



AUDITOR GENERAL

1993/94: REPORT 1

Value-for-Money Audit

MINISTRY OF ENVIRONMENT,
LANDS AND PARKS

Habitat Protection Function

Regulatory Process for Special Waste



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The Honourable Joan Sawicki
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Madam:

I have the honour to transmit herewith my Value-for-Money Report on the Habitat Protection Function and the Regulatory Process for Special Waste. Both of these audits were carried out within the former Ministry of Environment, Lands and Parks.

George L. Morfitt, FCA
Auditor General

Victoria, British Columbia
November 1993

copy: Mr. E. George MacMinn, Q.C.
Clerk of the Legislative Assembly

Ministry of Environment, Lands and Parks

Contents

| | |
|---|----|
| Overview | 1 |
| Introduction | 5 |
| Habitat Protection Function Audit | |
| Highlights | 11 |
| Detailed Report | 17 |
| Ministry Response | 41 |
| Regulatory Process for Special Waste Audit | |
| Highlights | 47 |
| Detailed Report | 52 |
| Ministry Response | 74 |
| Ministry Program Descriptions..... | 76 |
| Appendices | 85 |



Overview



This report, my first to the Legislative Assembly for the 1993/94 year, contains the results of two value-for-money audits that focus on environmental matters. During the coming months, I will be providing further reports detailing the results of other work carried out by my Office. In the spring of 1994, I will present my Annual Report to the Legislative Assembly which will conclude the 1993/94 reporting year.

Value-for-money audits look at how organizations give attention to value for money — economy, efficiency and effectiveness — in the conduct of their operations. The concept of value-for-money auditing is based on two principles. The first is that public business should be conducted in a way that makes the best possible use of public funds. The second is that people who conduct public business should be held accountable for the prudent and

effective management of the resources entrusted to them.

We select significant programs or functions of government for audit on a cyclical basis. By approaching our program of value-for-money auditing in this way, we intend to provide members of the Legislative Assembly and the public with assessments of all significant government operations over a reasonable period of time.

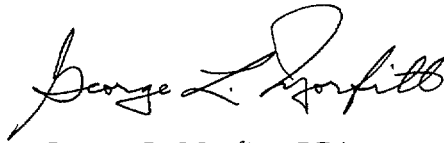
Recognizing the increased public interest in matters relating to the environment, the accounting and auditing profession in Canada is currently studying environmental management, accounting and reporting issues and considering how the profession should react to the interests and concerns of citizens. My Office is participating in these discussions. Meanwhile, we have incorporated environmental issues into our existing types of audits and have taken steps to ensure that these issues are considered when planning each of our audits.

Several of the value-for-money audits conducted by my Office over the past few years have dealt with matters having environmental implications. For example, my 1991 Annual Report included the results of three value-for-money audits in the

Ministry of Forests having a common theme: how the Ministry monitors the activities of forest companies in Crown forests. In those audits we examined how the ministry ensures forest companies meet their obligation to manage, protect and conserve the forest when they build roads, harvest timber, and reforest areas they have harvested.

Environmental matters that are the responsibility of the Ministry of Environment, Lands and Parks were last reported on by my Office in 1981, when we conducted an in-depth review of the Waste Management Program. This year's audits look at one area that is related to that covered in 1981 — the regulatory process for special waste — as well as another, quite different area — the habitat protection function within the ministry. Our audit of special waste examines how the ministry regulates the management of special waste in the province. In the habitat protection audit, we look at how the ministry interacts with other agencies to protect fish and wildlife habitats.

I greatly appreciate the help the ministry's executive and staff extended to our audit team. Although our work placed some additional demands on their time and energy, they showed a keen interest in our audit and gave us their full cooperation.



George L. Morfitt, FCA
Auditor General

Victoria, British Columbia
October 14, 1993



Ministry of Environment, Lands and Parks

Introduction

This report contains the results of two value-for-money audits conducted in the Ministry of Environment, Lands and Parks in 1992. We focused on the part of the ministry known as BC Environment, formerly the Ministry of Environment.

This part of the ministry is responsible for maintaining environmental quality through management and protection of the province's land, water, air and living resources. It does this primarily in two ways: resource stewardship and regulatory action.

In its stewardship role, the ministry participates in integrated resource management processes with other agencies that make resource-use decisions. In the first audit reported here, we looked at how the ministry interacts with other agencies to protect fish and wildlife habitats.

In its regulatory role, the ministry develops standards to protect the public and the environment from hazardous substances. It also monitors compliance with the standards by those who generate, transport, store, treat and dispose of special waste. In the second audit, we examined how the ministry regulates the management of special waste in the province.

Ministry responses to all our value-for-money audits are published along with our reports. Over time, as the ministries implement the recommendations that arise from our audits, we publish their accounts of progress in our annual reports. We believe this keeps the legislators and the public informed of the nature, extent and results of ministry remedial actions. We follow up on our audit recommendations when we carry out our next audit of each ministry.



Ministry of Environment, Lands and Parks

Habitat Protection Function

Contents

Highlights

Audit Purpose and Scope11

Overall Conclusion12

Key Findings12

Detailed Report

The Ministry's Role in Protecting Habitat17

Establishing Objectives and Priorities for Habitat Protection.....22

Providing Habitat Protection Advice to Other Agencies26

Determining Results of Habitat Protection Efforts.....37

Ministry Response.....41

Ministry of Environment, Lands and Parks***Habitat Protection Function******An audit of ministry processes to protect fish and wildlife habitat***

Habitat protection is the key to protection of fish and wildlife. Only by ensuring that adequate habitats are retained can loss of species and loss of biological diversity be prevented. Habitat is threatened from many sources; developments due to urban growth, forestry, gas and oil exploration, and mining can all have detrimental effects on it. The Ministry of Environment, Lands and Parks directly manages designated protected areas and, for the remainder of the province, provides information and recommendations to other government and public agencies so that the negative impacts of developments on habitat can be avoided or reduced.

Audit Purpose and Scope

We conducted this audit to assess the adequacy of the ministry's processes for protecting fish and wildlife habitat, and to determine the extent to which ministry management and the Legislative Assembly are provided with performance information.

We examined issues important to the conduct of habitat protection. Specifically, we looked at the ministry's role and the processes it has for establishing objectives and priorities, providing advice to other agencies, and determining the results of its efforts. We did not consider how laws and regulations for hunting and fishing are developed, applied or enforced.

Our audit focused primarily on the habitat protection activities of the ministry's Integrated Management Branch in Victoria and habitat protection staff in the regions. We also looked at the related activities performed by other head office and field staff such as the setting of wildlife and fisheries management goals and the maintenance of inventories by the Fisheries and Wildlife branches.

We focused our audit on practices in use during the period from October 1992 to January 1993 and also considered initiatives being planned at that time. Our examination was performed in accordance with value-for-money auditing standards recommended by the Canadian Institute of Chartered Accountants, and accordingly included such tests and other procedures as we considered necessary in the circumstances.



Overall Conclusion

The ministry's role in protecting fish and wildlife habitats is primarily one of providing information about habitat protection concerns to agencies making decisions about land and water use. In deciding how best to do this, ministry management has established as a priority the communication of habitat protection advice to developers and regulating agencies before development takes place. As a result, the ministry has formulated many technical guidelines, is active in interagency planning processes, and makes numerous site-specific recommendations every year.

However, specific objectives for protecting habitat on a province-wide basis have not been established or communicated. Two reasons for this are: existing habitat inventory information is incomplete; and, the ministry is unwilling to state provincial objectives in a situation where it has no legal control. Without such objectives, the long-term vision for the status of different habitat types is not clear.

Given the ministry's decision to focus on reviewing development plans and providing guidelines and recommendations, it does not often gather information about whether habitat protection advice is followed or has the desired impact on habitat. Therefore, the ministry is not readily able to report to the Legislative Assembly and the public on how well its efforts are protecting habitat.

The ministry has recently received some additional resources with which to begin to give more attention to developing and sharing information with other agencies. It has several goals: to increase involvement in long-term development plans; to improve the collection and management of inventory data; and to assess compliance of other agencies with ministry advice. In addition, the ministry has requested legislation aimed at expanding its legislated habitat protection provisions and to require formal reports of development impacts on habitat. Significant progress has been made in the last few years, however, a continuing commitment to these initiatives is required if they are to be effective.

Key Findings

Habitat Protection Is Shared Responsibility

Competing pressures on resources are leading to the need for better ways of resolving conflicts between the environment and the economy. Awareness is increasing about the need for making land-use decisions that consider entire ecosystems and non-extractive uses of land. The British Columbia government is responding to this need with several initiatives that are intended to improve the way land-use decisions are made.

In British Columbia, no single agency is responsible for habitat protection. It is a shared responsibility, mainly between the Ministry of Forests and the Ministry of Environment, Lands and Parks. The Ministry of Forests manages 85% of the provincial land base. The Ministry of Environment, Lands and Parks manages 6% as Crown lands and parks, and less than 1/10 of 1% as Wildlife Management Areas. Most of the balance is regulated by regional and municipal governments. Although the Ministry of Environment, Lands and Parks does not have authority or accountability for protecting habitat in most of the province, it does have an important role to play in providing information to decision-makers about habitat status and requirements.

Habitat protection does not mean preservation of all natural systems. The ministry recognizes and accepts that development will occur on the land base. Where it does occur, however, it must be carried out in a way that minimizes the impact on habitat. The provincial habitat landscape is a mix of protected areas and large expanses of territory where habitat objectives must compete with other interests and objectives. Within non-protected areas, habitat protection staff carry out their role primarily by getting involved in interagency integrated management planning processes and by making recommendations regarding development proposals from other agencies. The degree to which habitat is actually protected depends on the degree to which the ministry is able to negotiate with regulating agencies, such as the Ministry of Forests, to adopt and enforce ministry recommendations.

Pre-Development Advice Is Given Priority

The ministry has conducted reviews of workload activities that have led to changes in the way advice is given to other agencies. Most of habitat protection staff efforts are focused on improving the provision of habitat protection advice to developers and regulating agencies before development takes place. We believe the ministry's justification for this—to prevent or mitigate habitat losses before they occur—is reasonable.

