidents.

Responsible organization: Transport Canada.

Database contact: Cam Wallace, AMSE, Pollution Prevention, Regulations and Special Projects, Ship Safety Branch, Canadian Coast Guard, 11th Floor, Canada Bldg., Minto Place, 344 Slater St., Ottawa, ON K1A 0N7, (613) 991-3170, Fax (613) 954-4916.

Access mechanisms: Through the responsible organization.

Variables included:

- name of ship involved in the incident
- ship's country of registry
- date of incident
- classification of pollutant (oil, garbage, sewage, pollutant substance, air pollution)
- type of pollutant (type of oil),

quantity of pollutant
- location (general area), reporting office of CCG
- ship type (tanker, fishing vessel)
- main cause (tank overflow, collision, grounding)
- was the incident spotted during aerial surveillance
- was evidence forwarded to a foreign administration for possible prosecution in a foreign court?
- were charges laid?
- was the accused found guilty?
- date of sentencing
- amount of fine
- remarks

Data acquisition methods: CCG Pollution Prevention officers in field offices report to headquarters. Department of Defence surveillance reports are forwarded through regional CCG offices.

Geographic coverage: All Canadian internal waters, territorial seas, fishing zones and Arctic shipping safety control zones. On occasion, reports of incidents beyond these waters are received.

Geographic units of measure: Individual spills recorded by general area.

Period of record: 1979 to present.

Update frequency: Monthly.

Database storage format: Annual summaries and various reports.

Database computer environment: AT-type PC using DBASE III software.

Restrictions and conditions: Some information may be restricted.

Price information: None.

Corresponding printed sources: *Annual Summary of Ship Safety Pollution Prevention Activities.*

Languages: English.

User aids available: None.

Keywords: environmental prosecutions; marine; pollution; ships; spills

Additional information:

1. Copies of incident reports are forwarded to Environment Canada for inclusion in the National Analysis of Trends in Emergencies Systems (NATES).
2. For the 15-year period from 1979 to 1993; just over 3,800 incidents were reported.
3. Incidents include only those where the suspected source is a ship and where jurisdiction falls under the *Canada Shipping Act* or the *Arctic Waters Pollution Prevention Act.*

Statistics Canada

CA-CMI-0338: Coal Mines

Summary description: This is an annual survey collecting financial data related to the production activities of major Canadian coal mines, which is used to support research, planning and policy development.

Responsible organization: Statistics Canada.

Database contact: Dave Madsen, Electricity and Coal Unit, Industry Division, 11th Floor, Jean Talon Bldg., Tunney's Pasture, Ottawa, ON K1A 0T6, (613) 951-3565, Fax (613) 951-3522.

Access mechanisms: Through the responsible organization.

Variables included:

- quantity and value of fuel and electricity
- value of materials and supplies
- quantity and value of sales
- inventory
- consumption of purchased fuel and electricity
- selected mining and non-mining inputs
- operating revenue
- production summary
- technical details
- payroll, employment and hours

Data acquisition methods: Based upon a direct survey of 30 coal mines with gross sales of $1,000,000 over the year using 100 per cent self-completion and mail-out/mail-back. The collection period is January 1 to July 1.

Geographic coverage: Canada.

Geographic units of measure: Nova Scotia; New Brunswick; Saskatchewan; Alberta; British Columbia.

Period of record: 1972 to present.

Update frequency: Annual

Database storage format: Reports.

Database computer environment: Not applicable.

Restrictions and conditions: Confidentiality of individual responses.

Price information: There is a charge.

Corresponding printed sources: Statistics Canada Publication 26-206.

Languages: English and French.

User aids available: Not applicable.

Keywords: coal; energy; hydrocarbons; mining; non-renewable resources

Additional information:

1. This database is also referenced in Statistical Data Documentation System (SDDS) as Survey # 2177.
2. No major revisions have been made since the inception of the survey.
3. Release time is one year after the reference calendar year.
4. Saskatchewan and Alberta are combined.

Natural Resources Canada

CA-MIN-0150: Mineral Deposits Information System (MINSYS)

Summary description: An index for and general information about mineral records filed under the National Mineral Inventory for Canada

Responsible organization: Natural Resources Canada

Database contact: Ginette Bouchard, Mineral Policy Sector, 460 O'Connor St., Ottawa, ON K1A 0E4, (613) 992-4665, Fax (613) 943-8453.

Access mechanisms: Through the responsible organization.

Variables included:

- mineral commodities present, deposit name and discovery year
- geological data
- location (latitude, longitude, NTS)
- first (and last) production year
- status (minor occurrence through currently producing mine)
- work done (drilling, geochemical, underground)

- cross-reference to provincial inventory system

Data acquisition methods: Deposit information from federal and provincial governments, corporations and the literature.

Geographic coverage: Canada.

Geographic units of measure: Individual deposits by latitude and longitude, NTS.

Period of record: Late 1800s to 1991; continuous since 1959.

Update frequency: Updating activity has been cancelled.

Database storage format: Tables, diskettes (3.5"), microfiches.

Database computer environment: Data are available on diskettes, in DBASE IV or ASCII format, accessible through DOS on PC.

Restrictions and conditions: Normal copyright protection.

Price information: MINSYS is available on diskette or microfiche for $350.

Corresponding printed sources: National Mineral Inventory Cards are available at $2 per card.

Languages: English.

User aids available: Coding guide and database description.

Keywords: extraction; metals; minerals; mining; non-renewable resources

Additional information:

1. An index is available on microfiches.

Provincial Databases

Alberta

Energy Resources Conservation Board

AB-EIS-0149: Environment Information System

Summary description: This database captures pipeline and non-pipeline releases of potentially harmful substances into the environment.

Responsible organization: Energy Resources Conservation Board (ECRB).

Database contact: Information Services Department, Energy Resources Conservation Board, 640-5th Ave. S.W., Calgary, AB T2P 3G4, (403) 297-8311, Fax (403) 297-7040.

Access mechanisms: Through the responsible organization.

Variables included:

- event (location, date, source, cause, injuries or deaths)
- ERCB area office, field
- operator or licencee
- pipeline (licence number, line number, leak or rupture)
- types and volumes of release (gas, water-based material, hydrocarbons)
- clean-up dates
- complaints (noise, odour, smoke)

Data acquisition methods: Site inspection report. Data are captured by area office inspectors who fill out a report of the event on site.

Geographic coverage: Alberta.

Geographic units of measure: Dominion land survey system (legal land location or township and range).

Period of record: 1975 to present.

Update frequency: Weekly.

Database storage format: Microfiche, tape.

Database computer environment: Mainframe, custom software.

Restrictions and conditions: None.

Price information: Various costing arrangements subject to change (see additional information).

Corresponding printed sources: Cumulative data reports are printed monthly.

Languages: English.

User aids available: Code table.

Keywords: contaminants; pollution; prairies

Additional information:

1. The ERCB's EIS is currently being revised, the new system is scheduled for availability in summer 1994.
2. Effective January 1, 1993 (subject to change) pricing was: annual subscription, $200; single issue, $125; by location, a pull and copy charge; viewing, no charge.

Alberta Transportantion and Utilities

AB-SSU-0056: Sand/Salt Utilization Program

Summary description: Assists regional operations in tracking and reporting on the amount of sand and salt used by each shop in a district.

Responsible organization: Alberta Transportation and Utilities.

Database contact: Clarence Dewald, Assistant Director, Construction Programs Branch, Alberta Transportation and Utilities, 4999-98th Ave., Edmonton, AB T6B 2X3, (403) 427-3110, Fax (403) 422-2978.

Access mechanisms: Through the responsible organization.

Variables included:

- sand and salt volume
- geographic location

Data acquisition methods: Sand and salt use reported by District staff.

Geographic coverage: Alberta.

Geographic units of measure: Use is recorded on maintenance control subsections with predefined start and end points.

Period of record: 1991 to present.

Update frequency: Daily.

Database storage format: Hard copy, diskette.

Database computer environment: PC, CLIPPER 5.01.

Restrictions and conditions: None.

Price information: None.

Corresponding printed sources: This system generates a variety of reports.

Languages: English.

User aids available: User's manual.

Keywords: contaminants; prairies; vehicles

Additional information: None.

Department of Agriculture, Food and Rural Development

AB-WQD-0082: Water Quality Data

Summary description: Water quality data from wells and dugouts.

Responsible organization: Department of Agriculture, Food and Rural Development.

Database contact: Dave Scott, Systems Engineer, Engineering Services Branch, Department of Agriculture, Food and Rural Development, 7000-113th St., Edmonton, AB T6H 5T6, (403) 427-2181, Fax (403) 438-3362.

Access mechanisms: Through the responsible organization.

Variables included:

- owner (name, address, legal location)
- substance concentrations (Na, Ka, Ca, Mg, Fe, sulphate, Cl-, N, Fl, total dissolved organic solids)
- conductivity
- pH
- hardness
- alkalinity
- water treatment equipment

Data acquisition methods: Water sample analysis. Water samples are submitted to the departmental water testing service by producers.

Geographic coverage: Alberta.

Geographic units of measure: Wells referenced by quarter section.

Period of record: 1982 to present.

Update frequency: Every two to three months.

Database storage format: Hard copy, diskette.

Database computer environment: PC, PARADOX.

Restrictions and conditions: Names and addresses are confidential.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: agriculture; prairies; water quality

Additional information: None.

Department of Environmental Protection

AB-HEL-0144: HELP End Landfill Pollution Data Tracking and Control System

Summary description: An inventory of industrial landfills and plant sites for management of potentially contaminated sites.

Responsible organization: Department of Environmental Protection

Database contact: Helen Schiebel, HELP Project Assistant, Waste Management Division, Water Resources Services, Department of Environmental Protection, 1443-10405 Jasper Ave., Edmonton, AB T5J 3N4, (403) 427-3946, Fax (403) 427-0413.

Access mechanisms: Through the responsible organization.

Variables included:

- company (type of operation)
- landfill (number, licence, status)
- location (section, township, range, west of meridian)
- area (operated from, operated to)
- overall comments
- waste types
- design and operation

Data acquisition methods: Government and public survey plus industry questionnaire. Survey and questionnaire results are input by Ministry staff.

Geographic coverage: Alberta.

Geographic units of measure: Legal land description.

Period of record: 1986 to 1988.

Update frequency: Not applicable.

Database storage format: Hard copy, diskette.

Database computer environment: PC, DBASE III+.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: HELP End Landfill Pollution Data Tracking and Management System Report.

Languages: English.

User aids available: None.

Keywords: contaminants; disposal; prairies

Additional information: None.

British Columbia

Ministry of the Environment, Lands and Parks

BC-SPC-0524: Special Waste Management System

Summary description: To record manifest forms from generators and transporters of waste.

Responsible organization: Ministry of Environment, Lands and Parks.

Database contact: Irene Cleary, Data Management Clerk, Environmental Protection Division, Ministry of Environment, Lands and Parks, 1106-1175 Douglas St., Victoria, BC V8V 1X4, (604) 387-2049, Fax (604) 953-3856.

Access mechanisms: Through the responsible organization.

Variables included:

- generator of waste (consignee, carrier)
- waste information (type, quantity)

Data acquisition methods: Monitoring. Manifest forms.

Geographic coverage: British Columbia.

Geographic units of measure: Municipality.

Period of record: 1987 to present.

Update frequency: Daily.

Database storage format: Tapes.

Database computer environment: VAX, DATATRIEVE.

Restrictions and conditions: Some restrictions apply.

Price information: $100 per disk for six months of data.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Pacific; transportation; waste

Additional information:

1. Database to be replaced by the Special Waste Information System (SWIS) currently under development.

BC-SRD-0521: Sportfishing Regulations Database

Summary description: A listing of current and historical regulations pertaining to sportfishing.

Responsible organization: Ministry of Environment, Lands and Parks

Database contact: Jennifer Warris, Regulation Coordinator, Fisheries Branch, Ministry of Environment, Lands and Parks, 780 Blanshard St., Victoria, BC V8V 1X4, (604) 356-7285, Fax (604) 387-9750.

Access mechanisms: Through the responsible organization.

Variables included:

- water body (name, number, watershed code)
- regulation (type, authority, legal reference)
- gear
- catch limit
- water closure

Data acquisition methods: Not applicable (see additional information).

Geographic coverage: British Columbia.

Geographic units of measure: Lakes, rivers.

Period of record: 1931 to present.

Update frequency: Every two years or as required.

Database storage format: Not applicable (see additional information).

Database computer environment: Not applicable (see additional information).

Restrictions and conditions: None.

Price information: None.

Corresponding printed sources: Fishery regulations synopsis.

Languages: English.

User aids available: None.

Keywords: Pacific; wildlife; fish; regulation

Additional information: This database is in the early planning stages.

BC-GOW-0120: Groundwater Observation Well Network

Summary description: Observation wells, locations and hydrographs.

Responsible organization: Ministry of Environment, Lands and Parks.

Database contact: Mike Wei, Senior Advanced Ground Water Hydrologist, Water Management Division, Ministry of Environment, Lands and Parks, 4th Floor, 765 Broughton St., Victoria, BC V8V 1X4, (604) 356-5062, Fax (604) 356-5496.

Access mechanisms: Through the responsible organization.