However, as a result of the focus on pre-development plans, fewer resources are available to review on-going development plans. The ministry has yet to evaluate whether those regions focusing primarily on the review of long-term plans are achieving the best use of available resources.

Interagency Coordination Is Good

In recent years, the ministry has given habitat protection a higher profile by establishing an Integrated Management Branch in Victoria to develop provincial habitat protection policies and processes, as well as to improve coordination of ministry actions with those of other resource agencies.

Improvements have been made in the way the ministry provides advice to other agencies. Habitat protection staff have spent considerable time jointly developing new ways of coordinating land-use decisions (notably through the current Provincial Land Use Strategy initiatives) and reviewing proposed policies, legislation, and strategic plans of other agencies. They are also helping to coordinate many interagency committees and workshops that have been established to integrate management of the province's resources.

Ministry staff have worked with other agencies to create habitat protection technical guidelines for various types of resource development across much of the province. Many sets of guidelines have been jointly prepared. Some of these guidelines focus on particular species or areas that are considered to be important; others are more general in their coverage. These guidelines are useful because they prescribe procedures that can be used by other agencies to mitigate habitat losses when they conduct their development activities.

In addition, thousands of specific recommendations are provided annually by the ministry through informal agreements with other regulating agencies to assist them in making decisions about whether to approve proposed developments.

Provincial Objectives Have Not Been Established

Even though the ministry gives priority to influencing the development plans of others, it has not provided enough information provincially so that objectives can be set for when and where development should take place. Instead it has focused on providing information on a case-by-case basis, with the broad objective of preserving as much habitat as possible.

We think that setting specific provincial habitat objectives would provide a better framework for prioritizing habitat needs, thereby supporting recommendations made by habitat protection staff to other agencies. The ministry, however, has been slow to establish these objectives for a number of reasons. It is difficult to set objectives without better information about species habitat requirements. In addition, it is difficult to define habitat needs without better information about existing habitats. The ministry is also reluctant to specify minimum requirements in a situation where it does not have legal authority to ensure that these requirements are met.

While we acknowledge that there are complexities, we believe that the ministry's present broad objective of preserving as much habitat as possible is not sufficient to adequately guide land- and water-use decisions being made at a provincial level.

Existing Habitat Protection Information Is Incomplete

In developing recommendations about habitat protection, ministry staff use inventory information about fish and wildlife populations and available habitat. There are several problems with this information, however.

Overall, more information exists about fish and wildlife numbers than about the availability of suitable habitat. In some regions of the province, inventory information is more current and detailed than in others. In the Kootenays and on Vancouver Island, for example, logging and mining developments have raised so much public concern about habitat that the ministries involved have required companies to produce up-to-date inventory data for the areas being developed and have focused more resources on assessing this information.

In most of the province, current, detailed habitat inventory information is not available. Much of what exists was collected in the 1970s and has not been updated, and methods for accessing it are inefficient. When reviewing proposed plans of other agencies, the ministry needs to be able to efficiently verify the habitat information included. It also needs efficient ways to access and update its existing inventory data to reflect development activities that have taken place.

Assessments of Compliance Are Infrequent

Because of its focus on involvement in other agency plans, the ministry does not systematically assess whether the advice it provides is followed consistently and, when it is, whether habitat is adequately protected. Studies that have been done in the past two or three years show that guidelines and recommendations are followed only sometimes.

We believe that assessing compliance is a crucial part of the ministry's role in protecting habitat, and feel that the ministry should do more in this area. It should also disclose its findings to encourage other agencies to comply. The ministry has recently developed a system for conducting assessments by independently gathering compliance information. The system has been piloted in a few regions. We think it should be applied province-wide on a routine basis and adapted to record compliance information available from other agencies such as the Ministry of Forests.

The Ministry Is Not Able to Show How Well It Is Doing

Because of deficiencies in available information about compliance of other agencies with habitat protection guidelines and recommendations and about the impacts of development, ministry

managers are not provided with adequate performance information. As a result, the ministry is not able to report meaningfully to the Legislative Assembly regarding its habitat protection efforts.

However, the ministry recognizes that better accountability information is necessary and is planning improvements. As part of proposals for new legislation for the protection of wildlife and endangered species, and for reporting under the federal-provincial *State of the Environment Report*, the ministry is developing indicators for reporting on the status of certain habitat types.

Additional Resources Have Been Supplied

The ministry recently received additional funding to begin to improve its ability to respond to requests for habitat information. This money is being used where the ministry has assessed the need to be greatest: 22 new staff are being hired to help agencies formulate long-term plans for forestry developments, improving the accuracy of habitat inventories, developing shared computerized geographical information systems (GIS) for accessing and updating inventories, and implementing systems for assessing compliance with habitat guidelines and recommendations. Continued efforts in these areas will be necessary to ensure that current initiatives are effective.





The Ministry's Role in Protecting Habitat

Changing Times

There is global concern that the world is at risk of losing many species of plants and animals over the coming years. A major cause of species loss is habitat loss. The United Nations Conference on Environment and Development, held in Brazil in June 1992, brought many countries together to consider ways of preventing continued losses. A Convention on Biodiversity was drafted at the conference, intended to secure a commitment from signing nations to prevent extinction of species and their habitats. Canada is a signatory to that convention and the British Columbia government has endorsed it. The Ministry of Environment, Lands and Parks is one of the provincial agencies responsible for pursuing this goal.

Competing pressures on resources are leading to the development of new methods for resolving conflicts between the environment and the economy. Awareness is increasing about the need for making land-use decisions that consider entire ecosystems and the non-extractive uses of land and resources. The British Columbia government is responding to this need with several initiatives, all of which the Ministry of Environment, Lands and Parks is participating in:

- The Ministry of Forests has been asked to coordinate the development of a new Forest Practices Code that better defines logging practices to minimize environmental damage.

- The British Columbia Round Table on the Environment and the Economy has reviewed ways of improving decisions about land-use and economic developments that impact the environment, and is now investigating ways of improving the sustainability of resources.
- The Protected Area Strategy committee is examining proposed study areas across the province to decide which should be added to the existing system of protected areas, targeted to make up 12% of the provincial land base.
- The Commission on Resources and Environment (CORE) is developing a province-wide land-use strategy to reduce conflict in land allocation and land-use planning.

The Importance of Protecting Habitat for Fish and Wildlife

The wildlife in British Columbia are regarded by many as unique global resources. Ministry documents note that the province is home to at least 280 species and subspecies of mammals, 460 species of birds, and 70 species of fish. The number and diversity of big game species are matched by those in only a few regions in the world. British Columbia has a large portion of the world's population for species such as grizzly bears and thin-horn sheep. As well, the province has many unique fish resources. The Fraser River, for example, is the world's greatest salmon producer.



Fish and wildlife have significant economic importance to the province. The ministry has estimated that freshwater anglers expend more than \$0.5 billion every year and provide about 5,300 person-years of employment, while wildlife-related activities represent a gross economic value of \$1.2 billion annually and provide approximately 12,200 person-years of employment.

The recreational use of habitat areas also has major economic and social benefits. Hikers, campers, and hunting and fishing enthusiasts rely on good habitat management to ensure that their experiences are worthwhile. Indirect uses, such as viewing species in their natural habitat, are growing in importance and depend on the availability of quality habitat.

Just as significant is the increasing influence of fish and wildlife habitat on human habitat. The focus on maintaining habitat features such as suitable quality and quantity of trees, soil, air, and water is part of protecting ecosystems and maintaining the biodiversity needed for the survival of all life on the planet. As the knowledge of biologists increases, some habitats, historically viewed as non-productive, are now recognized as being integral to environmental health and quality. Wetlands, for example, provide valuable hydrological and water purification functions and thus have a role in maintaining water quality.

The importance of this theme was recently reinforced by the Canadian Council of Forest Ministers. In March 1992, the

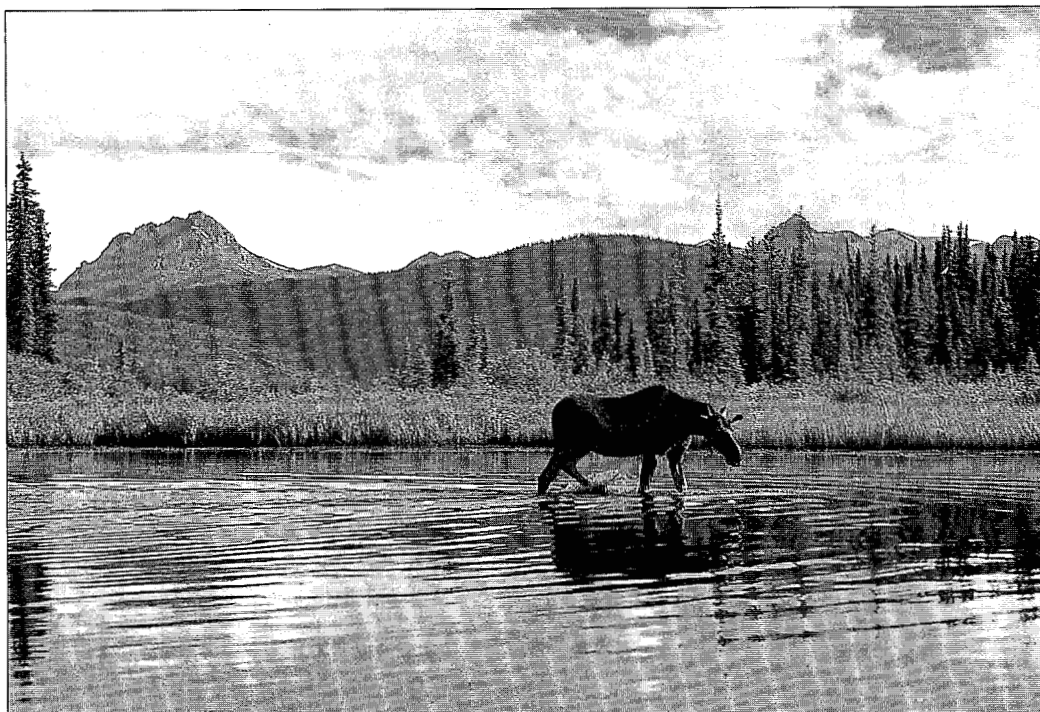
Council announced a new vision for Canada's forests which stated that "our goal is to maintain and enhance the long-term health of our forest ecosystems, for the benefit of all living things both nationally and globally."

Significant in this statement is the recognition that an ecosystem approach to managing the land base is needed, and that impacts on those ecosystems can influence all life forms.

Legislation

Protection of habitat is a shared responsibility, mainly between the Ministry of Forests and the Ministry of Environment, Lands and Parks. The Ministry of Forests is responsible for managing 85% of the land base and is charged with considering integrated resource uses. The Ministry of Environment, Lands and Parks manages 6% as provincial parks and less than 1/10 of 1 % as Wildlife Management Areas. Most of the remainder is regulated by regional and municipal governments.

Overall, existing legislation does not provide the ministry with broad habitat protection authority. The *Ministry of Environment Act* gives the ministry a mandate for managing fish and wildlife in the province. According to the Act, one purpose of the ministry is "to manage, protect and conserve all water, land, air, plant life and animal life, having regard to the economic and social benefits they may confer on the Province." Wording in legislation for the Ministry of Forests, however, gives that ministry the mandate for making land-use decisions that



Courtesy of Ministry of Environment, Lands and Parks

affect habitat in most of the province, albeit with consideration for integrated management concerns expressed by other agencies such as the Ministry of Environment, Lands and Parks.

The *Park Act* gives the ministry authority to manage wildlife and its habitats in parks and recreation areas. The *Wildlife Act* gives it authority to manage wildlife in other parts of the province, but the mandate is limited to only some habitats. While the *Wildlife Act* provides for the protection of "critical habitat," this definition applies just to endangered species, of which there are few in British Columbia. The legislation also gives the ministry authority over parks and Wildlife Management Areas, but these cover only a small portion of the land base. Overall, the legislation has the effect of separating the responsibility for wildlife from responsibility for its habitat except

in designated areas. The ministry has determined that legislative changes are needed and has drafted a proposal for new legislation, aimed at expanding its legislated habitat protection provisions.

The ministry relies on the federal *Fisheries Act* for protection of anadromous (sea-going) fish and their habitat. That legislation focuses on in-stream habitat only, however, and does not provide protection to the streamside components that are important to maintaining fish habitat.

Under existing legislation, the role of the Ministry of Environment, Lands and Parks is to provide suggestions and recommendations to those agencies making land-use decisions that could have a negative impact on fish and wildlife habitats. The agencies are then expected to consider this input in approving plans or carrying out operations.



Only over a limited number of areas assigned to it by government does the ministry have specific authority to control development that could negatively affect fish and wildlife species.

Organization within the Ministry

BC Environment, the environment component of the Ministry of Environment, Lands and Parks, is a decentralized organization with 1,151 full-time staff equivalents (FTEs) for the fiscal year 1992. This was increased to 1,261 FTEs for the fiscal year 1993. Geographically, staff are dispersed across the province. BC Environment operates through six regional offices, three sub-regional offices, and approximately 50 district offices used primarily by conservation officers who enforce fishing and hunting regulations and other environmental legislation. The branches in Victoria have about 36 % of the total staff. These branches are responsible for setting policies, identifying ministry priorities, allocating each program's overall funding and staffing levels, and evaluating performance. The regional, sub-regional, and district offices have about 64 % of the staff. Their main function is to carry out ministry policies and deliver the programs.

The ministry carries out habitat protection operations through several branches. The Integrated Management Branch has 19 FTEs responsible for coordinating the development of integrated management planning processes and technical guidelines with other agencies, and for developing operational guidelines

for field staff to use. One section of the branch is staffed mainly by employees who used to be in the headquarters habitat protection sections of Fisheries and Wildlife branches; the other section consists of staff newly hired or relocated from other sections of the ministry for their expertise in integrated resource planning. Habitat inventories, along with fish and wildlife population inventories, are managed by the Fisheries Branch and the Wildlife Branch.

In the field, each regional and sub-regional office of BC Environment has habitat protection staff. They totaled 46 in 1992, varying from nine in the Lower Mainland office to three in some of the sub-regional offices. These staff report to the Regional Manager, Fish and Wildlife, who reports to a Regional Director of BC Environment. In the 1992 fiscal year, habitat protection operations incurred expenses of \$2,493,000 in the regions, about 5% of the ministry's total regional spending.

There is increasing pressure on habitat protection staff to participate in multi-agency, multi-stakeholder planning exercises such as those taking place under the Commission on Resources and Environment (CORE) and in the new Land and Resource Management Planning (LRMP) process carried out by the Ministry of Forests. This involvement is significant because of the extensive time commitments required and the associated demands for information that such groups come to expect from ministry participants.



Habitat protection work is both proactive and reactive. Through its involvement in the LRMP process, the ministry is proactive, identifying habitat concerns it may have and seeking to have these incorporated into long-term forestry plans. As well, staff react to operations as they are being carried out, and review draft annual plans referred to them by agencies such as the Ministry of Transportation and Highways and the Ministry of Forests. Staff respond to these proposals through a referral system. Referrals vary from those that may be answered over the phone, to those that call for a detailed response. A five-year Forest Development Plan, for example, requires site visits by

staff to make assessments, and follow-up contact with Ministry of Forests staff. This work can take weeks.

The majority of referrals received by most habitat protection staff involve forestry activities. These operations can affect fish by raising sediment levels, modifying stream flows, and raising water temperatures. Wildlife may be affected by loss of winter range, loss of movement corridors, fragmentation of habitats, and an overall reduction in habitat quality. Gas and oil exploration, recreation activities and urban growth can similarly affect habitat areas.





Establishing Objectives and Priorities for Habitat Protection

To promote efficiency in its role of providing information to other agencies about habitat protection concerns, the ministry should have adequate processes for deciding how best to do so. We looked for a process that establishes specific objectives for what habitat types and areas to protect and clear priorities for carrying out habitat protection activities aimed at meeting those objectives.

Conclusion

The ministry has not developed sufficient information about when and where habitat should be protected in the province in general. This information is needed if specific provincial objectives are to be developed. It has, however, established clear priorities for carrying out habitat protection activities that allow it to respond to habitat protection issues in specific areas as they arise.

Findings

Setting Habitat Protection Objectives

To guide staff in carrying out habitat protection activities, the ministry has developed broad goals for habitat protection, namely to maintain biodiversity and to minimize habitat losses. In 1992 it issued three broad statements about the direction it is taking for environmental issues: an "Environmental Action Plan for B.C.", "Environment 2001: Strategic Directions for B.C." and

"Towards a Strategy for Sustainability". In addition, the ministry has recently completed a draft ministry strategic plan. One of the broad ministry goals identified in this plan is "Natural Diversity: The protection, conservation and restoration of the full range of biological and physical diversity native to British Columbia."

As well, the Fisheries and Wildlife programs have recently developed strategic plans. Since management of habitat is part of the management of species, habitat protection staff participate in planning that takes place for Fisheries and Wildlife programs at the program and regional levels. Goals for habitat protection are stated in these documents in broad terms and include maintaining biodiversity, reducing habitat losses, and enhancing habitat where possible. "Maintaining biodiversity" means that a wide variety of species, genes, and habitat types must be preserved so that reduction to a limited, and therefore vulnerable, gene pool is avoided. "Minimizing habitat losses" means mitigating (as much as possible, given conflicting economic and social pressures on resources) the reduction of habitat areas due to other land and water uses.

To further assist in planning processes, staff in each region have identified important habitat types that need to be protected. In some areas they have developed specific



Courtesy of Ministry of Environment, Lands and Parks

plans to protect these habitats, such as: Wildlife Management Areas containing critical habitat for threatened or endangered species; and lands given to the ministry by other agencies either in compensation for habitat taken over by them or out of an expressed concern for the environment. The total amount of habitat included in these areas is less than 1/10 of 1 % of the province, but it is the only land outside of designated parks over which the ministry has ultimate authority for habitat protection.

For the rest of the province, habitat protection staff apply the broad objective of trying to preserve as much important habitat as they possibly can when negotiating with other agencies. The amount of habitat that gets preserved depends on the ability of habitat protection staff to convince the other agencies to modify their resource development plans. At

the moment, there are no stated provincial objectives for preserving different habitat types to guide these decisions.

Ministry management point to a lack of adequate information about existing habitat quality, quantity, and requirements for particular species as a reason for why it is difficult to develop comprehensive provincial plans to guide habitat protection. Therefore, the ministry has not yet developed or enunciated to other agencies specific objectives for accomplishing its goals. For example, the ministry has not formally stated how much of remaining important habitat areas for vulnerable species it thinks should be protected.

Some regions, in recognition of the need for better objectives, have stated in their planning documents that targets should be established by habitat type and



that a “no net loss” policy should be applied. The ministry has not formally endorsed this principle, out of a concern that achieving such targets might not be possible in a setting where the ministry does not have ultimate authority to control losses.

We noted, however, that specific objectives for maintaining habitat have been developed elsewhere. The federal Department of Fisheries and Oceans has a no net loss policy for fish habitat over which it has jurisdiction. Its stated objective under this policy is to maintain the function and value of fish habitat. In addition, multi-jurisdiction planning for the Great Lakes Basin includes the development of specific objectives for wetland habitat which recognize that quality must be measured as well as quantity. In the State of Washington, environmental managers have also recommended no net loss objectives for fish and wildlife habitats.

We believe that measurable objectives are required at the provincial level to provide a long-term vision for the status of habitat. Such objectives could, even if they are based on estimates, assist the ministry in directing regional decisions. With these available, the ministry will also be better able to measure the success it has in protecting habitat, and to point out problems if the objectives are not being met.

Recommendation 1: The ministry should develop long-term provincial objectives for the protection of habitat, based on available information. These

should receive government sanction and be publicly communicated.

Establishing Clear Priorities

In its role of providing information about habitat protection concerns to other agencies, the ministry has decided to focus on giving information and advice to developers and regulating agencies before developments take place. Staff are clear that the aim is to prevent problems before they occur. They have been asked recently to be further proactive by giving more attention to long-term plans than before. Consequently, staff in some regions spend almost all of their time reviewing long-term development proposals. This leaves little time for reviewing current proposals.