Variables included:

- water (volume, quality, location, levels)
- ownership

- physical
- biological
- chemical

Data acquisition methods: Recorder chart. Stevens water well recorder.

Geographic coverage: Part of British Columbia.

Geographic units of measure: Latitude and longitude.

Period of record: 1950 to present (70,000 records).

Update frequency: Monthly.

Database storage format: Hard copy.

Database computer environment: Not applicable.

Restrictions and conditions: None.

Price information: Charge for photocopy.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: hydrography; Pacific; water; water quality

Additional information: None.

BC-SIS-0511: Site Information System

Summary description: To track environmentally pertinent information on contaminated sites.

Responsible organization: Ministry of Environment, Lands and Parks.

Database contact: Roger Ord, Soil Hydrogeology Specialist, Contaminated Sites Unit, Industrial Wastes and Hazardous Contaminants Branch, Ministry of Environment, Lands and Parks, 3rd Floor, 777 Broughton St., Victoria, BC V8V 1X4, (604) 356-8386, Fax (604) 387-9935.

Access mechanisms: Through the responsible organization.

Variables included:

- site (location)
- contaminant levels as related to criteria for managing contaminated sites in British Columbia
- remedial technologies applied against specific contaminants at specific sites
- legal events

Data acquisition methods: Survey and monitoring. Staff receive reports or carry out site inspections.

Geographic coverage: British Columbia.

Geographic units of measure: Latitude and longitude.

Period of record: 1988 to present.

Update frequency: As information is received (see additional information).

Database storage format: Hard copy, diskette, on-line access.

Database computer environment: HP UNIX server, ORACLE.

Restrictions and conditions: Legal restrictions exist.

Price information: Some charges to users.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Pacific; regulation; contaminants

Additional information:

1. System is updated as Ministry receives a site profile according to *Bill 26* (contaminated site legislation).
2. System to be running in fall 1994.

BC-WAS-0252: WASTE

Summary description: Permit/approval administration and tracking system. Contains permittee information and permit criteria.

Responsible organization: Ministry of Environment, Lands and Parks.

Database contact: Min Pak, Evaluation, Economics and Laboratory Services Branch, Environmental Protection Division, Ministry of Environment, Lands and Parks, 777 Broughton St., Victoria, BC V8V 1X5, (604) 387-9972, Fax (604) 356-6337.

Access mechanisms: Through the responsible organization.

Variables included:

- permit/approval (administration information, technical criteria)

Data acquisition methods: Permit/approval document. Data input by Ministry staff.

Geographic coverage: British Columbia.

Geographic units of measure: Latitude and longitude, MOELP regional office boundaries.

Period of record: 1990 to present. The WASTE System became operational in 1990. Information for all permits/approvals issued (including those issued before 1990) by the program.

Update frequency: As information changes.

Database storage format: Hard copy, diskette.

Database computer environment: Macintosh, PC.

Restrictions and conditions: None.

Price information: There is a charge (see additional information).

Corresponding printed sources: None.

Languages: English.

User aids available: User's manual.

Keywords: environmental science; Pacific; waste

Additional information:

1. Minimum $50 per request to consultants and general public. No charge to government agencies or educational institutions.

Ministry of Energy, Mines and Petroleum Resources

BC-ARI-0130: Assessment Report Indexing System (ARUS)

Summary description: ARIS is a relational database that is an index and an administrative tracking system to the Geological Survey Branch's Mineral Assessment Report library of more than 22,000 reports.

Responsible organization: Ministry of Energy, Mines and Petroleum Resources.

Database contact: Laura de Groot, Database Manager, Geoscience Information System, Ministry of Energy, Mines and Petroleum Resources, 5th Floor, 1810 Blanshard St., Victoria, BC V8V 1X4, (604) 952-0387, Fax (604) 952-0381.

Access mechanisms: Through the responsible organization.

Variables included:

- assessment reports
- mineral deposits
- ownership (operator, location)
- bibliography
- exploration results

Data acquisition methods: Reports. Legislated submissions by companies pertaining to the *Mineral Act* Regulations.

Geographic coverage: British Columbia.

Geographic units of measure: Longitude and latitude, UTM coordinates.

Period of record: 1947 to present. Ongoing.

Update frequency: Daily.

Database storage format: Hard copy, microfiche, diskette.

Database computer environment: VAX 8650, VMS, SUPRA, CARIS GIS, PC.

Restrictions and conditions: Partly restricted. Non-confidential data open to the public.

Price information: Index diskettes $50 per set.

Corresponding printed sources: CARIS GIS maps.

Languages: English.

User aids available: CARIS User's Manual.

Keywords: Geographic Information System (GIS); geology; minerals; Pacific

Additional information:

1. A group of fields are extracted to diskettes for each assessment report in a group of eight ASCII files. The data may be used on the PC within database management and mapping.

BC-BCM-0129: BC MINFILE

Summary description: MINFILE contains over 11,000 metallic, industrial, mineral and coal occurrences for British Columbia. The database is used by government, industry and academia for resource management, land-use planning, exploration and research.

Responsible organization: Ministry of Energy, Mines and Petroleum Resources.

Database contact: Cindy McPeek, Database Manager, Geoscience Information Section, Ministry of Energy, Mines and Petroleum Resources, 5th Floor, 1810 Blanshard St., Victoria, BC V8V 1X4, (604) 952-0387, Fax (604) 952-0381.

Access mechanisms: Through the responsible organization.

Variables included:

- minerals (industrial, metallic, deposits, location)
- coal
- geology (rock types, reserves, tectonic belt, location)
- production
- bibliography

Data acquisition methods: Research, field work, compilation, surveys. Maps, personal visits.

Geographic coverage: British Columbia.

Geographic units of measure: Longitude and latitude, UTM coordinates.

Period of record: 1967 to present. Ongoing.

Update frequency: Daily.

Database storage format: Hard copy maps, microfiche, diskette.

Database computer environment: PC, DBASE, MINFILE/PC.

Restrictions and conditions: None.

Price information: $5 per disk.

Corresponding printed sources: MINFILE publications, MINFILE maps, open files.

Languages: English.

User aids available: MINFILE Coding Manual (1992). MINFILE User's Manual (1992).

Keywords: Geographic Information System (GIS); minerals; pacific

Additional information:

1. MINFILE/PC 3.0 is an IBM-compatible, menu-driven program consisting of search, report and data-entry modules. MINFILE data are distributed in ASCII files, which are configured into indexed database (DBASE) files.
2. PROPERTY FILE, a hard copy back-up to MINFILE, consists of original source material.

BC-MWR-0478: Mine Waste Rock Dump Monitoring Database

Summary description: Database stores information on monitoring data available for waste rock dumps worldwide.

Responsible organization: Ministry of Energy, Mines and Petroleum Resources.

Database contact: Rick Lawrence, Chair, Mining Environment, Department of Mining and Mineral Processing, University of British Columbia, 6350 Stores Rd., Vancouver, BC V6T 1Z4, (604) 822-6781, Fax (604) 822-5599.

Access mechanisms: Through the responsible organization.

Variables included:

- detailed mine information (location, climate)
- waste rock dump details (size, hydrology, mineralogy)
- monitoring program details (data availability, access)

Data acquisition methods: Monitoring. Questionnaires to Mines and information from other databases.

Geographic coverage: Worldwide, specifically Canada, United States, Sweden, Norway, Australia.

Geographic units of measure: Municipality.

Period of record: 1993 to present.

Update frequency: Depends on funding.

Database storage format: Diskette.

Database computer environment: PC.

Restrictions and conditions: None.

Price information: A charge may apply.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Pacific; mining; waste

Additional information:

1. Summary data will be widely available on the Internet sometime in 1994.

Newfoundland

Department of Environment

NF-WWD-0189: Water Well Database

Summary description: Information on drilled wells in Newfoundland supplied from water well records received by well drillers.

Responsible organization: Department of Environment.

Database contact: Bob Lethbridge, Water Well Inspector, Ground Water Section, Water Resources Division, Department of Environment, P.O. Box 8700, St. John's, NF A1B 4J6, (709) 729-3398, Fax (709) 729-0320.

Access mechanisms: Through the responsible organization.

Variables included:

- well (depth, yield, date drilled, static water level, test time, type of water, northing and easting, UTM coordinates)
- community
- owner
- well (number driller, elevation, location, lithology, final status, water use)

Data acquisition methods: Hard copy water well inspection sheets supplied by well drillers. Approximately 12,000 on file.

Geographic coverage: Newfoundland.

Geographic units of measure: UTM coordinates.

Period of record: 1960 to present.

Update frequency: Approximately every two months.

Database storage format: Hard disk, diskette.

Database computer environment: PC, DBASE IV.

Restrictions and conditions: None.

Price information: $20.00 per publication.

Corresponding printed sources: Water Well Data for Newfoundland and Labrador, 1984-1990. Department of Environment, Water Resources Report 1-3, Groundwater Series, 1990.

Languages: English.

User aids available: None.

Keywords: Atlantic; hydrology; water

Additional information:

1. Data on 7,000 wells out of the 8,000 to 9,000 drilled since 1950 when records were first required. Data from 700 new wells drilled each year.
2. This database can be cross-referenced with the Groundwater Quality Database by well number.

NF-ACM-0163: Annual Census of Mines, Quarries and Sandpits

Summary description: Contains the results of questionnaires returned to the Newfoundland Department of Natural Resources by companies operating in the province. It consists of 33 files; each file is for a different commodity and contains general information on the annual mines census.

Responsible organization: Department of Natural Resources.

Database contact: Glenn Luther, Statistician, Mineral Resources Branch, Department of Natural Resources, West Block, Confederation Bldg., P.O. Box 8700, St. John's, NF A1B 4J6, (709) 729-6448, Fax (709) 729-6782.

Access mechanisms: Through the responsible organization.

Variables included:

- mines census

Data acquisition methods: Research and surveys. Data are collected via questionnaires returned to the department by companies operating in the province.

Geographic coverage: Western, central and eastern regions of Newfoundland and Labrador.

Geographic units of measure: Mine site.

Period of record: 1953 to present.

Update frequency: Updated in 1990.

Database storage format: Hard copy, diskette.

Database computer environment: PC.

Restrictions and conditions: Most information is confidential and for internal use only.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Atlantic; extraction; mining

Additional information: None.

Nova Scotia

Department of Municipal Affairs

NS-NSP-0028: Nova Scotia Property Database

Summary description: A database containing property parcel boundaries that are linked to attribute files describing ownership information and address.

Responsible organization: Department of Municipal Affairs

Database contact: Andrew Kenny, Programmer Analyst, Land Information Management Services Division, Department of Municipal Affairs, 1660 Hollis St., Halifax, NS B3J 1V7, (902) 424-3127, Fax (902) 424-5872.

Access mechanisms: Through the responsible organization.

Variables included:

- land parcels
- land ownership
- administration boundaries
- addresses

Data acquisition methods: Monitoring land ownership transactions, mapping. Legal surveys, registered documents.

Geographic coverage: Complete coverage of the eastern two thirds of Nova Scotia.

Geographic units of measure: Property Identification Number, ATS77 Datum, 3 degree Modified Transverse Mercator Projection.

Period of record: Not applicable.

Update frequency: Continual.

Database storage format: Hard copy, diskette.

Database computer environment: PC, CARIS GIS, LORIS (Land Ownership Registry Index System), FOXPRO.

Restrictions and conditions: Unknown.

Price information: Price list available.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Atlantic; Geographic Information System (GIS); landscape

Additional information:

1. Approximately 7,500 transactions recorded per year.
2. Of the 500,000 land parcels in Nova Scotia, approximately 375,000 are mapped; the remaining 125,000 are located in the western counties of Nova Scotia.
3. There are Land Information Centres in Halifax, New Glasgow, Sydney and Lawrencetown.

NS-BAS-0326: Base Mapping — Nova Scotia Department of Municipal Affairs

Summary description: Base maps are prepared specifically for the Nova Scotia Department of Municipal Affairs projects, such as municipal planning exercises, sewer and water inventory, downtown facilities inventory.

Responsible organization: Department of Municipal Affairs

Database contact: Jim Drolet, Community Planning, Department of Municipal Affairs, Maritime Centre, P.O. Box 216, 1505 Barrington St., 13th Floor, Halifax, NS B3J 2M4, (902) 424-7416, Fax (902) 424-0531.

Access mechanisms: Through the responsible organization.

Variables included: NTS map sheets .

Data acquisition methods: Survey. Prepared by departmental staff photomechanically reducing existing mapping.

Geographic coverage: Nova Scotia.

Geographic units of measure: Latitude and longitude, NTS mapsheets.

Period of record: 1970 to 1990.

Update frequency: Will not be updated.

Database storage format: Hard copy, maps.

Database computer environment: Not applicable.

Restrictions and conditions: None.

Price information: $5 per map.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: land use; geography; Atlantic

Additional information: None.

NS-RSP-0395: Rural Settlement Pattern, Settlement Record and Agricultural Land Use

Summary description: A detailed inventory of agricultural field usage and building and other land usage.

Responsible organization: Department of Municipal Affairs.

Database contact: Jim Drolet, Community Planning, Department of Municipal Affairs, Maritime Centre, P.O. Box 216, 1505 Barrington St., 13th Floor, Halifax, NS B3J 2M4, (902) 424-7416, Fax (902) 424-0531.

Access mechanisms: Through the responsible organization.

Variables included:

- building (counts)
- land use (hectares)

Data acquisition methods: Aerial photography, field surveys. Air photo interpretation and consultation with farmers when necessary.

Geographic coverage: Nova Scotia at scales of 1:10,000 and 1:50,000.

Geographic units of measure: Latitude and longitude.

Period of record: 1979 to 1985.

Update frequency: Not applicable.

Database storage format: Hard copy maps.

Database computer environment: Not applicable.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Atlantic; geography; land use; agriculture

Additional information:

1. An alphanumeric database is available and quantifies hectares and building/land use counts.

Department of Health

NS-NOU-0394: Naturally Occurring Uranium and Arsenic in Ground Water in Nova Scotia

Summary description: To identify areas within Nova Scotia where wells are likely to contain uranium and arsenic.

Responsible organization: Department of Health.

Database contact: Peter Casey, Director, Public Health Services Division, Department of Health, P.O. Box 488, Halifax, NS B3J 2R8, (902) 424-4300, Fax (902) 424-0558.

Access mechanisms: Through the responsible organization.

Variables included:

- arsenic
- uranium
- well location

Data acquisition methods: Reports. Manuscripts provided by Nova Scotia Department of Health.

Geographic coverage: Nova Scotia.

Geographic units of measure: Latitude and longitude.

Period of record: Maps published in 1991.

Update frequency: Will not be updated.

Database storage format: Hard copy maps (1:1,710,000).

Database computer environment: Not applicable.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Atlantic; contaminants; water quality

Additional information: None.

Department of the Environment

NS-SYL-0442: Salvage Yards Licencing Application

Summary description: An inventory of all licenced salvage yards.

Responsible organization: Department of the Environment.

Database contact: Christine Hodgson, Department of the Environment, P.O. Box 2107, Halifax, NS B3J 3B7, (902) 424-5300, Fax (902) 424-0503.

Access mechanisms: Through the responsible organization.

Variables included:

- owners
- lot (location, description)
- licence (year licenced, current number)

Data acquisition methods: Monitoring. Data compiled from applications received in paper format.

Geographic coverage: Nova Scotia.

Geographic units of measure: Not applicable.

Period of record: 1964 to present.

Update frequency: As required.

Database storage format: Hard copy.

Database computer environment: PC.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: contaminants; Atlantic

Additional information: Licences are renewed annually and are conditional.

NS-PSA-0008: Petroleum Storage Applications

Summary description: A computerized inventory of petroleum storage tanks for cross-referencing and serviceability status on tank usage.

Responsible organization: Department of the Environment

Database contact: John Henderson, Department of the Environment, P.O. Box 2107, Halifax, NS B3J 3B7, (902) 424-5300, Fax (902) 424-0503.

Access mechanisms: Through the responsible organization.

Variables included:

- installation (date, type, owner, operator, location)
- product stored (inventory)
- tank and dyking information (size)

Data acquisition methods: Monitoring. Information extracted from storage tank applications.

Geographic coverage: Nova Scotia.

Geographic units of measure: Not applicable.

Period of record: 1988 to present.

Update frequency: As required.

Database storage format: Hard copy, diskette.

Database computer environment: PC, FOXPRO, FOXBASE, DBASE III+.

Restrictions and conditions: Some data are confidential.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Atlantic; energy; oil

Additional information:

1. Applications received in paper copy and entered onto system.
2. Database includes information on all storage tanks having a nominal capacity of 2,000 litres or greater (underground) or 4,000 litres or greater (above ground) including abandoned tanks.

NS-IWT-0006: Inventory of Wastewater Treatment Plants

Summary description: An inventory of wastewater treatment plants for every community of over 300 people. Information about the disposal of wastewater is also available for each community of 300 or more and in some cases for smaller communities.

Responsible organization: Department of the Environment.

Database contact: Sharon Vervaet, Resource Management and Pollution Control Division, Department of the Environment, P.O. Box 2107, Halifax, NS B3J 3B7, (902) 424-5300, Fax (902) 424-0503

Access mechanisms: Through the responsible organization.

Variables included: inventory (location of plant, type, capacity)

Data acquisition methods: Survey. Information gathered from individual plants, files, permits.

Geographic coverage: Nova Scotia.

Geographic units of measure: Plant location.

Period of record: 1993 to present. Recently started.

Update frequency: As required.

Database storage format: Hard copy, diskette.

Database computer environment: PC, FOXPRO.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: A briefing note is available about the database.

Keywords: Atlantic; effluents; environmental science; water

Additional information: None.

Land Registration and Information Service (LRIS).

NS-NSR-0402: Nova Scotia Resource Atlas

Summary description: A collection of maps, text and statistics to present the essential facts about Nova Scotia, its people and its resources.

Responsible organization: Land Registration and Information Service (LRIS).

Database contact: Nancy Gayton, Map Librarian, Resource Information, Land Registration and Information Service (LRIS), P.O. Box 310, 16 Station St., Amherst, NS B4H 3Z5, (902) 679-6091, Fax (902) 679-6176.

Access mechanisms: Through the responsible organization.

Variables included:

- forestry (forest cover, biophysical land classification, property ownership, wildlife resource habitat and harvest, land capability and mill locations)
- agriculture (agriculture capability, climate, climatic zones, capital value of farms, agriculture and associated industries)
- fishery (species, total value of landings, processing plant facilities, fishery infrastructure)
- geology (geology, coal resources, peat resources, metallic minerals, industrial minerals, offshore resources)
- resources infrastructure (water resources, transportation, electrical energy, manufacturing, labour force, education, population, tourism, recreation, international exports, resource data)

Data acquisition methods: Reports. Information compiled from various provincial and federal government departments and agencies by departmental staff.

Geographic coverage: Nova Scotia.

Geographic units of measure: Latitude and longitude.

Period of record: Primarily data from 1984-1985.

Update frequency: None planned.

Database storage format: Hard copy.

Database computer environment: Not applicable.

Restrictions and conditions: None.

Price information: There is a charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Atlantic; ecology; landscape

Additional information: None.

Department of Health

NS-NOU-0394: Naturally Occurring Uranium and Arsenic in Groundwater in Nova Scotia

Summary description: To identify areas within Nova Scotia where wells are likely to contain uranium and arsenic.

Responsible organization: Department of Health

Database contact: Peter Casey, Director, Public Health Services Division, Department of Health, P.O. Box 488, Halifax, NS B3J 2R8, (902) 424-4300, Fax (902) 424-0558.

Access mechanisms: Through the responsible organization.

Variables included:

- arsenic
- uranium
- well location

Data acquisition methods: Reports. Manuscripts provided by Nova Scotia Department of Health.

Geographic coverage: Nova Scotia.

Geographic units of measure: Latitude and longitude.

Period of record: Maps published in 1991.

Update frequency: Will not be updated.

Database storage format: Hard copy maps (1:1,710,000).

Database computer environment: Not applicable.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Atlantic; contaminants; water quality

Additional information: None.

Department of Transportation and Communications

NS-GPS-0397: Gravel Pit Sites

Summary description: An inventory of deeds, legal descriptions, site plans and acquisition source for gravel pit sites in Nova Scotia.

Responsible organization: Department of Transportation and Communications.

Database contact: Frank Harland, Manager, Land Acquisition, Right-of-Way Claims Division, Department of Transportation and Communications, P.O. Box 186, Halifax, NS B3J 2N2, (902) 424-5699, Fax (902) 424-0558.

Access mechanisms: Through the responsible organization.

Variables included:

- site plan
- acquisition source

Data acquisition methods: Monitoring. Deed and field surveys.

Geographic coverage: Nova Scotia.

Geographic units of measure: Site.

Period of record: Current from date of acquisition.

Update frequency: As transactions occur.

Database storage format: Hard copy.

Database computer environment: Not applicable.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Atlantic; minerals; mining

Additional information: None.

New Brunswick

Department of the Environment

NB-HWM-0282: Hazardous Waste Management System

Summary description: A database that contains information on the generation, transportation and disposal of hazardous wastes in New Brunswick.

Responsible organization: Department of the Environment.

Database contact: Réjean Doiron, Hazardous Materials Section, Operations Branch, Department of the Environment, P.O. Box 6000, Fredericton, NB E3B 5H1, (506) 457-4848, Fax (506) 453-2265.

Access mechanisms: Through the responsible organization.

Variables included:

- handlers of hazardous wastes
- generator's (name, ID number, mailing address, shipping [site] address, type, waste class, PIN, TDG class, volume)
- carrier's (name, ID number, mailing address, vehicle, waste class)
- receiver's (name, ID number, mailing address, receiving [site] address, type, waste class, PIN, TDG class, volume, disposal)
- hazardous waste state (liquid/solid/gas)
- hazardous waste class
- product identification number (PIN)
- quantity
- TDG class and handling code

Data acquisition methods: Monitoring. From direct registration of handlers of hazardous wastes and from waste manifests (hazardous waste shipping document) received.

Geographic coverage: New Brunswick.

Geographic units of measure: Department of Environment region, city, county, province.

Period of record: 1992 to present.

Update frequency: Continual.

Database storage format: Hard copy, diskette.

Database computer environment: PC, CLIPPER.

Restrictions and conditions: Some information available only on written request.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: User's guide.

Keywords: Atlantic; transportation; waste

Additional information: None.

NB-EEM-0197: Environmental Emergencies

Summary description: Data on spills and their causes.

Responsible organization: Department of the Environment.

Database contact: D. J. Williams, Manager of Enforcement, Investigations and Enforcement Branch, Department of the Environment, P.O. Box 6000, Fredericton, NB E3B 5H1, (506) 457-4850, Fax (506) 453-2893.

Access mechanisms: Through the responsible organization.

Variables included:

- dates
- companies
- product
- quantity
- causes of spills

Data acquisition methods: Monitoring. Reports.

Geographic coverage: New Brunswick.

Geographic units of measure: Not applicable.

Period of record: 1966 to present.

Update frequency: Daily.

Database storage format: Hard copy.

Database computer environment: Not applicable.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Atlantic; contaminants; spills

Additional information: None.

NB-ADS-0228: Active Disposal Sites

Summary description: List of active municipal solid waste disposal sites with certificate of approval.

Responsible organization: Department of the Environment.

Database contact: Roger Maillet, Mike Reinhardt, Solid Waste and Recycling Section, Department of the Environment, P.O. Box 6000, Fredericton, NB E3B 5H1, (506) 457-4848, Fax (506) 457-7805.

Access mechanisms: Through the responsible organization.

Variables included:

- solid waste
- disposal sites

Data acquisition methods: Inspections, list of disposal sites. Data input by departmental staff.

Geographic coverage: New Brunswick.

Geographic units of measure: Municipality.

Period of record: Not applicable.

Update frequency: As required.

Database storage format: Hard copy.

Database computer environment: PC, WORDPERFECT.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Atlantic; disposal; engineering

Additional information: None.

NB-NBB-0217: New Brunswick Biomedical Waste Inventory

Summary description: An inventory of biomedical waste generated in New Brunswick.

Responsible organization: Department of the Environment.

Database contact: Mike Murphy, Air Quality Section, Department of the Environment, P.O. Box 6000, Fredericton, NB E3B 5H1, (506) 457-4848, Fax (506) 453-2265.

Access mechanisms: Through the responsible organization.

Variables included:

- kg/month (received, treated)

Data acquisition methods: Quarterly reports. Certificate of approval.

Geographic coverage: New Brunswick (anticipated).

Geographic units of measure: Place name.

Period of record: 1993 to present.

Update frequency: Continually.

Database storage format: Hard copy, diskette.

Database computer environment: PC, EXCEL.

Restrictions and conditions: Semi-confidential.

Price information: Dependent on size of request.

Corresponding printed sources: None.

Languages: English.

User aids available: None at present.

Keywords: Atlantic; human health; waste

Additional information: This is a new program being developed.

NB-PCB-0281: PCB Inventory System

Summary description: A database that maintains an inventory of PCB wastes stored at various locations in the province.

Responsible organization: Department of the Environment.

Database contact: Réjean Doiron, Hazardous Materials Section, Operations Branch, Department of the Environment, P.O. Box 6000, Fredericton, NB E3B 5H1, (506) 459-4848, Fax (506) 453-2265.

Access mechanisms: Through the responsible organization.

Variables included:

- company information (name, mailing address, storage site address, contact, inspection information)
- inventory information (PCB item, quantity, PCB type [for each item], location)

Data acquisition methods: Monitoring. From inventories received from PCB waste storage owners. Accuracy of information is verified by the Department of the Environment.

Geographic coverage: New Brunswick.

Geographic units of measure: Environmental region (6), county, city, province.

Period of record: 1989 to present.

Update frequency: Annual or more frequently.

Database storage format: Hard drive, diskette.

Database computer environment: PC, DBASE.

Restrictions and conditions: Some data is confidential; approval by management needed.

Price information: No charge.

Corresponding printed sources: None.

Languages: English (French optional).

User aids available: PCB Inventory System User's guide.

Keywords: Atlantic; contaminants; waste

Additional information: None.

NB-WWR-0082: Water Well Reports Database

Summary description: To maintain a register of drilled wells (domestic and municipal) in New Brunswick.

Responsible organization: Department of the Environment.