To make efficient use of its resources, the ministry has had to make choices about how to allocate staff efforts in formulating and giving out information about habitat protection concerns. Ministry staff are actively involved in the many interagency meetings being held as a result of government initiatives, such as CORE, to communicate habitat concerns.

To further improve communications, the ministry has put considerable effort into developing technical guidelines that prescribe procedures to be used for various development activities to minimize the negative impacts on habitat. On a day-to-day basis, the ministry also continues to receive requests from other agencies for habitat protection advice for particular developments being proposed.



To determine ways of using staff more efficiently, the ministry's Habitat Protection Standing Committee conducted a two-year review that ended in 1991. Final results showed that slightly more than half of staff workload was from forestry activities. The remainder was from referrals on highways, oil, gas and electricity developments, agriculture activities, and various urban developments. The review also showed that the time spent on highway development referrals could be reduced by delegating less complex referrals back to the Ministry of Transportation and Highways with a list of habitat protection guidelines to apply. This has been done.

As population growth continues in certain parts of British Columbia, the threats to habitat from urban land developments intensify. The ministry is making an effort to increase the number of urban referrals it processes and, to do this, has recently assigned more staff to this function.

In trying to be more efficient in processing forestry referrals, the ministry is encouraging its field staff to be more proactive by reviewing long-term forestry plans for habitat protection concerns, rather than just to review annual cut block plans. Management staff in all regions agree that a more proactive approach is needed to protect habitat, partly because cut

block plans are driven mainly by what goes into long-term management plans. In fact, in one region staff place far more emphasis on involvement in forestry long-term development plans than they do on responding to annual cut block referrals. In other regions, management staff believe that a more balanced approach between short-term and long-term plans is needed. This is because present cut block plans are coming from long-term plans that may have been approved before the shift to reviewing long-term plans was made and may not adequately consider habitat protection. Also, proponents of a more balanced approach contend that logging impacts occur despite the best planning efforts and, therefore, there is a need to review current activities.

The ministry has not yet determined which approach is better, as the results of focusing primarily on long-term plans have not been evaluated. It is therefore possible that present efforts for protecting habitat are not as effective as they could be.

Recommendation 2: The ministry should evaluate whether those regions focusing primarily on the review of long-term plans are achieving the best use of available resources.





Providing Habitat Protection Advice to Other Agencies

To provide timely, accurate advice to other agencies, the ministry should have adequate processes for communicating habitat protection concerns. We looked for a process that coordinates interagency planning meetings and workshops, develops technical guidelines, collects and updates information about existing habitat, and responds to requests for site-specific recommendations.

Conclusion

The ministry has done well in coordinating interagency planning meetings and workshops and in developing technical guidelines. However, processes for managing inventory data and responding to requests for site-specific recommendations are deficient.

Findings

There is overlapping authority between the federal and provincial governments for fish and wildlife habitats. The federal government is responsible for migratory species; responsibility is shared for marine mammals, waterfowl, song birds, and sea turtles. Responsibility for habitat management within Wildlife Management Areas lies with BC Environment. Several agencies have management authority over habitat outside Wildlife Management Areas: the Ministry of Forests, BC Parks, BC Lands, Canadian Wildlife Service, Parks Canada, First Nations, and local governments.

The ministry provides advice to these other agencies through

processes guided by formal and informal agreements. Staff have established interagency contacts at both the head office and field levels for providing information about habitat to influence decisions that might have negative impacts. The three main ways staff provide advice are: getting involved in interagency planning processes, developing technical guidelines, and responding to requests for site-specific recommendations.

Getting Involved in Interagency Planning Processes

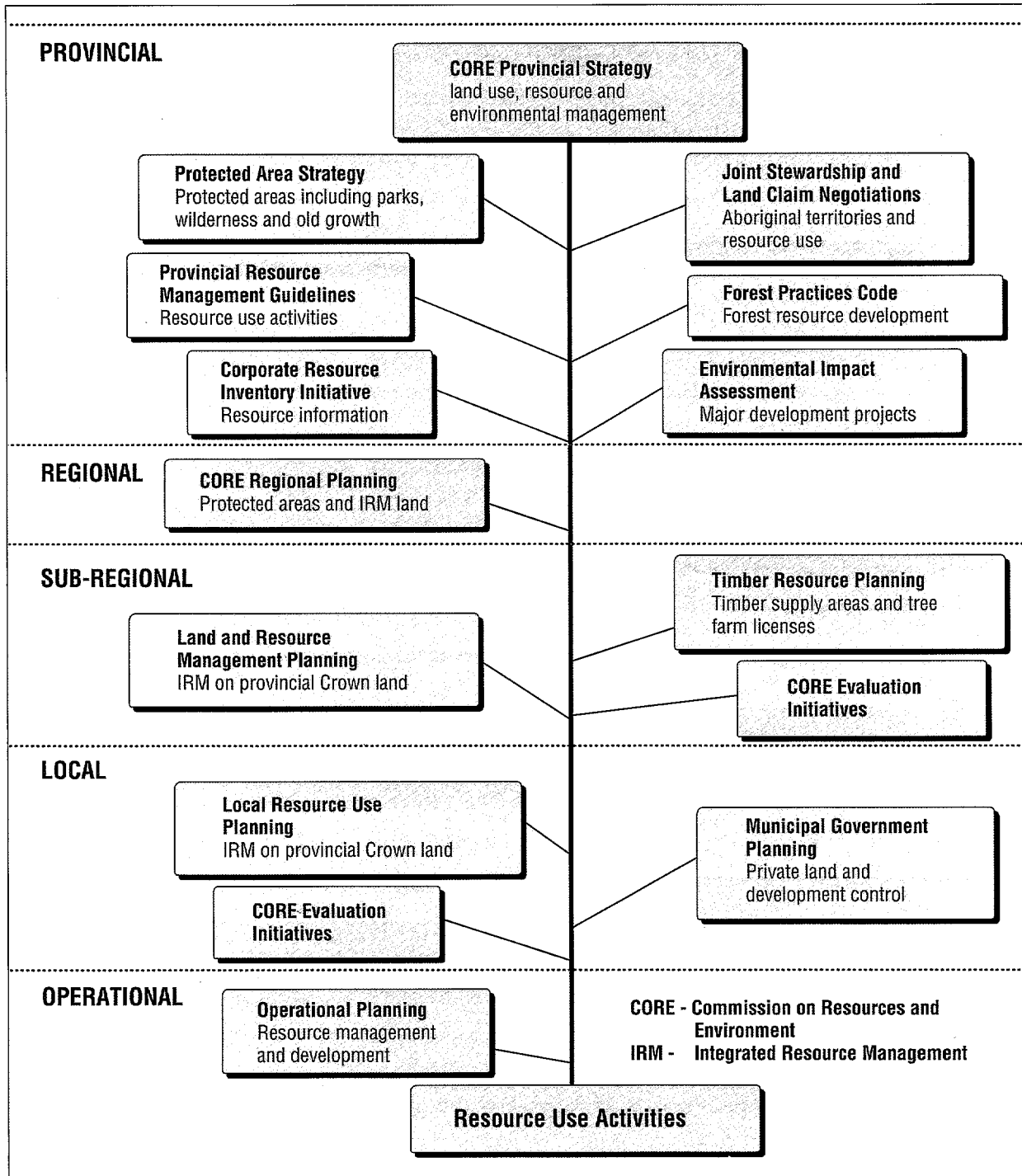
The ministry has spent considerable time getting involved in interagency planning processes. It recently established an Integrated Management Branch to give a higher profile to the coordination of habitat protection activities with other agencies. Staff in this branch meet frequently with representatives from other agencies and provide field staff with advice and guidance on habitat and integrated planning processes. Overall, the staff in this branch, along with regional staff, are active in more than 60 different committees that make decisions about land and water use affecting habitat.

Staff at all levels give high priority to attending meetings for the current Provincial Land-Use Strategy initiatives (Exhibit 1.1) and reviewing proposed policies, legislation, and strategic plans of other resource ministries so they can raise concerns about any issues that could negatively affect habitat. Habitat protection staff are also

Exhibit 1.1

Land-Use Planning Processes in British Columbia

This figure identifies the hierarchy of land-use planning processes that involve habitat protection staff



Source: Ministry of Environment, Lands and Parks



active in many interagency committees that have been established to help in the integrated management of the province's resources. These include committees to oversee management of new inventory moneys, to develop interior fish/forestry/wildlife guidelines, and to improve integrated management planning processes.

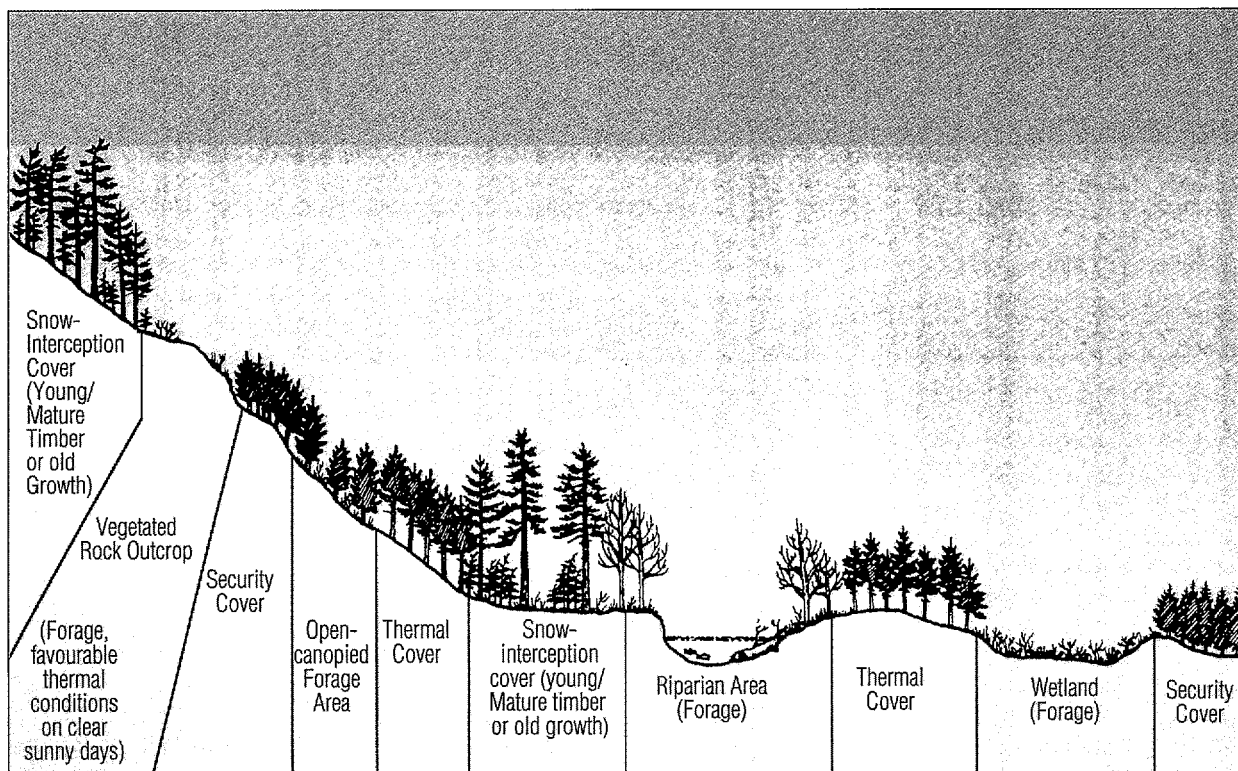
Ministry staff have identified those geographic areas and issues they think should be considered by CORE and the Protected Areas Strategy committee in their

deliberations. As well, staff are refining habitat protection guidelines so that they can be incorporated into the proposed Forest Practices Code, and are providing input into the development of socio-economic analysis guidelines for LRMPs. Staff have also made significant contributions to the Ministry of Forests' planning of a Forest Ecosystem Network approach to managing land, an approach intended to reduce fragmented landscapes by providing connected corridors of wilderness for wildlife migration. The interaction that

Exhibit 1.2

Elk Winter Range

Important components of elk winter range showing good interspersed of forage and cover requirements



Source: Ministry of Environment, Lands and Parks



ministry staff has with the staff of other agencies, in reviewing and making recommendations on the longer-term plans, also gives the ministry an opportunity to be a part of planning that influences the protection of habitat.

In addition to these activities, the ministry sponsors or participates in many multi-agency workshops or meetings. One example is the Habitat Futures Workshop, an event held every three years with various ministry participants, academics, consultants, and representatives from other provinces and the northwestern United States. This workshop gives participants an opportunity to get updated on many topics related to habitat protection efforts. As well, other topic-specific workshops are held from time to time, such as the one on ecosystem objectives and planning held in Victoria during the course of our review.

Developing Technical Guidelines

The ministry has developed numerous guidelines with other agencies as an efficient way of ensuring that habitat needs are considered when others are making decisions about procedures to use when conducting development activities. Guidelines are being refined and a computerized pilot data base has been developed to further improve access to information about technical guidelines for habitat protection.

The ministry has put considerable effort into writing a large number of technical guidelines for use in directing such activities as urban development, oil and gas exploration and

development, and forestry practices. The guidelines specify procedures that agencies should use, or avoid using, to protect habitat when extracting resources or developing areas with fish and wildlife habitats (Exhibit 1.3). Staff have developed the guideline information based on estimated habitat requirements drawn from their experience, from generally accepted practice, and, where available, from research findings.

In many cases, the ministry has developed guidelines with other agencies for particular activities or geographical areas. It has worked with the Ministry of Forests to develop many of the timber harvesting guidelines for various Timber Supply Areas, has participated for several years in the development of fish/forestry guidelines for the interior of British Columbia, and is now working on a wildlife component for the latter.

Some of the existing guidelines focus on species that have been deemed important enough to study. For example, grizzly bear and mountain caribou habitat guidelines have been developed and are being refined through ongoing studies. Other guidelines do not have a species focus. The recently released *Land Development Guidelines for Protection of Aquatic Habitat* is meant to guide procedures for protecting all fish species and their habitat from the negative effects of urban development.

To further clarify habitat protection requirements and to save time in responding to information referrals, staff are refining guidelines to be more



Exhibit 1.3

Habitat Protection Guidelines

Some examples of guidelines used by ministry staff to make recommendations to other agencies about habitat protection requirements

Fisheries:

- Delineate and protect a Streamside Management Zone (SMZ), which will provide riparian vegetation, stream bank stability, and a future source of large organic debris.
- Leave a SMZ (equal to the channel width) on each side of the stream. For streams less than 10 m wide, a 10 m SMZ is required. For streams greater than 30 m wide, a 30 m SMZ is considered to be adequate at this time.

Source: British Columbia Coastal Fisheries/Forestry Guidelines. October 1992. B.C. Ministry of Forests, B.C. Ministry of Environment, Lands and Parks, Federal Department of Fisheries and Oceans, Council of Forest Industries.

Wildlife:

- At any one time, 10% of forest producing sites should be maintained as old growth.
- To accommodate cavity nesters, a minimum of 1 patch of mature timber (not second growth) should be provided for every 50 hectares of logged area. These patches should be a minimum of 2 hectares in size.
- Forty % of the identified ungulate winter range should be retained in stands of minimum height class 3 (20 - 30 m) with an average conifer thermal canopy greater than 70%. These stands should be at least 10 hectares in size.

Source: Okanagan Timber Supply Area: Timber Harvesting Guidelines. February 1992. B.C. Ministry of Forests.

- Reserve from cutting a minimum of 15 trees per hectare on every cutting unit in order to assist in the maintenance of structural habitat diversity at the stand level.

Source: Green Tree Retention Guideline. B.C. Ministry of Environment, Lands and Parks, Nelson Regional Office

specific wherever possible. The ministry has developed a computerized pilot data base containing some of the habitat protection guidelines used by other agencies. Eighteen different sets of guidelines were reviewed and the details entered into the data base. Due to limited funding, however, the information has not yet been refined to the point where it can be used by field staff or other agencies, although that is the proposed

concept. We believe the ministry is headed in the right direction with such a data base, because computerized access to the many published guidelines will likely promote more efficient application of them.

Ministry staff have also been instrumental in promoting a new planning approach for forestry operations. Increasing recognition of the need to maintain



Exhibit 1.4

Guidelines for Biological Diversity in Coastal Forests

These guidelines address the need to maintain biodiversity, and recognize that our knowledge of the characteristics and elements needed to maintain biodiversity is incomplete

Landscape Unit level guidelines -

identify prescriptions for Forest Ecosystem Networks (FENs) and for land outside FENs. A concept developed by a ministry biologist, FENs consist of reserve areas and the corridors, or linkages, that connect them. They are large and of variable width, incorporating a variety of physical and biological features. They can extend from valley bottom to the height of the terrain. Their purpose is to maintain a network of old growth and special habitats (such as riparian areas and wetlands) in their natural state. The establishment of FENs is a relatively new concept in managing forest land in British Columbia.

Some of the FEN guidelines include:

- Reserve areas - The optimum size is not yet known, but larger rather than smaller reserves are preferred. The reserve should be at least 600 m wide. Where possible, reserve areas should be linked and different linkage widths should be used. There should be proportional representation of old-growth forests and special habitats in the landscape unit. Ideally, at least 10 - 12% of each forested site series should be represented in the FEN. Rare ecosystems should be over-represented (more than 12%).

Guidelines for forested areas outside FENs include:

- At least 20% - and ideally more than 40% - of the forest land in each landscape unit should be at greater than mid-culmination age.
- No more than 30% of the forests in each landscape unit should be younger than 20 years old.
- Cut blocks should average 40 hectares in size.

Stand level guidelines -

identify prescriptions for smaller, more homogeneous land units within a landscape that can be managed under a single prescription, or a set of treatments, to meet specific objectives.

Some examples of stand level guidelines include:

- Existing snags should be retained, and recruitment of new snags planned for the future.
- Large, old living trees, which offer several habitat attributes that young trees do not, should be retained.
- A variety of tree species, including hardwoods, should be retained in a stand.

Source: Guidelines to Maintain Biological Diversity in Coastal Forests. Draft December 1992. B.C. Ministry of Forests, B.C. Ministry of Environment, Lands and Parks.

biodiversity and protect ecosystems has led to development by ministry staff of guidelines for "Forest Ecosystem Networks." This concept has been incorporated

into draft guidelines for maintaining biodiversity in coastal forests (Exhibit 1.4) and is consistent with the principles for land-use planning developed by



CORE. Since most referrals come from the Ministry of Forests and the impacts of logging have significant effects on habitat, it makes sense that habitat protection staff are also active in helping that ministry incorporate habitat guidelines into the proposed Forest Practices Code, intended to improve regulation of the forest industry.

Responding to Requests for Site-Specific Recommendations

Ministry staff respond in several ways to requests from other agencies for habitat protection information on specific sites. They review proposed plans, compare them to inventory data to see what the likely impact will be on habitat in the proposed location, sometimes visit proposed sites with staff from referring agencies, and make recommendations for how developments can be carried out so as to reduce the effects on habitat.

The ministry estimates that habitat protection staff provide recommendations for more than 10,000 specific development plans every year. To respond to these referrals, the ministry manages information about existing habitat inventory as well as information about the referrals themselves.

Managing Habitat Inventory Information

We found that staff in most areas are currently working with maps containing incomplete, outdated habitat inventory information. Furthermore, systems for accessing the information are inefficient. The ministry is aware it needs better inventory data and systems for accessing it, and

increased funding is being used to begin improvements. However, the ministry estimates that, if current levels of funding are maintained, significant improvements will still take many years.

The ministry's Fisheries and Wildlife branches manage inventory data on species population numbers and the type and quality of habitats by geographical area. Habitat data includes both the sizes of areas available for habitat and the characteristics of areas, such as soil and vegetation types. This information is recorded on maps of various sizes which habitat protection field staff then use to prepare site-specific recommendations for referring agencies.