Database contact: Mark Miller, Water and Wastewater Section, Operations Branch, Department of the Environment, Argyle Place, P.O. Box 6000, Fredericton, NB E3B 5H1, (506) 457-4848, Fax (506) 457-7805.

Access mechanisms: Through the responsible organization.

Variables included:

- physical (well location, yield, depth, well log)
- domestic
- municipal
- water quality

Data acquisition methods: Monitoring. Data obtained from well drillers reports, internal files and lab results.

Geographic coverage: New Brunswick

Geographic units of measure: Latitude and longitude, UTM coordinates, PID numbers.

Period of record: 1976 to present.

Update frequency: Continually.

Database storage format: Hard copy, maps, cartridge tape, diskette.

Database computer environment: PC, DBASE IV, FOXPRO, INFOCUS, QUIKMAP.

Restrictions and conditions: None (see additional information).

Price information: No charge.

Corresponding printed sources: None.

Languages: English and French.

User aids available: Database field descriptions, code book.

Keywords: Atlantic; hydrology; water

Additional information:

1. Georeferencing done by PID number conversion.
2. Domestic Well Database and Municipal Well Database are separate. Municipal Well Database contains much more information and more accurate information that the Domestic Well Database. Both databases can be accessed through Water Well Reports Database.
3. Agreement that users use database only for own purposes, no further exchange of information is permitted.
4. Well water quality data will be available in summer of 1994.

NB-PMT-0079: Petroleum Management System

Summary description: To compile data on above ground, underground and portable petroleum storage tanks in New Brunswick.

Responsible organization: Department of the Environment.

Database contact: Doug Neilson, Operations Branch, Department of the Environment, Argyle Place, P.O. Box 6000, Fredericton, NB E3B 5H1, (506) 457-4848, Fax (506) 453-2265.

Access mechanisms: Through the responsible organization.

Variables included:

- petroleum storage tanks (upgrades, new construction, abandonments, transfers of ownership, leaks, spills, licencing data)

Data acquisition methods: Monitoring. Information obtained from permits, major oil companies and environmental approvals.

Geographic coverage: New Brunswick

Geographic units of measure: PID, PAN, DSSNO, county, municipality, postal code.

Period of record: 1988 to present.

Update frequency: Daily.

Database storage format: Hard copy.

Database computer environment: PC, NOVELL, CLIPPER, DBASE IV, FOXPRO, LOTUS 123.

Restrictions and conditions: Site specific information available upon request.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Atlantic; energy; fuel

Additional information:

1. Database contains comprehensive information on 6,500 petroleum storage tank sites and 19,000 individual tanks. Only aggregated data can be released to protect individual oil companies.

NB-CLD-0229: Closed Dumps

Summary description: Identification and verification of closed or abandoned land disposal sites.

Responsible organization: Department of the Environment.

Database contact: Don Woods, Engineer, Solid Waste and Recycling, Department of the Environment, P.O. Box 6000, Fredericton, NB E3B 5H1, (506) 457-4848, Fax (506) 457-7805.

Access mechanisms: Through the responsible organization.

Variables included:

- closed dump (location, size, use)

Data acquisition methods: Site survey and report. Data prepared by consulting firm.

Geographic coverage: New Brunswick.

Geographic units of measure: Dump sites.

Period of record: Not applicable.

Update frequency: Not applicable.

Database storage format: Hard copy.

Database computer environment: Not applicable.

Restrictions and conditions: Single copy (book).

Price information: No charge.

Corresponding printed sources: Map of closed dumps.

Languages: English.

User aids available: None.

Keywords: Atlantic; engineering; waste

Additional information: None.

New Brunswick Geographic Information Corporation

NB-PAT-0150: Property Taxation Assessment System

Summary description: To collect information on land use and value for purpose of taxation and to levy and account for provincial and municipal taxes.

Responsible organization: New Brunswick Geographic Information Corporation.

Database contact: Bill Morrison, Project Manager, Development Division, New Brunswick Geographic Information Corporation, 985 College Hill Road, P.O. Box 6000, Fredericton, NB E3B 5H1, (506) 457-3581, Fax (506) 453-3898.

Access mechanisms: Through the responsible organization.

Variables included:

- property information influencing property value

Data acquisition methods: Field visits, building permits, registry transactions. Five-year re-inspection cycle.

Geographic coverage: New Brunswick.

Geographic units of measure: Property identification number.

Period of record: 1993 to present.

Update frequency: On-line daily.

Database storage format: Hard copy.

Database computer environment: UNISYS 220/9111, DMS 1100.

Restrictions and conditions: On-line access restricted.

Price information: Non-confidential data available for a fee.

Corresponding printed sources: Coding tables.

Languages: English.

User aids available: Manual or presentations available.

Keywords: Atlantic; economics; land use

Additional information: None.

NB-LOP-0160: New Brunswick Land Ownership or Parcel Indexing System

Summary description: To provide information on New Brunswick, with respect to property boundaries, property identifier and ownership attribute information.

Responsible organization: New Brunswick Geographic Information Corporation

Database contact: New Brunswick Geographic Information Corporation, 985 College Hill Rd., P.O. Box 6000, Fredericton, NB E3B 5H1, (506) 457-3581, Fax (506) 453-3898.

Property and Mapping Managers: Bathurst: Joe Cormier. (506) 547-2734; Edmundston: Leo-Guy LeBlanc, (506) 735-2548; Fredericton: Ron Richard, (506) 453-3390; Moncton: Plen Dickson, (506) 856-2322; Saint John: George Schurman, (506) 658-2479.

Access mechanisms: Through the responsible organization.

Variables included:

- parcel boundaries
- owner (name, address)
- parcel (area, location, dimensions)
- deed references

Data acquisition methods: Reports. Deeds, plans, other registered documents.

Geographic coverage: New Brunswick at a scale of 1:1,000 to 1:10,000.

Geographic units of measure: Datum: ATS77, NB Double Stereographic Projection.

Period of record: Ongoing and historical information back to early 1970s.

Update frequency: Daily.

Database storage format: Exabyte tape.

Database computer environment: CARIS GIS, NTX.

Restrictions and conditions: None.

Price information: Fee schedule available from contact person.

Corresponding printed sources: None.

Languages: English.

User aids available: User's guide.

Keywords: Atlantic; Geographic Information System (GIS); geography

Additional information:

1. Over 2,000 files for the province.

Prince Edward Island

Department of Provincial Affairs and Attorney General

PE-BDP-0030: Building and Disposal Permits

Summary description: The data are used to control and monitor building construction and sewage disposal in rural areas.

Responsible organization: Department of Provincial Affairs and Attorney General.

Database contact: John Pickard, Supervisor, Subdivision Development Branch, Department of Provincial Affairs and Attorney General, P.O. Box 2000, Charlottetown, PEI C1A 7N8, (902) 368-4887, Fax (902) 368-5544.

Access mechanisms: Through the responsible organization.

Variables included:

- applicant
- proposed structure
- septic system details
- date (requested, approved)

Data acquisition methods: Permit application forms. Legislation requires permits be approved.

Geographic coverage: Rural Prince Edward Island.

Geographic units of measure: County and district.

Period of record: 1960 to present.

Update frequency: Weekly.

Database storage format: Hard copy, diskette.

Database computer environment: PC, DBASE.

Restrictions and conditions: Permit details cannot be discussed before final approval.

Price information: No charge.

Corresponding printed sources: Annual building permit statistics reports.

Languages: English.

User aids available: None.

Keywords: Atlantic; construction; waste

Additional information:

1. Comparable databases for urban areas are held by individual municipalities.
2. While a permit is being considered, only information on the applicant, type of structure proposed and date of application are available from the branch.
3. Summary data are available in annual reports; original data can be examined at the data centre but not photocopied.

Department of the Provincial Treasury

PE-DET-0026: PEI Digital Enhanced Topographic Database — Resource and Urban Series

Summary description: Digital files of topographic maps: Resource Series at 1:1,000 for Summerside and 1:2,000 for the greater Charlottetown area; Urban Series at 1:10,000 for the entire province.

Responsible organization: Department of the Provincial Treasury

Database contact: Brenda Campbell-Perry, System Administrator, Geomatics Information Centre, Department of the Provincial Treasury, P.O. Box 2000, Charlottetown, PE C1A 7N8, (902) 368-5165, Fax (902) 368-4399.

Access mechanisms: Through the responsible organization.

Variables included:

- buildings (structures)
- designated areas
- utilities
- hydrography
- delimeters
- land cover
- roads
- railroads
- contours (see additional information)

Data acquisition methods: Aerial photographs. For the Resource Series, 1985 and 1988 aerial photographs at 1:35,000 were interpreted and the information digitized. For the Urban Series, 1985 and 1991 aerial photographs at 1:6,000 (for 1:1,000 files) and 1:10,000 (for 1:2,000 files) were interpreted and the information digitized.

Geographic coverage: Entire province is covered using a stereographic double projection (ATS77) with origin as latitude 47° 15' N, longitude 63° W, scale factor 0.999912 and false northing and easting as 400,000/700,000.

Geographic units of measure: Data for the Resource Series are positioned within 2.5 m while the Urban Series are positioned within less than 1 m.

Period of record: 1985 to 1991. Resource Series: for the portion of the island west of Summerside/Miscouche, 1985 aerial photographs were used. For the remainder of the province, maps were compiled based on 1988 photographs. Urban Series: for Summerside, 1985 aerial photographs were used. For the greater Charlottetown area, maps were compiled based on 1991 photographs.

Update frequency: No periodic updates planned.

Database storage format: Exabyte/SCSI tapes, CDROM, diskette.

Database computer environment: SUN, UNIX, AUTOCAD, CARIS GIS.

Restrictions and conditions: None.

Price information: $100 per file, $150 other formats and $40 per paper copy.

Corresponding printed sources: None.

Languages: English.

User aids available: System Data Summary for PEI GIS, 1993.

Keywords: Atlantic; Geographic Information System (GIS); remote sensing

Additional information:

1. Contours for the Resource Series (4 m intervals) are available only on a few maps for the eastern part of the province. The addition of these to the remainder of the maps will depend upon the future political and economic climate. Contours for the Urban Series are available at 2 m intervals on the 1:2,000 maps and 1 m intervals on the 1:1,000 maps.
2. While 1991 aerial photographs are available for the Resource Series, there are no plans to update the database using them. Urban Series plans are to expand the coverage of the greater Charlottetown area based on 1993 aerial photography.

Department of Environmental Resources

PE-WWI-0025: Water Well Information System

Summary description: Construction, water yield, and geological data for wells drilled in the province.

Responsible organization: Department of Environmental Resources.

Database contact: George Somers, Head, Groundwater Section, Department of Environmental Resources, Water Resources Division, P.O. Box 2000, Charlottetown, PE C1A 7N8, (902) 368-5046, Fax (902) 368-5830.

Access mechanisms: Through the responsible organization.

Variables included:

- location (UTM grid, locality, property number)
- owner
- well (diameter, depth, casing material and depth)
- test (duration, rate)
- geological data

Data acquisition methods: Well drillers' reports. Well drillers are legally required to submit reports to the department.

Geographic coverage: Prince Edward Island.

Geographic units of measure: Wells referenced by UTM coordinates and property number.

Period of record: 1972 to present.

Update frequency: Monthly.

Database storage format: Hard copy, diskette.

Database computer environment: PC, DBASE.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: Annual update in departmental annual report. Annual reports are prepared providing numbers of wells drilled by county. Occasional region-specific reports are produced.

Languages: English.

User aids available: None.

Keywords: Atlantic; hydrology; water

Additional information:

1. A federal-provincial working group convened to develop a standard database format and determine methodologies for exchanging database information.
2. Water quality data for wells is held in the Water Chemistry database.
3. In the future, wells will also be referenced by land parcel numbers.
4. The quality of the data varies among drillers.

Department of Transportation and Public Works

PE-CLI-0029: Crown Land Inventory

Summary description: Information on crown land used to guide property management.

Responsible organization: Department of Transportation and Public Works.

Database contact: Paul Knox, Crown Property Controller, Properties and Surveys Division, Department of Transportation and Public Works, P.O. Box 2000, Charlottetown, PE C1A 7N8, (902) 368-5131, Fax (902) 368-5395.

Access mechanisms: Through the responsible organization.

Variables included:

- property number
- location
- acreage
- property type (land, building)
- land coverage (woodland, cleared, shorefront)
- designation restrictions (nature reserve)

Data acquisition methods: Field surveys and record compilation. Property transaction and assessment information obtained from the Registry Office, surveyors and department staff.

Geographic coverage: All Crown land.

Geographic units of measure: Properties referenced by number.

Period of record: 1860 to present. The database was initiated in 1970.

Update frequency: Irregular.

Database storage format: Diskette.

Database computer environment: SUN, CARIS GIS.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: A user's guide, Land Linc, was prepared by the Department of Finance in 1990.

Keywords: Atlantic; environmental science; Geographic Information System (GIS)

Additional information:

1. This database is a component of the province-wide GIS system being developed by the Real Property Records Division of the Department of Finance. All the data entered in the system by all departments are tied to unique property numbers.
2. Data on private land transactions are in the Property Assessment Taxation System portion of the GIS system.
3. A road inventory database is planned for inclusion in the GIS system.

Québec

Centre de recherche industrielle du Québec

QC-BII-0077: Industrial Information Database

Summary description: Identification and description of manufacturers and their products, wholesalers and products distributed.

Responsible organization: Centre de recherche industrielle du Québec.

Database contact: Bernard Turgeon, Banque d'information industrielle, Centre de recherche industrielle du Québec, 333, rue Franquet, C.p. Box 9038, Sainte-Foy, QC G1V 4C7, (418) 652-2213, Fax (418) 652-2212.

Access mechanisms: Through the responsible organization.

Variables included:

- identification of manufacturer or business
- description of manufacturer or business
- products manufactured or distributed
- top management
- number of employees
- economic activity code
- sales figures
- country of export
- quality assurance standards

Data acquisition methods: Questionnaires completed by the firms.

Geographic coverage: Québec.

Geographic units of measure: Establishment, municipality, regional county municipality, census division, postal code, administrative region.

Period of record: Current data.

Update frequency: Ongoing.

Database storage format: Hard copy, diskette.

Database computer environment: HP 3000, MINISYS. PC.

Restrictions and conditions: Some data confidential (copyrights), see data centre contact.

Price information: $120 minimum for hard copy (see Additional information).

Corresponding printed sources: Catalogues of products available in Quebec.

Languages: French.

User aids available: Information kit that describes the data bank and gives the search criteria for the various establishments.

Keywords: manufacturing; natural resources; industry

Additional information:

1. Other charges include: $300 minimum per tape (minimum 1,000 files). The complete database is also available for $750 (complete version) or $450 (selected certain information deleted).

Bureau de la Statistique du Québec

QC-IMA-0460: Manufacturing Industries

Summary description: The data set contains economic statistics on the manufacturing sector in the areas of inventory, inputs, outputs, labour force, wages and value added by industry, firm size, region, type of firm, and destination of shipments.

Responsible organization: Bureau de la Statistique du Québec.

Database contact: Direction de la géostatistique et de l'information, Bureau de la Statistique du Québec, Centre d'information et de documentation, 200, chemin Sainte-Foy, 3e étage, Québec, PQ G1R 5T4, (418) 691-2401, Fax (418) 643-4129.

Access mechanisms: See additional information.

Variables included: See additional information.

Data acquisition methods: See additional information.

Geographic coverage: See additional information.

Geographic units of measure: See additional information.

Period of record: See additional information.

Update frequency: See additional information.

Database storage format: See additional information.

Database computer environment: See additional information.

Restrictions and conditions: See additional information.

Price information: See additional information.

Corresponding printed sources: See additional information.

Languages: French.

User aids available: See additional information.

Keywords: construction; industry; economics

Additional information:

1. Specific queries may be addressed to the BSQ (Bureau de la Statistique du Québec).

Ministère des Ressources naturelles

QC-SIC-0066: Cadastre Information System

Summary description: Registered lots, including date of registration, status, comments, for all land in the province registered under the cadastre system.

Responsible organization: Ministère des Ressources naturelles

Database contact: Jean-Guy Forget, Direction de l'enregistrement cadastrale, Ministère des Ressources naturelles, 5700, 4e avenue Ouest, Section G312, Charlesbourg, PQ G1H 6R1, (418) 643-4660, Fax (418) 643-8987.

Access mechanisms: Through the responsible organization.

Variables included:

- information on registered lots (date of registration, status, comments)

Data acquisition methods: Compilation of data drawn from the index (files).

Geographic coverage: Quebec (part registered under the cadastre system).

Geographic units of measure: Lots and cadastres referenced using MTM coordinates.

Period of record: 1981 to present.

Update frequency: Ongoing.

Database storage format: Hard copy, diskette, tape.

Database computer environment: Ministère des Communications central computer, VSAM in-house software.

Restrictions and conditions: Some confidential data, prior authorization required.

Price information: Consultation free; cost of document distribution variable.

Corresponding printed sources: Index of registered lots for each cadastre, number of pages varies by cadastre.

Languages: French.

User aids available: User's guide.

Keywords: geography; Gulf of St. Lawrence; rivers; land use

Additional information:

1. This database is to be modernized (ORACLE on VAX) in approximately one year for conversion to a geographic database system; graphics data will be incorporated by means of a geographic information system. Partially digitized cartography.

QC-B-0085: Sludge

Summary description: Computerized reference index to various publications that report on assessment of sewage sludge (municipal, septic tank, pulp and paper, de-inking) in a woodland environment; characterization, environmental impact (soil, water, land animals, vegetation), environmental assessment, human safety and health.

Responsible organization: Ministère des Ressources naturelles.

Database contact: Nathalie Lafontaine, Direction de l'environnement, Ministère des Ressources naturelles, 930, rue Sainte-Foy, 6e étage, Québec, PQ G1S 4X5, (418) 646-3373, Fax (418) 643-5651.

Access mechanisms: Through the responsible organization.

Variables included:

- number
- title
- author
- source
- date
- place
- key words

Data acquisition methods: Compilation of bibliographical information (USDA, Dialog, bibliographies of monographs or articles). Inter-library loan services of governments, universities and research agencies.

Geographic coverage: Quebec, Canada, United States.

Geographic units of measure: Not applicable.

Period of record: Not applicable.

Update frequency: Ongoing.

Database storage format: Hard copy, diskette.

Database computer environment: PC, EDIBASE.

Restrictions and conditions: On-site consultation.

Price information: No charge.

Corresponding printed sources: None.

Languages: French and English.

User aids available: Edibase guide (manual).

Keywords: contaminants; disposal; waste

Additional information: None.

Ministère de l'Environnement et de la Faune

QC-GER-0040: Database on MENVIQ Files that Relate to Contaminated Land Rehabilitation

Summary description: Inventory of general, administrative and technical data on contaminated land in Quebec for which MENVIQ (Ministère de l'Environnement et de la Faune) operates a file in context of the contaminated land rehabilitation policy.

Responsible organization: Ministère de l'Environnement et de la Faune

Database contact: Jocelyne Hébert, Direction des programmes de gestion des déchets et lieux contaminés, Ministère de l'Environnement et de la Faune, 3900, rue de Marly, 5e étage, Sainte-Foy, PQ G1X 4E4, (418) 644-2914, Fax (418) 646-4920.

Access mechanisms: Through the responsible organization.

Variables included:

- site identification and map reference (municipality and region)
- annual progress of file
- person responsible
- priority contaminant type
- area of contaminated site
- volume of contaminated soil
- date file opened
- type of land owner
- current land use
- future zoning of land
- evaluation of restoration cost
- date of file update

Data acquisition methods: Compilation of data drawn from files. Files processed by the responsible persons in each regional branch office. The files are transferred to the central computer for entry into the system.

Geographic coverage: Québec.

Geographic units of measure: Municipality, administrative region.

Period of record: 1988 to present.

Update frequency: Annually.

Database storage format: Hard copy.

Database computer environment: PC, DBASE IV.

Restrictions and conditions: Data accessible under the *Access to Information Act.*

Price information: As specified in the *Access to Information Act.*

Corresponding printed sources: Direction des programmes de gestion des déchets et des lieux contaminés, 1991. Data bank on MENVIQ files that relate to contaminated land rehabilitation (GERSOL), list of files by administrative region.

Languages: French.

User aids available: None.

Keywords: contaminants; municipalities; soils

Additional information: None.

QC-SSI-0042: Industrial Depollution Program Incident Monitoring Systems

Summary description: Inventory of Quebec industries. Industrial incident program.

Responsible organization: Ministère de l'Environnement et de la Faune.

Database contact: Pierre Bergevin, Direction des programmes d'assainissement, Ministère de l'Environnement et de la Faune, 5199, rue Sherbrooke E., bureau 4800, Montréal, PQ H1T 3X3, (514) 873-3056, Fax (514) 873-8257.

Access mechanisms: Through the responsible organization.

Variables included:

- identification of industries
- identification of responsible persons
- technical data on water
- programming steps

Data acquisition methods: Inventory searches and telephone surveys. Information obtained from Scoot and Centre de Recherche Industrielle du Québec (CRIQ) inventories, provided by municipalities and telephone calls.

Geographic coverage: Quebec.

Geographic units of measure: Industries referenced by address, municipality, administrative region, MENVIQ (Ministère de l'Environnement et de la Faune) region

Period of record: 1980 to 1991. This database has not been updated since April 1991 (see additional information).

Update frequency: Bi-annual.

Database storage format: Hard copy, diskette.

Database computer environment: PC, CLIPPER, DBASE III.

Restrictions and conditions: For the sole use of MENVIQ managers.

Price information: No charge.

Corresponding printed sources: None.

Languages: French.

User aids available: None.

Keywords: industry; disposal; regulation

Additional information:

1. Although this database has not been updated since April 1991, the data stored in the system can still be accessed. Similar, more recent data are recorded in the Register database.

QC-SLA-0039: Pulp and Paper Data Management System

Summary description: Data on controlled discharges from pulp and paper mills, calculation of allocations and company profiles (see Additional information).

Responsible organization: Ministère de l'Environnement et de la Faune.

Database contact: Yves Genest, Service suivi et statistiques, Ministère de l'Environnement et de la Faune, 2360, rue Sainte-Foy, 3e étage C.p. Box 73, Sainte-Foy, PQ G1V 4H2, (418) 644-3598, Fax (418) 644-2003.

Access mechanisms: Through the responsible organization.

Variables included:

- suspended matter
- BOD5
- pumped flow
- colour
- pH (acidity)

Data acquisition methods: Sampling and analysis. Sampling and analysis carried out by the companies. Data provided to regional branch offices, then transmitted to central branch for entry into the system. Although central branch inspectors also take samples at times, these data are not entered into this database.

Geographic coverage: Quebec.

Geographic units of measure: Industrial sites (approximately 60), municipalities, regional branches.

Period of record: 1985 to 1995.

Update frequency: Monthly.

Database storage format: Hard copy, diskette.

Database computer environment: DGI central computer. PC, EXCEL.

Restrictions and conditions: Some data are confidential, see data centre contact..

Price information: No charge.

Corresponding printed sources: Monthly publication entitled Rapport de conformité (mensuel) par l'industrie (pâtes et papiers); list for on-site consultation (authorization required). Three-page monthly and annual abstracts.

Languages: French.

User aids available: None.

Keywords: industry; waste; regulation

Additional information:

1. This database is concerned solely with the old regulation, which remained in force until September 1995. The data related to the new regulation (in force since October 1992), in the pulp and paper industry, may be consolidated with the SSPI (decision pending).

QC-GER-0041: GERLED Inventory Database

Summary description: Inventory of general, administrative and technical information on hazardous waste elimination sites listed in the GERLED inventory.

Responsible organization: Ministère de l'Environnement et de la Faune.

Database contact: Jocelyne Hébert, Direction des programmes de gestion des déchets et lieux contaminés, Ministère de l'Environnement et de la Faune, 3900, rue de Marly, 5e étage, Sainte-Foy, PQ G1X 4E4, (418) 644-2914, Fax (418) 646-4920.

Access mechanisms: Through the responsible organization.

Variables included:

- site identification and map reference (municipality and administrative region)
- annual progress of file
- number and category of site
- type of (site, waste, priority contaminants)
- name and type of site owner
- dollars invested (all levels of government, private)
- planned future zoning
- date of file update

Data acquisition methods: Compilation of data drawn from files. Files processed by the responsible person in each regional branch office. Data sheets for file processing are forwarded to head office.

Geographic coverage: Quebec.

Geographic units of measure: Municipality, administrative region.

Period of record: 1977 to present.

Update frequency: Annual.

Database storage format: Hard copy.

Database computer environment: PC, DBASE IV.

Restrictions and conditions: Data accessible under the *Access to Information Act*.

Price information: As specified in the *Access to Information Act*.

Corresponding printed sources: Undetermined at present.

Languages: French.

User aids available: None.

Keywords: contaminants; disposal; municipalities

Additional information:

1. This database is currently in the layout phase.

Ontario

Ministry of Labour

ON-MES-0005: Merged Support System Radiation Protection Service

Summary description: Contains measurements of environmental radiation sources from Ministry of Environment and Energy and Ministry of Labour survey areas. Contains inventory of ionizing (X-ray) equipment and non-ionizing devices from worksites such as plants or companies, mines and construction sites. Indicates the number of orders issued on field visits to sites containing ionizing or non-ionizing radiation devices and indicates compliance status.

Responsible organization: Ministry of Labour.

Database contact: Joan Berry, Manager, Application Development, Information, Technology and Systems Branch, Ministry of Labour, 3rd Floor, 400 University Ave., Toronto, ON M7A 1T7, (416) 326-7133, Fax (416) 326-7138.

Access mechanisms: Through the responsible organization.

Variables included:

- X-ray inventory
- ionizing and non-ionizing radiation (hazard, company/plant, type of radiation source, total number of radiation sources, number of orders issued during inspection and compliance status)
- radiation protection laboratory (sample date, description, duration, concentration or measurement, hazard, company/plant)

Data acquisition methods: Field survey. Field visit to company/plant site or site of radioactive spill.

Geographic coverage: Ontario.

Geographic units of measure: Sites referenced by city and detailed source location.

Period of record: Ionizing/non-ionizing radiation data: 1988 to present.