In its 1990 report, the Forest Resources Commission reported a serious lack of adequate habitat inventories—a lack that is a major impediment to responsible forest land management. Habitat protection staff told us that they are still relying on some inventory data that was collected over 20 years ago. More information is currently available about species population numbers than about habitats.

Some areas of the province have better habitat inventory information than others. Large portions of Vancouver Island and the Kootenays have been mapped in detail (1:50,000 scale), because there have been more conflicts about land use there than in most other areas. The ministry has recently collected habitat information from aerial photographs for the whole province



Courtesy of Ministry of Environment, Lands and Parks

and is transferring it to less detailed maps (1:250,000 scale). This preliminary scale mapping is suitable for overview planning, but refinements are needed for operational planning. In recognition of this need, the government's Corporate Resource Inventory Initiative (CRII) has provided about \$1.5 million to the ministry for improving wildlife habitat inventories and about \$1 million for fish habitat inventories for the fiscal year 1993. This is the ministry's share of \$9 million that is being coordinated by CRII for fiscal 1993 to improve inventory data in a number of provincial agencies.

The ministry is also developing a computerized data base of inventory information about the status of threatened animals, plants, and habitats. This Conservation Data Center Project is one of only three in Canada. It

was started two years ago and is to spend \$150,000 a year as part of a joint commitment by the Canadian and U.S. governments. Its main purpose is to manage information on the biodiversity of certain areas. Staff expect it to be useful for identifying areas that should be purchased or otherwise protected when development is planned in adjacent areas.

Not only is accurate, complete inventory data important, but so are the methods used to access it. During our field work we observed ministry staff overlaying large maps on top of each other to compare information from various sources about a given area. It is not easy to update these maps when changes to the land base occur.

Many of the agencies that the ministry deals with have computerized geographical information systems (GIS). These



Courtesy of Ministry of Environment, Lands and Parks

can handle inventory data efficiently by automatically overlaying different data for the same geographical area to produce custom, computerized maps. As well, GIS can be used to efficiently update information as changes occur, and to track developments. The ministry has completed a GIS pilot study in Smithers which it is now expanding to other regions of the province. The implementation of GIS is being coordinated with the Ministry of Forests and the ministry's BC Lands Division, two of the prime agencies with which BC Environment needs to share inventory information.

Recommendation 3: The ministry should complete its habitat inventory and the systems for accessing and updating it as soon as possible.

Managing Habitat Referrals

We found that some regions are tracking and responding to referrals by using a computerized

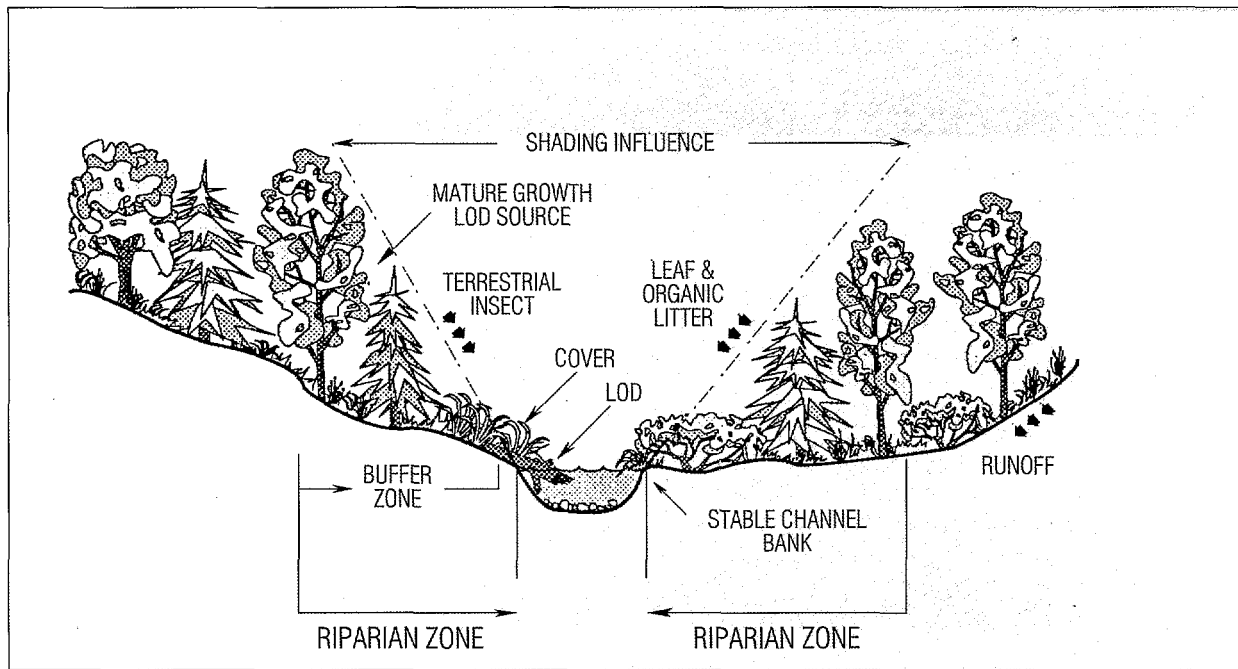
system. Although it needs improvements, the system provides some efficiencies in processing responses. The system is not, however, in use throughout the province. The ministry has plans to upgrade it and implement it province-wide, but this is not a priority given present resource constraints.

Referrals are the main vehicle that habitat protection staff use to provide site-specific input to development decisions involving land and water use. A manual referral system has been in place about 20 years and has expanded from an initial focus on forestry developments to a focus on all developments that can affect habitat. The ministry estimates that approximately 10,000 habitat-related referrals are received each year from ministries or other agencies. Forestry-related developments account for more than half of the total workload.

Exhibit 1.5

Riparian Zone Benefits to Aquatic Habitat

Examples of reasons for maintaining vegetation in riparian zones



Source: Ministry of Environment, Lands and Parks

The referral process is relatively straightforward. Under a number of informal agreements with other agencies, proponents or reviewers of resource development send in plans or proposals to the ministry for review and comment. If they have concerns about habitat, ministry staff will provide recommendations for mitigating the impacts of the proposals on habitat. For example, habitat protection staff may review logging plans and provide recommendations on the location and number of stream crossings, or on the size, shape, and location of proposed cut blocks. The time it takes for the ministry to respond differs from one situation to another. Some referrals can be

done by phone, others must be in writing. Some can be responded to in minutes, others (such as five-year development plans for forestry operations) may require a week or more to assess.

The tracking of referrals through the response process is done informally, generally according to a routing sheet. However, there is no adequate means for determining whether referrals have been returned within deadlines. The tracking systems vary between field offices. No one province-wide system is being used to control referrals.

Some regions, however, use the ministry's computerized Monitoring Referral System (MRS)



to record information about referrals. Those regions using the system generate reports that include the numbers of referrals responded to, by referral source. Management should be able to use these summary reports to assess workload sources and levels, but we found them not as useful as they could be because they only contain information about referrals actually responded to. Staff told us that some referrals cannot be responded to because of heavy workloads. No summary records are produced, however, to show how many or what type of referrals they are.

The ministry recognizes that system changes are needed if the MRS is to be a more effective tool, but such changes are considered

low priority until a GIS is in place in all offices. We think this is a reasonable approach that will allow the ministry to efficiently integrate the information bases between the two systems.

In the meantime, however, ways should be developed for estimating the numbers and types of referrals that are not responded to within stated deadlines, to determine the extent to which there are problems in this area.

Recommendation 4 : The ministry should produce better management information about whether it is meeting the needs of referring agencies.





Determining Results of Habitat Protection Efforts

To determine whether its efforts are working, the ministry needs (omit reference to processes) to assess how well its guidelines and recommendations are being complied with, and to evaluate what impacts—intended and unintended—its activities are having. Information about these aspects of performance should be accumulated, summarized and reported to the Legislative Assembly.

Conclusion

The ministry does not often assess whether other agencies comply with habitat protection guidelines and recommendations. This is because of ministry management's decision to focus more on involvement in interagency planning. Evaluations of impacts that have been done show that long-term studies are needed and that it is difficult to attribute outcomes to actions taken by the ministry. The resulting deficiencies in available information mean that the ministry is not able to provide adequate performance information to the Legislative Assembly. The ministry has plans, however, to improve the present situation.

Findings

Assessing Compliance with Recommendations

The collection of compliance information is done, at the moment, only on a sporadic basis. The ministry is piloting a new system that is expected to collect

further information; however, more work is needed to coordinate available compliance information from other regulating agencies.

We found that habitat protection staff sometimes participate in joint investigations of cases where it is suspected that other agencies have not complied with ministry guidelines or recommendations. However, at the moment, more focus is placed on the "front end" processes of providing recommendations than on the "back end" processes of assessing compliance with those recommendations.

As discussed earlier in this report, ministry management has decided to focus staff efforts on involvement in the planning processes of other agencies, in an attempt to prevent problems before they occur. As a result, staff do not often take the time to find out if their habitat protection recommendations have been incorporated into final plans and if they are then complied with. In a 1991 workload analysis, staff in one region estimated that only 2% of their time was spent checking to see if their recommendations had been followed.

To compensate for the lack of a regular compliance assessment program, the ministry has purchased a number of independent reviews to assess compliance. In 1990, such a review in one region in the Interior found that logging contractors were largely complying with guidelines



and recommendations. In 1992, however, a review of cut blocks on Vancouver Island by an independent consultant found many examples where non-compliance with fisheries guidelines were resulting in damage to fish habitat. The consultant concluded that much of this salmon habitat damage could have been prevented if the guidelines had been followed. As a result, the Ministry of Forests conducted an expanded audit of other coastal cut blocks to assess compliance with habitat guidelines, and issued directives to the companies involved to correct discrepancies where they were found.

Most of the decisions affecting habitat are made on forestry-related matters. The Ministry of Forests has an inspection system in place to monitor compliance with harvesting and silviculture requirements, and it incorporates recommendations made by habitat protection staff. Ministry of Forests staff are trained to recognize breaches of habitat recommendations, but they do not usually have the expertise to assess the impact of such discrepancies. At the moment, staff in the two ministries communicate informally about such concerns. Through this and other informal processes and communications, ministry staff become aware of many of the cases of non-compliance. No systematic process is in place, however, to record this information, assess its reliability and determine what actions should be taken.