Update frequency: Daily.

Database storage format: Hard copy.

Database computer environment: DEC VAX, FOCUS.

Restrictions and conditions: None.

Price information: Not established.

Corresponding printed sources: The Ministry of Labour provides environmental analysis reports to the Ministry of the Environment. The former also provides investigation reports of X-ray installation or non-ionizing radiation concerns to the company or agency.

Languages: English.

User aids available: User aids include: Standard Industrial Classification; Standard Geographic Codes; Ontario Regulation 554/86; Health and Safety Legislation.

Keywords: Great Lakes; human health; radiation

Additional information: None.

Ministry of Natural Resources

ON-LIS-0106: Land Index System Database

Summary description: This is an inventory of all lands disposed of by the Ontario Crown; a list of all land surveys of crown land, and the current approved holders of Crown leases and Licences of Occupation. This provides a record of crown land status to MNR (Ministry of Natural Resources) and MNDM field and main offices.

Responsible organization: Ministry of Natural Resources.

Database contact: J. Gary Sherman, Coordinator, Crown Land Registry, Natural Resources Information Branch, Ministry of Natural Resources, 90 Sheppard Ave. East, North York, ON M2N 3A1, (416) 314-1384, Fax (416) 314-1397.

Access mechanisms: Through the responsible organization.

Variables included:

- land (status, dispositions, files, grants, grant types, title, Crown land surveys)
- date
- reservations
- mining (claims, locations)

Data acquisition methods: Documents, reports. Material obtained from internal and external sources.

Geographic coverage: Ontario.

Geographic units of measure: Documents referenced by township, lot and concession, unorganized areas and territorial districts.

Period of record: 1793 to present.

Update frequency: This holding is updated on a transactional basis.

Database storage format: Hard copy.

Database computer environment: VAX, ORACLE.

Restrictions and conditions: None.

Price information: Administrative charges only.

Corresponding printed sources: Various reports are produced.

Languages: English.

User aids available: Index.

Keywords: geography; Great Lakes; land use

Additional information: None.

ON-MNR-0124: Ministry of Natural Resources Land Files

Summary description: This file collection represents the correspondence and history relating to specific land dispositions in Ontario. The contents can contain applications, requisitions, legal opinions, survey information as well as orders withdrawing land from disposition.

Responsible organization: Ministry of Natural Resources.

Database contact: J. Gary Sherman, Coordinator, Crown Land Registry, Natural Resources Information Branch, Ministry of Natural Resources, 90 Sheppard Ave. East, North York, ON M2N 3A1, (416) 314-1384, Fax (416) 314-1338.

Access mechanisms: Through the responsible organization.

Variables included:

- land dispositions
- correspondence
- title

Data acquisition methods: Documents, reports. Material obtained from internal and external correspondence.

Geographic coverage: Ontario.

Geographic units of measure: Documents referenced by township, lot and concession, territorial district.

Period of record: 1915 to present.

Update frequency: This holding is updated on a transactional basis.

Database storage format: Hard copy.

Database computer environment: Not applicable.

Restrictions and conditions: None.

Price information: Administrative charges and cost per copy.

Corresponding printed sources: None.

Languages: English.

User aids available: All land files are listed in the Land Index System Database.

Keywords: geography; Great Lakes; land use

Additional information: None.

ON-APL-0062: Air Photo Library

Summary description: This is the repository for MNR (Ministry of Natural Resources) air photo original negatives and the service protects the originals while providing MNR and external clients with a variety of print images upon demand.

Responsible organization: Ministry of Natural Resources.

Database contact: Ken Robinson, Natural Resources Information Branch, Ministry of Natural Resources, 90 Sheppard Ave. East, North York, ON M2N 3A1, (416) 314-1365, Fax (416) 314-8482.

Access mechanisms: Through the responsible organization.

Variables included:

- photograph (date, number, scale, flight line)
- photograph type (colour, black and white)
- topographic map

Data acquisition methods: Aerial photography. Air photographs taken by contractors.

Geographic coverage: Ontario.

Geographic units of measure: Photographs referenced by number, flight line and topographic map.

Period of record: 1931 to present.

Update frequency: Continual.

Database storage format: Hard copy.

Database computer environment: Not applicable.

Restrictions and conditions: Photographs are not loaned out.

Price information: Fees will be charged.

Corresponding printed sources: None.

Languages: English.

User aids available: Air photograph indices.

Keywords: Great Lakes; imagery; remote sensing

Additional information:

1. The air photographs have been collected for various interpretive programs and at various scales — 1:50,000, 1:30,000, 1:15,840, 1:8,000, 1:6,000.
2. The products for internal clients are not routinely processed by the NRIC.

ON-AID-0063: Aquatic Invertebrate Data

Summary description: Aquatic invertebrates and associated habitat descriptions collected to Aquatic Habitat Inventory standards. This is largely stream and large river data (not many lakes). The data support scientific analysis, fisheries management and research.

Responsible organization: Ministry of Natural Resources.

Database contact: George Gale, Senior Development Planner, Natural Resources Information Branch, Ministry of Natural Resources, 4th Floor, 90 Sheppard Ave. East, North York, ON M2N 3A1, (416) 314-1320, Fax (416) 314-1336.

Access mechanisms: Through the responsible organization.

Variables included:

- invertebrates (water bugs, aquatic insects)
- aquatic community type
- sampling (location, date)
- sampler
- other (chemical, physical, biological and habitat parameters)

Data acquisition methods: Field surveys carried out through the Aquatic Habitat Inventory.

Geographic coverage: Ontario.

Geographic units of measure: Latitude and longitude.

Period of record: 1972 to 1990.

Update frequency: Irregular.

Database storage format: Hard copy.

Database computer environment: Not applicable.

Restrictions and conditions: None.

Price information: Administrative charges only.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: insects; rivers; wildlife; aquatic ecosystems

Additional information:

1. An estimated 300,000 specimen records have been digitized. It is said by some to be the most comprehensive data series of its kind.

Ministry of Transportation

ON-PSS-0076: Provincial Salt and Sand Use

Summary description: Inventory of salt and sand used in winter road maintenance.

Responsible organization: Ministry of Transportation.

Database contact: Ken Kirchner, Manager, Maintenance Office, Transportation Operations Branch, Ministry of Transportation, 1201 Wilson Ave., Room 230, Downsview, ON M3M 1J8, (416) 235-3764, Fax (416) 235-3656.

Access mechanisms: Through the responsible organization.

Variables included:

- salt used for winter maintenance
- tonnes/equivalent two lane kilometre
- tonnes/district
- sand use

Data acquisition methods: Reports. Ministry field staff record salt and sand use by district.

Geographic coverage: Province of Ontario Provincial Highway System.

Geographic units of measure: MTO (Ministry of Transportation) Districts referenced by name.

Period of record: 1974 to present.

Update frequency: Annual.

Database storage format: Hard copy (tables, graphs), diskette.

Database computer environment: PC, LOTUS 123.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: Internal reports.

Languages: English.

User aids available: None.

Keywords: contaminants; Great Lakes; roads

Additional information: None.

Ontario Ministry of Environment and Energy

ON-MGR-0038: Manifest and Generator Registration

Summary description: Information on hazardous and liquid industrial waste transfers.

Responsible organization: Ministry of Environment and Energy.

Database contact: Wing Tse, Environmental Information Systems Section, Environmental Monitoring and Reporting Branch, Ministry of Environment and Energy, 135 St. Clair Ave. West, Toronto, ON M4V 1P5, (416) 314-7994, Fax (416) 314-7880.

Access mechanisms: Through the responsible organization.

Variables included:

- company (name, address, identification number)
- waste (type, volume)

Data acquisition methods: Manifest forms and generator registration reports. The forms and reports are submitted by the public as required.

Geographic coverage: Ontario receivers, Canadian and American generators and carriers.

Geographic units of measure: Receivers, generators and carriers referenced by county, municipality, region, district, province, state.

Period of record: 1986 to present.

Update frequency: Annual.

Database storage format: Disk.

Database computer environment: Mainframe.

Restrictions and conditions: Only annual summary data are available to the public.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: User's guide.

Keywords: transportation; waste; industry

Additional information:

1. Annual summary data, which can be borrowed and copied, are available from Ministry regional offices, Environmental Monitoring and Reporting Branch.

ON-MIS-0425: MISA Industrial Monitoring Information System

Summary description: Effluent data from Ontario's direct discharger industrial plants.

Responsible organization: Ministry of Environment and Energy.

Database contact: Dr. A.K. Sharma, Supervisor, Data Management Unit, Environmental Monitoring and Reporting Branch, Ministry of Environment and Energy, 40 St. Clair Ave. West, Toronto, ON M4V 1M2, (416) 314-7905, Fax (416) 314-7880.

Access mechanisms: Through the responsible organization.

Variables included:

- conventional and non-conventional parameters including toxics

Data acquisition methods: Self-monitoring by plants. Audit samples collected by Ministry staff.

Geographic coverage: Ontario.

Geographic units of measure: UTM coordinates.

Period of record: 1986 to present.

Update frequency: Monthly.

Database storage format: Tape, diskette.

Database computer environment: IBM mainframe, COBOL, FOCUS, DB/2.

Restrictions and conditions: Restricted access.

Price information: $25 per hour.

Corresponding printed sources: Annual report on the direct discharges from industrial plants in Ontario (1986 to 1992).

Languages: English.

User aids available: Database Guide. MISA effluent and compliance regulations.

Keywords: contaminants; Great Lakes; waste; industry

Additional information: None.

ON-MBL-0022: MOEE Master Beach List

Summary description: Beach location, characteristics and posting history.

Responsible organization: Ministry of Environment and Energy.

Database contact: John Antoszek, P. Eng., Municipal Programs Section, Program Development Branch, Ministry of Environment and Energy, 40 St. Clair Ave., West, Toronto, ON M4V 1M2, (416) 314-3891, Fax (416) 314-3918.

Access mechanisms: Through the responsible organization.

Variables included:

- beach name
- location (latitude and longitude, region/district/county, municipality)
- health unit
- days posted per year

Data acquisition methods: Reports. As reported by the Ministry of Health's local health units.

Geographic coverage: Ontario.

Geographic units of measure: UTM coordinates.

Period of record: 1986 to present.

Update frequency: Annual.

Database storage format: Hard copy, diskette.

Database computer environment: PC, DBASE III+.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: Descriptions of data fields.

Keywords: coastal zone; health; recreation

Additional information: None.

ON-OWD-0039: Ontario Waste Disposal Site Inventory

Summary description: Location, classification, waste type and closure date for active and closed waste disposal sites in Ontario.

Responsible organization: Ministry of Environment and Energy.

Database contact: D. Conrod, Hydrogeologist, Science and Technology Branch, Ministry of Environment and Energy, 2 St. Clair Ave. West, Toronto, ON M4V 1L5, (416) 323-5217, Fax (416) 323-5031.

Access mechanisms: Through the responsible organization (see additional information).

Variables included:

- site (name, location, classification, closure date)
- waste types

Data acquisition methods: Field inventories. Ministry staff and consultants conduct studies ranging from visual site inspections to full hydrogeological investigation for human and environmental impacts.

Geographic coverage: Ontario.

Geographic units of measure: UTM coordinates, municipalities, lots, concessions.

Period of record: 1979 to present.

Update frequency: Every two to three years.

Database storage format: Hard copy, diskette.

Database computer environment: PC, LOTUS 123.

Restrictions and conditions: None.

Price information: No charge to the public.

Corresponding printed sources: A publication is available to the public.

Languages: English.

User aids available: None.

Keywords: contaminants; waste; human health

Additional information:

1. The publication can be obtained from the Public Information Centre, Ontario Ministry of Environment and Energy, 135 St. Clair Ave. West, Toronto, ON M4V 1P5, (416) 323-4321. Only the report (not the database) is available to the public.
2. The environmental parameters in Variables included are evaluated as required.

Manitoba

Manitoba Rural Development

MB-MAC-0110: Manitoba Assessment Computer System

Summary description: The database contains assessment values for land and buildings as well as the classification of each property for taxation purposes. Also available is the status of the property regarding its liability to taxation, the owner's name and mailing address and the legal description. The database is accessible through Manitoba Online, an information system with access to several government information sources.

Responsible organization: Manitoba Rural Development.

Database contact: Manitoba Online, Customer Service Representative, Information Systems Management (ISM), 400 Ellice Ave., Winnipeg, MB R3B 3M3, (204) 946-4989, Fax (204) 947-3816.

Access mechanisms: Through ISM Information Systems Management Corporation.

Variables included:

- ownership information
- legal description of property
- sales information
- building characteristics
- land characteristics (soil information for arable land)

Data acquisition methods: Survey information and manual measurements.

Geographic coverage: Province of Manitoba excluding the City of Winnipeg.

Geographic units of measure: Acres, frontage.

Period of record: 1987 to present.

Update frequency: As required.

Database storage format: Not applicable.

Database computer environment: TELON, VMS.

Restrictions and conditions: Current tax roll information only.

Price information: $0.25 per transaction.

Corresponding printed sources: None.

Languages: English.

User aids available: User's manual available through Manitoba Online.

Keywords: geography; land use; prairies

Additional information: None.

Manitoba Environment

MB-REG-0076: Register (Hazardous Waste)

Summary description: An inventory of site information for companies registered as hazardous waste generators, carriers and/or receivers.