We believe that the ministry needs to assess the processes used by the Ministry of Forests to collect

compliance information, so that both agencies can better coordinate follow-up actions. Teams, for example, could be used to visit development sites that are in high risk areas.

The ministry, recognizing the need for a regular process for assessing compliance with habitat guidelines, has recently begun to develop a more formal system for doing so—the Referral Monitoring System (RMS). This process has been tested in the Interior, where results showed that guidelines are sometimes complied with and sometimes not. The information used in the process is collected directly by ministry staff or contractors. Given that some information is already available from other agencies, we think that better coordination and collection of information would lead to overall savings and improved results.

Recommendation 5: The ministry should work with the Ministry of Forests to develop integrated compliance monitoring processes that address the needs of both ministries to the greatest extent possible.

Evaluating Impacts

The ministry participates in a number of studies to better understand the impacts of development on habitat. It does not, however, have a program to evaluate the impact of its efforts on habitat conditions. Some improvements, nevertheless, are underway. As part of the ministry's Referral Monitoring System (RMS) being developed to assess compliance, there is a component to evaluate the effects



of development activities on habitat.

While there is no province-wide tracking of habitat status, a few areas are being individually assessed. We found that a number of habitat-related research projects are underway, carried out by a variety of provincial, federal, and other agencies. Ministry staff are actively involved in many of them. The Ministry of Forests, through the Silviculture Systems Program, provided the Ministry of Environment, Lands and Parks with \$210,000 to carry out research in biodiversity, wildlife trees, riparian zone research, and wildlife diversity. There is active integration of these projects with Ministry of Forests regional research projects.

For example, staff on Vancouver Island are identifying and tracking winter ranges for hoofed animals in old growth forests, which they have requested be deferred from logging. Similarly, the Carnation Creek research project has been underway since the 1970s, attempting to understand the long-term effects of coastal logging practices on fish habitat. The results of this project indicate that there are difficulties in carrying out evaluations in the natural environment. Some impacts may take years before they are fully recognized and understood. In addition, new concepts are being developed, such as biodiversity and ecosystem health, and indicators or measures for evaluating these have not yet been established. The ministry recognizes that it will need to do this if it is to report fully on the status of habitat.

The ministry's Habitat Conservation Fund is sponsoring a six-year project, along with the Williston Wildlife Compensation Program and Fletcher Challenge Canada, to study options for retaining critical habitat elements, particularly wildlife trees, that are important for the maintenance of biological diversity. The study site is about 85 km northwest of Mackenzie, where cut blocks are to be harvested using three different enhancement techniques that involve the retention of specified numbers of dead trees or islands of mixed-age timber. Researchers will evaluate the effects of these treatments on breeding birds (especially cavity nesters) and marten, and compare the results with those obtained in a conventionally logged control area.

A monitoring manual developed by the Ministry of Forests and the Ministry of Environment in 1991 provides a standard system and procedures for monitoring pre- and post-operational conditions to identify impacts on habitat. The manual recognizes the need to monitor primary program objectives as well as secondary effects on selected resources, but it has not yet been implemented in the field.

The RMS being developed to provide compliance information is also to provide assessments of the effectiveness of the ministry's activities. However, the relationship between specific actions and habitat changes are sometimes hard to establish without long-term studies and a significant allocation of resources. Nonetheless, we think that the ministry should continue to



develop methods of evaluating the impact of its efforts.

Reporting on Performance

Because of deficiencies in available information, the ministry is not able to provide adequate performance information to the Legislative Assembly. Plans are underway, however, to improve the present situation.

The ministry's annual report to the legislature contains information about habitat protection, but it is limited to describing activity levels for fish and wildlife projects and numbers of responses to referrals. It is not possible to tell from these how well the ministry has performed, because there is no accompanying contextual information, such as the number of referrals received compared to the number responded to. Also missing is any information about the status of important habitat types or the amount saved or lost over the years.

The ministry, in recognition of the need for better accountability information, has recently started to develop indicators for reporting on the status of certain habitat types. We noted that the ministry has included in its proposal for new legislation, the *Wildlife and Endangered Species Act*, a requirement for reporting on habitats for species identified as important.

In addition, British Columbia's proposed *State of the Environment Report*, a joint federal and provincial initiative for all provinces following the Earth Summit Conference, includes information about some habitat types and proposes certain indicators for reporting on their status. For example, for old growth forests, the total area remaining will be reported; for estuaries, the number with less than 25% disturbance will be reported.

The ministry recognizes that the quality of existing data has been identified in the *State of the Environment Report* as varying from good to poor. Nevertheless, simply being able to acquire this information is a major step forward in improving the ministry's ability to report on habitat status in British Columbia. Further development of indicators and data collection processes is then needed if the ministry is to report comprehensively on the state of habitat in the province.

Recommendation 6: The ministry should identify the performance information it needs to provide adequate accountability. It should develop measurement tools to gather that information, and should report on its performance to the public and the Legislative Assembly.





Ministry Response

The Ministry of Environment, Lands and Parks welcomes this report and appreciates the cooperation shown by the Office of the Auditor General in its preparation. The Ministry will benefit from the independent assessment of and recommendations for the Habitat Protection function.

We find the report to be positive and conclude from it that the auditors believe the taxpayer has been receiving good value from the resources used by the Habitat Protection Program.

The Ministry acknowledges that more can always be done but this needs to be considered against a background of restraint and practical and resource limitations. At the time of the audit, there were 46 regional Habitat Protection staff dealing with the activities of tens of thousands of industry and agency workers whose operations generate at least 10,000 written requests for input every year, over and above the planning and other work which must be done by our people. As noted in the audit report, the Ministry has recently been able to obtain 22 additional personnel to assist in carrying out some of our habitat protection responsibilities. People spend about \$1.7 billion annually in the Province on various recreational uses of fish and wildlife, while less than half of one percent of that amount is now spent annually in protecting fish and wildlife habitats.

Because of the practical limitations on our available resources, the Ministry some time ago decided to focus most of its energies on influencing the planning activities of other resource agencies. We recognized in making this decision that Habitat Protection personnel

would not be able to direct much effort toward assessing compliance with approved planning guidelines. In retrospect, the Ministry continues to believe this decision has resulted in the most effective use of its resources.

With regard to the six recommendations in the report, the Ministry has the following comments:

Recommendation 1: Specific Objectives

The Office of the Auditor General proposes specific land-based and policy objectives for habitat protection.

The stated aim of the Ministry continues to be to maintain biological diversity in the province by protecting all ecosystems. Habitat Protection staff currently have a large number of written ecosystem objectives and a growing body of specific guidance in manuals for workers in the extractive resource industries.

Habitat protection essentially involves negotiation, which means compromise is necessary. Given the broad ecological inventory of the province, it is doubtful that hard-and-fast objectives would be that useful compared to the difficulty in defining them. Negotiating with the bottom line in full view seems inappropriate.

Recommendation 2: Evaluation of Planning Emphasis

The Ministry supports this recommendation and is now evaluating its heavy emphasis on planning.

Recommendation 3: Inventory

The Ministry has, for some time, identified a need to update its inventory of basic data and to develop better systems to manage the inventory. Such initiatives have in



the past been beyond our resources. The Ministry has cooperated with the Ministry of Forests in the last few years to initiate and manage the Corporate Resource Inventory Initiative of government, which should provide much of the information we lack.

Recommendation 4: Needs of Referring Agencies

The Ministry agrees that some monitoring of the referral process and on-going review of its effectiveness is necessary and has developed its own referral monitoring system which is being used to the limit of available resources.

Recommendation 5: Joint Monitoring of Compliance

This is a sound recommendation and the Ministry has already begun discussion with Ministry of Forests. The recent Clayoquot decision and the proposed Forest Practices Code will provide for joint monitoring on a standard course of action.

Recommendation 6: Performance Information and Reporting

The Ministry is aware of the need for better measurements and is attempting to make them within existing budgets. The Ministry has also submitted a formal request for legislation which includes increased emphasis on habitat protection with regular reports to the Legislative Assembly.

Ministry of Environment, Lands and Parks

*Regulatory Process for
Special Waste*

Contents

Highlights

Audit Purpose and Scope47
 Overall Conclusion48
 Key Findings49

Detailed Report

Regulating Special Waste in British Columbia.....52
 Setting Regulatory Standards for British Columbia55
 Implementing the Regulatory Process59
 Controlling the Management of Special Waste65
 Accounting for Regulatory Compliance and Results71

Ministry Response.....74

Ministry Program Descriptions

The Contaminated Sites Program76
 The Toxics Reduction Program79

Ministry of Environment, Lands and Parks

Regulatory Process for Special Waste

An audit of government regulation of special waste in British Columbia

Special wastes, also known as hazardous wastes, are materials of a toxic or reactive nature that must be handled or disposed of in appropriate ways to protect human health and the environment. To make sure that special waste is managed properly, the Ministry of Environment, Lands and Parks regulates the generation, handling, storage, transport, treatment, and disposal of hazardous wastes in British Columbia. It does so under the authority of the Waste Management Act (the Act) and the application of the Special Waste Regulation (the Regulation). Ministry staff carry out regulatory activities in each of the ministry's regional offices across the province and at head office in Victoria. For example, they identify industries producing special waste, inform them about the Act and the Regulation, and provide them with assistance to comply.

Audit Purpose and Scope

We conducted this audit to assess whether the ministry manages the regulatory process for special waste in a way that:

- ensures regulatory standards are current and consistent with program objectives to minimize the effect of special waste on human health and the environment, and that the Regulation is clearly communicated;
- reasonably ensures that industry adheres to the Regulation;
- shows due regard for economy and efficiency in its management of the regulatory process; and
- shows due regard for accountability in the assessment and reporting of how well the Regulation is met and how well the regulatory process minimizes the effect of special waste on public health and the environment.

The audit examined ministry programs and activities at head office that deal with special waste, including the planning and development of program policy. We looked at what the ministry

does to control the generation, handling, transport, treatment, storage, and disposal of special waste in half of its regions and sub regions. We also examined regional activities to monitor compliance with the Regulation, although we did not audit enforcement activities.