Responsible organization: Manitoba Environment.

Database contact: Randy Pelser, Regional Operations — Winnipeg, Environmental Operations, Manitoba Environment, Fort Osbourne Complex, 139 Tuxedo Ave., Winnipeg, MB R3N 0H6, (204) 945-7086, Fax (204) 945-5229.

Access mechanisms: Through the responsible organization by written request.

Variables included:

- company detail
- waste detail

Data acquisition methods: Monitoring. Registration forms.

Geographic coverage: Manitoba.

Geographic units of measure: Not applicable.

Period of record: 1986 to present.

Update frequency: As needed.

Database storage format: Hard disk.

Database computer environment: Macintosh, FOXBASE PLUS.

Restrictions and conditions: Some data may be confidential; the data centre will advise.

Price information: Dependent on the organization's policy.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: contaminants; prairies; waste

Additional information: None.

MB-INS-0064: Inspect (Dangerous Goods and Wastes)

Summary description: An inventory of information collected from dangerous goods/hazardous waste inspections.

Responsible organization: Manitoba Environment.

Database contact: Randy Pelser, Regional Operations — Winnipeg, Environmental Operations, Manitoba Environment, Fort Osbourne Complex, 139 Tuxedo Ave., Winnipeg, MB R3N 0H6, (204) 945-7086, Fax (204) 945-5229.

Access mechanisms: Through the responsible organization by written request.

Variables included:

- inspection results

Data acquisition methods: Monitoring. Inspection reports from environmental officers.

Geographic coverage: Manitoba.

Geographic units of measure: Not applicable.

Period of record: 1991 to present.

Update frequency: Continual.

Database storage format: Hard disk.

Database computer environment: Macintosh, FOXBASE PLUS.

Restrictions and conditions: Some data may be confidential; the data centre will advise.

Price information: Dependent on the organization's policy.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: environmental science; prairies; toxic chemicals

Additional information: None.

MB-MAN-0065: Manifest (Hazardous Waste)

Summary description: An inventory of information collected from hazardous waste shipping documents.

Responsible organization: Manitoba Environment.

Database contact: Randy Pelser, Regional Operations — Winnipeg, Environmental Operations, Manitoba Environment, Fort Osbourne Complex, 139 Tuxedo Ave., Winnipeg, MB R3N 0H6, (204) 945-7086, Fax (204) 945-5229.

Access mechanisms: Through the responsible organization by written request.

Variables included:

- waste detail
- amount (in, out)
- dates
- shipper

Data acquisition methods: Monitoring hazardous waste generators and receivers. Manifest forms.

Geographic coverage: Manitoba.

Geographic units of measure: Not applicable.

Period of record: 1988 to present.

Update frequency: Daily.

Database storage format: Hard disk.

Database computer environment: Macintosh, FOXBASE PLUS.

Restrictions and conditions: Some data may be confidential, the data centre will advise.

Price information: Dependent on the organization's policy.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: prairies; transportation; waste

Additional information: None.

MB-WAS-0079: Wastes (Hazardous Waste)

Summary description: An inventory of waste types and quantities for sites registered as hazardous waste generators.

Responsible organization: Manitoba Environment.

Database contact: Randy Pelser, Regional Operations — Winnipeg, Environmental Operations, Manitoba Environment, Fort Osbourne Complex, 139 Tuxedo Ave., Winnipeg, MB R3N 0H6, (204) 945-7086, Fax (204) 945-5229.

Access mechanisms: Through the responsible organization by written request.

Variables included:

- waste details
- volumes

Data acquisition methods: Monitoring of registration forms.

Geographic coverage: Manitoba.

Geographic units of measure: Not applicable.

Period of record: 1986 to present.

Update frequency: Daily.

Database storage format: Hard disk.

Database computer environment: Macintosh, FOXBASE PLUS.

Restrictions and conditions: Some data may be confidential, the data centre will advise.

Price information: Dependent on the organization's policy.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: contaminants; prairies; waste

Additional information: None.

MB-PET-0069: PETSTOR (Petroleum Storage) — History

Summary description: An inventory of information (installation and removal date, tank capacity) for sites with petroleum products storage tanks under MR 97/88R.

Responsible organization: Manitoba Environment.

Database contact: Maurice Mazerolle, Manager, Gasoline Program, Manitoba Environment, Building 2, 139 Tuxedo Ave., Winnipeg, MB R3N 0H6, (204) 945-7110, Fax (204) 945-5229.

Access mechanisms: Through the responsible organization.

Variables included:

- tanks (number, quantity, type — above/under/overhead)
- comments

Data acquisition methods: Surveys and monitoring. Registration Permit and Inspection as per MR 97/88R.

Geographic coverage: Manitoba.

Geographic units of measure: Regional.

Period of record: 1976 to present.

Update frequency: Daily.

Database storage format: Diskettes.

Database computer environment: Macintosh, FOXBASE PLUS.

Restrictions and conditions: Some data may be confidential, the data centre will advise.

Price information: Dependent on the organization's policy.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: energy; fuel; prairies

Additional information: None.

MB-PET-0071: PETSTOR (Petroleum Storage) — Inspect

Summary description: An inventory of inspection information for sites with petroleum products storage tanks.

Responsible organization: Manitoba Environment.

Database contact: Maurice Mazerolle, Manager, Gasoline Program, Manitoba Environment, Building 2, 139 Tuxedo Ave., Winnipeg, MB R3N 0H6, (204) 945-7110, Fax (204) 945-5229.

Access mechanisms: Through the responsible organization.

Variables included:

- site (name, location)
- date (inspection, warning/summons, investigation)
- comments

Data acquisition methods: Survey and monitoring. Registration permit and inspection as per MR 97/88R.

Geographic coverage: Manitoba.

Geographic units of measure: Regional.

Period of record: 1976 to present.

Update frequency: Daily.

Database storage format: Diskette.

Database computer environment: Macintosh, FOXBASE PLUS.

Restrictions and conditions: Some data may be confidential, the data centre will advise.

Price information: Dependent on the organization's policy.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: energy; fuel; prairies

Additional information: None.

MB-PET-0070: PETSTOR (Petroleum Storage) — Sites

Summary description: An inventory of information (installation date, tank capacity) for sites with petroleum products storage tanks registered in accordance with MR 97/88R.

Responsible organization: Manitoba Environment.

Database contact: Maurice Mazerolle, Manager, Gasoline Program, Manitoba Environment, Building 2, 139 Tuxedo Ave., Winnipeg, MB R3N 0H6, (204) 945-7110, Fax (204) 945-5229.

Access mechanisms: Through the responsible organization.

Variables included:

- owner/operator
- company (address, location)
- retail/bulk
- weekly/daily

Data acquisition methods: Survey and monitoring. Registration permit and inspection as per MR 97/88R.

Geographic coverage: Manitoba.

Geographic units of measure: Regional.

Period of record: 1976 to present.

Update frequency: Daily.

Database storage format: Diskette.

Database computer environment: Macintosh, FOXBASE PLUS.

Restrictions and conditions: Some data may be confidential, the data centre will advise.

Price information: Dependent on the organization's policy.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: energy; fuel; prairies

Additional information: None.

Manitoba Industry Trade and Tourism

MB-MLR-0034: Manitoba Land Related Information System

Summary description: Integrated database (GIS) of land-related information.

Responsible organization: Manitoba Industry Trade and Tourism.

Database contact: Bruce Graham, Linnet Graphics, Winnipeg, MB, (204) 957-7566.

Access mechanisms: Through the responsible organization.

Variables included:

- farming practices
- crop (varieties, yields)
- property assessment
- water (quality, well logs)
- soils

Data acquisition methods: Monitoring, surveys. Farming practices, crop variety and yield data — supplied by Manitoba Crop Insurance from reports filed by farmers (approximately 60 percent of the farmers in Manitoba). Property assessment data — supplied by property

assessors; used to determine possible locations of hazardous material or determine the sewage treatment from private homes. Water quality data — supplied by Ward Lab from samples tested by government monitoring stations and from private individuals. Water well log data — supplied by the Department of Natural Resources. Information obtained from water well drillers. Soils data — supplied by Soil Survey Branch.

Geographic coverage: Manitoba.

Geographic units of measure: Varies by data element.

Period of record: Varies depending on components.

Update frequency: Annual.

Database storage format: Hard disk.

Database computer environment: RS 6000, GEOVISION GIS.

Restrictions and conditions: Subject to negotiation.

Price information: Not established.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: Geographic Information System (GIS); geography; prairies

Additional information: None.

Saskatchewan

SaskPower

SK-PCB-0106: PCB — Storage Facility Database

Summary description: An inventory, by item, of PCB and PCB contaminated material produced by SaskPower. The database's purposes are inventory control and regulatory compliance.

Responsible organization: SaskPower.

Database contact: Barry Dehm, Environmental Surveillance, Environmental Program, SaskPower, 2025 Victoria Ave., Regina, SK S4P 0S1, (306) 566-2880, Fax (306) 566-3428.

Access mechanisms: Through the responsible organization.

Variables included:

- original owner/company (alphanumeric identification)
- container (type, contents, details)
- manufacturer information
- PCB concentration
- location of facility
- date received
- consigner/consignee data
- volume/weight

Data acquisition methods: Monitoring. Internal reports.

Geographic coverage: Saskatchewan.

Geographic units of measure: Address or legal land location.

Period of record: 1989 to present.

Update frequency: Daily.

Database storage format: Diskette.

Database computer environment: PC.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: contaminants; prairies; waste

Additional information: None.

Saskatchewan Environment and Resource Management

SK-TDG-0189: Transportation of Dangerous Goods

Summary description: An inventory that stores data on generators, carriers and receivers of dangerous goods as well as compiling manifest data.

Responsible organization: Saskatchewan Environment and Resource Management.

Database contact: Kyle Korneychuk, Supervisor, Industrial and Hazardous Waste Unit, Saskatchewan Environment and Resource Management, 3085 Albert St., Regina, SK S4S 0B1, (306) 787-6412, Fax (306) 787-0197.

Access mechanisms: Through the responsible organization.

Variables included:

- information regarding generator, carrier, receiver
- manifest information (waste types, waste carried/received)

Data acquisition methods: Monitoring. Written material (application forms), with registrations from across North America.

Geographic coverage: Saskatchewan.

Geographic units of measure: Not applicable.

Period of record: 1989 to 1992.

Update frequency: Daily.

Database storage format: Hard disk.

Database computer environment: PC, FOXPRO.

Restrictions and conditions: Data are not available to the public.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: TDG User's manual.

Keywords: prairies; toxic chemicals; transportation

Additional information: None.

SK-SFM-0036: Storage Facility Management Program

Summary description: An inventory of all hazardous substances and waste dangerous goods storage facilities within the province of Saskatchewan.

Responsible organization: Saskatchewan Environment and Resource Management.

Database contact: Darcy Hislop, Systems Services Branch, Saskatchewan Environment and Resource Management, 3211 Albert St., Regina, SK S4S 5W6, (306) 787-0599, Fax (306) 787-3919.

Access mechanisms: Through the responsible organization.

Variables included:

- substance stored (type, quantity)
- storage medium information

Data acquisition methods: Survey. Hazardous Substances and Waste Dangerous Goods Registration Form.

Geographic coverage: Saskatchewan.

Geographic units of measure: Not applicable.

Period of record: 1989 to present.

Update frequency: Daily.

Database storage format: Novell network, hard disk.

Database computer environment: PC, NOVELL.

Restrictions and conditions: Not accessible by the public.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: contaminants; prairies; toxic chemicals

Additional information: None.

SK-HAL-0191: HAL (Substance Spills)

Summary description: HAL is a database that contains a list of spills and the level of clean-up that has occurred when any substance that is considered a dangerous good (PCBs, oil and gas, uranium mining tailings) is involved.

Responsible organization: Saskatchewan Environment and Resource Management.

Database contact: Ash Oleson, Spill Response Officer, Air and Land Protection Branch, Saskatchewan Environment and Resource Management, 3085 Albert St., Regina, SK S4S 0B1, (306) 787-0738, Fax (306) 787-0197.

Access mechanisms: Through the responsible organization.

Variables included:

- spill information (date spill occurred, type of spill, cause of spill, volume, parties responsible, parties notified, fire/police response, remediation measures, disposal)

Data acquisition methods: Monitoring. Verbal reports and follow-up inspection.

Geographic coverage: Saskatchewan.

Geographic units of measure: Not applicable.

Period of record: 1981 to present.

Update frequency: As required.

Database storage format: Hard disk.

Database computer environment: Macintosh.

Restrictions and conditions: Unknown at this time.

Price information: Not established.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: environmental science; prairies; toxic chemicals

Additional information: None.

SK-SAN-0197: Sanitary Landfill Inventory

Summary description: A database containing information on all sanitary landfill sites operated by the Saskatchewan Environment and Resource Management in provincial parks and recreation sites. These sites are registered with the Environmental Protection Division.

Responsible organization: Saskatchewan Environment and Resource Management.

Database contact: Gary Wyatt, Supervisor, Engineering Design Section, Maintenance and Construction Branch, Saskatchewan Environment and Resource Management, 3211 Albert St., Regina, SK S4S 5W6, (306) 787-2842, Fax (306) 787-4218.

Access mechanisms: Through the responsible organization.

Variables included:

- site (name, location, description)
- approval status
- general comments

Data acquisition methods: Monitoring. Internal registration.

Geographic coverage: Provincial parks and recreation sites in Saskatchewan.

Geographic units of measure: Latitude and longitude.

Period of record: List began in approximately 1991.

Update frequency: As required.

Database storage format: Diskette.

Database computer environment: PC.

Restrictions and conditions: *Freedom of Information and Privacy Act* may apply.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: engineering; prairies; waste

Additional information:

1. The database is a short list of all disposal sites in provincial parks.

SK-STP-0198: Sewage Treatment Plant/Lagoon Inventory

Summary description: A database of all plants and lagoons operated by Saskatchewan Environment and Resource Management in provincial parks and recreational areas.

Responsible organization: Saskatchewan Environment and Resource Management

Database contact: Gary Wyatt, Supervisor, Engineering Design Section, Maintenance and Construction Branch, Saskatchewan Environment and Resource Management, 3211 Albert St., Regina, SK S4S 5W6, (306) 787-2842, Fax (306) 787-4218.

Access mechanisms: Through the responsible organization.

Variables included:

- site (name, location)
- systems description
- approval status
- general comments

Data acquisition methods: Monitoring. Internal reports.

Geographic coverage: Provincial parks and recreation areas of Saskatchewan.

Geographic units of measure: Latitude and longitude.

Period of record: 1991 to present.

Update frequency: As required.

Database storage format: Diskette.

Database computer environment: PC.

Restrictions and conditions: *Freedom of Information and Privacy Act* may apply.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: human health; parks; prairies; waste

Additional information: None.

Central Survey and Mapping Agency

SK-UCB-0416: Urban Cadastral Base Map Data Set

Summary description: Surveyed road, lot and block boundaries for 12 cities and 1,034 towns, villages and hamlets in Saskatchewan.

Responsible organization: Central Survey and Mapping Agency.

Database contact: GIS Centre, Central Survey and Mapping Agency, 2045 Broad St., Regina, SK S4P 3V7, (306) 787-4880, Fax (306) 787-4617.

Access mechanisms: User licence agreements.

Variables included:

- lines (BS [line between block and lane]), LL [lot line], RW [right of way line])
- text (BLOCKCOM (block letter or number), STREETCOM (street name), RMNO (rural municipality name and number))

Data acquisition methods: Computation of coordinates of survey monuments using coordinate geometry and township/survey plan dimensions. Township plans, geodetic control and registered plans of survey.

Geographic coverage: All 12 cities and 1,034 towns, villages and hamlets in Saskatchewan.

Geographic units of measure: Lot dimensions, lot areas, UTM coordinates.

Period of record: 1870 to present.

Update frequency: Cities every 30 working days, all else upon request.

Database storage format: Data cartridge, 9-track tape, streamer tape, diskette.

Database computer environment: DOS or UNIX systems, CAD or GIS software.

Restrictions and conditions: For internal use only. See data centre for further details.

Price information: Contact GIS Centre for details.

Corresponding printed sources: Legal survey plans of subdivisions.

Languages: English.

User aids available: Urban Cadastral User's Guide.

Keywords: geography; land use; prairies; Geographic Information System (GIS)

Additional information:

1. A brochure is available.

SK-RCB-0415: Rural Cadastral Base Map Data Set

Summary description: A township boundary system including legal surveys of roads, right-of-way parcels and subdivisions recorded and registered in the Land Titles Office.

Responsible organization: Central Survey and Mapping Agency.

Database contact: GIS Centre, Central Survey and Mapping Agency, 2045 Broad St., Regina, SK S4P 3V7, (306) 787-4880, Fax (306) 787-4617.

Access mechanisms: User licence agreements.

Variables included:

- line layer fields (LQS — section line, LRL — riverlot line, LTP — township boundary, LWBDY — waterbody boundary)
- text fields (TSECNO — section numbers, DQS — dimension for a section line)

Data acquisition methods: Computation of coordinates of survey monuments using coordinate geometry and township/survey plan dimensions. township plans, geodetic control and registered plans of survey.

Geographic coverage: Southerly surveyed portion of Saskatchewan (3,425 townships), including recreational subdivisions, unorganized hamlets and railway points.

Geographic units of measure: Legal subdivision (LSD = 40 acres), legal survey boundary dimension, UTM coordinates.

Period of record: 1870 to present.

Update frequency: Upon request.

Database storage format: Data cartridge, 9-track tape, streamer tape, diskette.

Database computer environment: DOS or UNIX systems, CAD or GIS software.

Restrictions and conditions: For internal use only. See data centre for further details.

Price information: Contact GIS Centre for details.

Corresponding printed sources: Township plans of survey.

Languages: English.

User aids available: Township Fabric User's Guide.

Keywords: geography; land use; prairies; Geographic Information System (GIS)

Additional information:

1. A brochure is available.

Saskatchewan Water Corporation

SK-GWP-0115: Ground Water Project Data

Summary description: An inventory of project and client data on all groundwater projects approved in the province. The database contains approximately 2,500 records.

Responsible organization: Saskatchewan Water Corporation.

Database contact: Tom S. Kaminski, Registrar, Water Management Division, Saskatchewan Water Corporation, 111 Fairford St., East, Moose Jaw, SK S6H 7X9, (306) 694-3965, Fax (306) 694-3944.

Access mechanisms: Through the responsible organization.

Variables included:

- proponent name
- region (map number, major basin number, sub-basin number)
- source of supply
- land location
- water quality (depth of aquifer, annual allocation, rate of diversion)
- volume measured (water level measured, observation wells)

Data acquisition methods: Registration. All projects need to acquire a Water Rights Licence from SaskWater.

Geographic coverage: Saskatchewan.

Geographic units of measure: Quarter section.

Period of record: 1960 to present.

Update frequency: Monthly.

Database storage format: Hard copy, diskette.

Database computer environment: PC.

Restrictions and conditions: None.

Price information: There is a charge.

Corresponding printed sources: None.

Languages: English.

User aids available: Some user information and a detailed list of fields are available.

Keywords: hydrology; prairies; water quantity; water quality

Additional information: None.

SK-GWW-0116: Ground Water Well and Test Hole Records

Summary description: A database comprising of complete well descriptions including the lithology of all wells and test holes completed in the province of Saskatchewan. The database contains over 100,000 records.

Responsible organization: Saskatchewan Water Corporation.

Database contact: Tom S. Kaminski, Registrar, Water Management Division, Saskatchewan Water Corporation, 111 Fairford St., East, Moose Jaw, SK S6H 7X9, (306) 694-3965, Fax (306) 694-3944.

Access mechanisms: Through the responsible organization.

Variables included:

- file number
- WELL A (owner name, driller name, date completed, water level, water struck, artesian head, location of well, water use, temperature, basin number)
- WELL B (depth, primary material, material colour, material description)
- WELL C (specific capacity, permeability, coefficient of transmissivity, coefficient of storage, producing aquifer, chemical analysis, total hardness, calcium hardness, Fe, Mn, Ca, Mg, Na, HCO3, CO3, Cl-, SO42-, NO3-, Fi, total dissolved solids,
- total alkalinity, conductivity, pH, comments)

Data acquisition methods: Registration. The *Groundwater Conservation Act* requires that all waterwell drillers be registered and submit reports.

Geographic coverage: Saskatchewan.

Geographic units of measure: Quarter section with distances in feet from boundary lines.

Period of record: 1960 to present.

Update frequency: Monthly.

Database storage format: Diskette, printout, microfiche.

Database computer environment: PC, FOXPRO. VAX.

Restrictions and conditions: None.

Price information: There is a charge.

Corresponding printed sources: None.

Languages: English.

User aids available: Some user information and a detailed list of fields are available.

Keywords: hydrology; prairies; water quality

Additional information:

1. Because of the large number of records and variables, the records were split into three separate databases. WELL A contains the general description of the well or test hole consisting of 68 variables. WELL B contains the Driller's Log, a description of the material encountered. WELL B contains 97 variables. WELL C contains the chemical analysis portion and any special comments made by the driller on the Drillers Report for a total of 28 variables.

Department of Energy and Mines

SK-PPD-0277: Petroleum Production and Disposition System

Summary description: The Production and Disposition System maintains statistical data concerning the production, injection, disposition and sales of crude oil, natural gas, water and petroleum related products from all producing oil, gas and water source wells in the province.

Responsible organization: Department of Energy and Mines.

Database contact: Darwin Roske, Petroleum Statistics Branch, Petroleum and Natural Gas Division, Department of Energy and Mines, 1914 Hamilton St., Regina, SK S4P 4V4, (306) 787-2552, Fax (306) 787-8236.

Access mechanisms: Through the responsible organization.

Variables included:

- producing/injecting wells (location, formation, type)
- produced/injected volumes of fluids/gas for wells by (month, year, cumulative to date)
- hours on production/injection for wells by (month, year, cumulative to date)
- well operator and battery/facility to which the well belongs
- production (receipts, deliveries, sales, inventories, fuel usage, shrinkage, losses of minerals at a battery/facility/system level by month)
- monthly sales valuation information at a battery/unit level (producing/selling company, purchasing company, pricing information, deductions and allowances, point of sale)

Data acquisition methods: Submission of data by oil and gas companies. Information submitted monthly on standardized reporting forms or via electronic means as per standardized formats.

Geographic coverage: Oil- and gas-producing regions of Saskatchewan south of the Precambrian Shield.

Geographic units of measure: Well identifier, meridian, township and range.

Period of record: 1935 to present.

Update frequency: Monthly, some daily.

Database storage format: Hard copy, microfiche, 9-track tape, cartridge, diskette.

Database computer environment: IBM mainframe, COBOL. PC, EASYTRIEVE, DATAEASE, MARK IV.

Restrictions and conditions: Some data are confidential.

Price information: There are various format and price ranges.

Corresponding printed sources: Various reports include: Annual Mineral Statistics Yearbook; Monthly Oil and Gas Production Report; Reservoir Annual; Horizontal Well Production Report; Publication's Maps and Services Catalogue.

Languages: English.

User aids available: User and Program Documentation for PDS. On-line menu panels.

Keywords: natural gas; oil; prairies

Additional information:

1. Some oil and gas sales data are available only in aggregated formats.

SK-SMD-0279: Saskatchewan Mineral Deposits Index

Summary description: A compilation of information available on known mineral deposits and showings in Northern Saskatchewan. The inventory can be used to research showings, the distribution of specific commodities, and possible commodities and potential in specific areas of interest.

Responsible organization: Department of Energy and Mines.

Database contact: Rick Bennett, Mineral Development Geologist, Department of Energy and Mines, 12th Floor, 1914 Hamilton St., Regina, SK S4P 4V4, (306) 787-2569, Fax (306) 787-2488.

Access mechanisms: Through the responsible organization.

Variables included:

- showing name
- commodity
- disposition
- latitude and longitude
- UTM
- NTS block
- geology
- literature references

Data acquisition methods: Compilation and research. Assessment reports; geological, geophysical, and geochemical reports; magazines, newspapers, scientific journals and volumes.

Geographic coverage: Saskatchewan.

Geographic units of measure: Latitude and longitude, UTM coordinates.

Period of record: 1912 to present.

Update frequency: Daily.

Database storage format: Hard copy, diskette.

Database computer environment: PC, Q&A.

Restrictions and conditions: None.

Price information: Recovery and reproduction cost.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: geology; minerals; prairies

Additional information:

1. Data consist of descriptions of individual showings.
2. Although the Department of Energy and Mines has exercised all reasonable care in the compilation, interpretation and reproduction of this database, it is not possible to ensure total accuracy, and all persons who rely on the information contained here do so at their own risk. The Department of Energy and Mines and the Government of Saskatchewan do not

accept liability for any error, omissions or inaccuracies that may be included in or derived from this database.

Northwest Territories

Department of Renewable Resources

NT-HMS-0184: Hazardous Materials Spill Database

Summary description: A database of hazardous material spills reported to the Northwest Territories 24-hour Spill Report Line Service.

Responsible organization: Department of Renewable Resources.

Database contact: Manager, Land Protection Division, Department of Renewable Resources, Scotia Centre, Box 21, 600, 5102-50th Avenue, Yellowknife, NT X1A 3S8, (403) 873-7654, Fax (403) 873-0221.

Access mechanisms: Through the responsible organization.

Variables included:

- spill (number, date, location)
- commodity spilled (volume/quantity)
- party responsible (source, cause, reason)

Data acquisition methods: Voluntary/ mandatory reporting of spills received over the NWT 24-hour Spill Report Line.

Geographic coverage: Northwest Territories.

Geographic units of measure: Location.

Period of record: 1981 to present.

Update frequency: Monthly.

Database storage format: Diskettes.

Database computer environment: PC, RBASE.

Restrictions and conditions: None.

Price information: No charge.

Corresponding printed sources: None.

Languages: English.

User aids available: None.

Keywords: contaminants; north; spills

Additional information:

1. Intention is to input further historical data as far back as 1972.

Yukon Territories

No references were found.

Improving Site-Specific Data on the Environmental Condition of Land

National Round Table on the Environment and the Economy

Table ronde nationale sur l'environnement et l'économie

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