We did not audit the ministry's activities that are specific to sites identified as being contaminated, or the activities of the Toxics Reduction Branch. We have, however, included ministry descriptions of the Contaminated Sites Program and The Toxics Reduction Program following this report.

We focused our audit mainly on activities undertaken by the ministry in the 12 months ending December 1992.

Our examination was performed in accordance with generally accepted auditing standards recommended by the Canadian Institute of Chartered Accountants, and accordingly, included such tests and other procedures as we considered necessary in the circumstances.

Overall Conclusion

The Special Waste Regulation came into effect in 1988 and the ministry is still implementing the Special Waste program.

We concluded that British Columbia's standards for management of special waste are current, and similar to those in use in North America generally. As a result, the standards provide a level of protection of human health and the environment that is comparable to that provided by other North American jurisdictions. However, we believe the ministry should better document the scientific information it uses to determine that its standards are appropriate for British Columbia.

The ministry communicates the Special Waste Regulation clearly, and is implementing processes to monitor compliance with the Regulation. However, although hazardous situations are monitored systematically, not all regions carry out a full range of inspection activities. The ministry relies on complaints and appeals to know that the Regulation is being applied properly, but in our opinion these procedures are not enough to know and demonstrate that the Regulation is being applied in a consistent manner across all regions.

We found that the ministry has acted to improve the economy and efficiency of its regulatory operations when regional staff identify opportunities in their daily activities. However, it has not yet done a full evaluation of the special waste program to see how efficiently it is carried out.



To date, ministry reports to the Legislative Assembly have described regulatory activities rather than compliance and protection results. The ministry has yet to report on how much of the special waste in British Columbia is regulated and whether the impact of special waste on health and the environment in the province is minimized. The ministry has begun gathering information to assess the performance of its special waste program and the success of the regulatory process, and plans to report its findings in the future.

Key Findings

Regulatory Standards for British Columbia Are Current

The ministry sets and modifies regulatory standards for special waste by considering standards established in jurisdictions similar to British Columbia. As well, it accesses relevant scientific information and consults with others who are involved with the regulation and management of special waste in British Columbia.

The ministry's process for developing and maintaining standards draws heavily, for the most part, from standards developed in other jurisdictions in North America. The ministry also monitors developments and new information in the management of special waste. As a result, we concluded that the standards were current and provided a level of protection comparable to that afforded by other North American jurisdictions.

Regulatory Standards Are Not Sufficiently Documented

We found the ministry's evaluation of standards from other jurisdictions to be insufficiently documented. In our opinion, the ministry could, by improving its documentation, better account for the adequacy of the standards it adopts to minimize risk to the public and the environment.

Program Goals and Processes Are Communicated Clearly

The ministry has a strategic planning process to establish overall direction, including that of special waste regulatory activities. The process articulates environmental protection priorities that the ministry believes best meet its pollution prevention goal. These priorities are set according to types, quantities, and sources of waste, as well as to hazards, available technologies, and staff resources.

The strategic plan articulates program goals and processes clearly. Both the annual business plan for the special waste program and the individual work plans of staff incorporate the strategic planning goals and program priorities. Staff therefore know what is expected of them.

In most regions, staff who carry out the special waste program have other responsibilities as well. Regional management identifies the need for services in the region and assigns tasks to staff according to regional priorities. We concluded that the ministry's planning process provides good management direction, although the ability of regional staff to meet overall program expectations is subject to regional priorities.

Planning Is Coordinated With Other Jurisdictions

In planning regulatory activities for special waste, the ministry coordinates with other provincial ministries and jurisdictions such as the federal government. This practice ensures that the Ministry of Health, for example, is consulted on issues of human health. The ministry also carries out studies on the nature and extent of special waste issues in British Columbia to generate information about hazard-based priorities—information it then uses in its regulatory planning process.

The Ministry Promotes Acceptance Through Communication and Consultation

The ministry promotes compliance with the Special Waste Regulation in a number of ways. It interacts with the public, industry, and interest groups to communicate, discuss, and gain acceptance of the Regulation and the regulatory process; it issues authorizations for the handling of special waste; and it monitors compliance with the Regulation and deals with appeals from persons who question regulatory decisions.

When an application to handle special waste has been submitted, the ministry ensures that the public and other jurisdictions are advised and have an opportunity to comment, before the ministry finalizes the authorization. Although the ministry responds to the comments it receives, it does not systematically anticipate reactions and plan accordingly. As a result, it is sometimes unprepared to deal with the dynamics of public concern over special waste. When this happens, public confidence in the regulatory process can be seriously tested. We believe the ministry would gain from consulting more actively with the public when applying the regulatory process to specific situations.

The Ministry Sets Monitoring Priorities on the Basis of Hazard

Clear goals and procedures exist for inspections and other monitoring activities that are carried out to ensure compliance with the Regulation during the authorization process. We found that procedures for processing authorizations, including site inspections, were followed in all regions we visited.



Once the authorization process has been completed and a written permit issued, the ministry carries out a range of activities to monitor compliance with the conditions of the permit. It examines monitoring information provided to it by the permittee, such as independent laboratory analyses of samples taken on site. In some cases it obtains independent audit reports on the permittee's compliance with the terms of the permit. Ministry staff also carry out direct on-site inspection and sampling. Complaints or accidents trigger an immediate on-site inspection by staff.

In the regions we visited, we found that all these activities were generally carried out according to plans and procedures. As well, additional monitoring and site inspections were carried out when monitoring activities identified non-compliance with the authorization. In one region, however, we found that the annual inspections for passive storage sites (i.e., facilities that have a permit and where there is no movement of hazardous material) had not been carried out according to the work plans.

In the regions we visited, we also found that staff had identified aspects of the regulatory operations that were costly or inefficient and had taken action to improve them. Some initiatives were taken locally while others involved headquarters and other regions.

The Regulatory Program Has Not Yet Been Evaluated Fully

The ministry gathers some information on its regulatory performance, but it has not yet conducted a comprehensive evaluation of its activities for managing special waste. Through its strategic planning and management processes, the ministry has begun to develop productivity information that is useful for sound program management. It is also developing more complete and accurate data on regulatory compliance province-wide.

We found that the ministry does not have a process for ensuring that the Special Waste Regulation is applied consistently across all regions, although it gauges this to some extent through stakeholder feedback, complaints, and appeals.

The ministry has provided reports to the Legislative Assembly that mainly describe levels of activity but do not include an accounting for program results. We believe it should assess its regulatory performance in managing special waste and provide more complete and meaningful reports to the Legislative Assembly.



Regulating Special Waste in British Columbia

The special waste management program was created in 1988 to minimize the threat of hazardous wastes. Special wastes (Exhibit 2.1) are materials of a toxic or reactive nature which, if not handled or disposed of properly, can be harmful to the safety or health of the people or to the environment.

The criteria that define special waste, as well as the standards and operational and administrative requirements for its appropriate management, are contained in the Special Waste Regulation. The Regulation sets siting, operating, and performance standards for special waste storage, treatment, and disposal facilities. Through these mechanisms, the Regulation

aims at "cradle-to-grave" control of hazardous wastes in the province.

Approximately 25 professional, technical, and support staff are involved in the program. In addition to their special waste activities, those staff located in the regions are also responsible for such matters as emergency spill response and contaminated sites management.

The ministry's regulatory process begins with the setting of standards to minimize the hazard to human health and the environment. As new information and technologies on the management of special waste are developed, the ministry may modify its regulatory standards.



Courtesy of Ministry of Environment, Lands and Parks

An example of how the waste is stored in an authorized storage facility

Exhibit 2.1

Special Waste: Some Examples

These wastes must receive special treatment because of their hazardous nature

| | |
|--|---|
| Polychlorinated biphenyls (PCB) wastes | Waste paint |
| Waste containing tetrachloroethylene | Waste batteries |
| Waste containing dioxin | Waste asbestos |
| Pesticide wastes | Wastes that are regulated dangerous goods |
| Leachable toxic waste | Waste containing polycyclic aromatic/ hydrocarbons (PAH) |
| Waste oil | |

Source: Ministry of Environment, Lands and Parks

Exhibit 2.2

Special Waste Statistics

A perspective on how much special waste is generated and handled in British Columbia in a year

| |
|---|
| <p>There are about 3,000 generators (individuals and companies) of special waste in British Columbia.</p> <p>Currently 404 of these generators are required to hold permits or approvals in accordance with the Special Waste Regulation.</p> <p>The quantity of special waste generated in British Columbia in 1992 is estimated at approximately 237,000 tonnes.</p> <p>In 1992, British Columbia exported 50,000 tonnes of special waste to other Canadian provinces or the United States.</p> <p>In the same year, it imported 8,000 tonnes of special waste from other jurisdictions, to use in recycling operations.</p> <p>About 350 carriers are licensed to transport special waste in British Columbia.</p> |
|---|

Source: Ministry of Environment, Lands and Parks



Achieving the goal of protecting human health and the environment depends not only on the quality of the standards and the degree of compliance with them, but also on the ministry's ability to identify the generators and handlers of special waste and make them aware of the Regulation. To ensure that the generators and handlers of special waste comply with the Regulation, ministry staff carry out a number of activities. Regional staff register generators; assess and issue approvals and permits for storage, treatment, and disposal of special waste; and carry out monitoring and enforcement activities. Head office staff issue transport licenses to carriers of special waste and maintain

computerized data bases to track the generation, movement, storage, and disposal of special waste in British Columbia. A major purpose of the tracking system is to make illegal disposal of these wastes difficult.

Compliance is largely affected by the extent to which industry and the public accept the regulatory process. For this reason, the ministry consults regularly with citizens, interest groups, and industry. Consultation may take place locally, on permit applications for example, or may be a province-wide effort to discuss proposed regulations.





Setting Regulatory Standards for British Columbia

The ministry develops and maintains standards to minimize the potential hazard of special waste to public health and the environment in British Columbia. Identified in the standards are such particulars as contaminant concentrations, methods of analysis, and procedures for handling waste. The standards should be based on sound scientific and technical data and kept up-to-date with new information and technology. Those involved with special waste in British Columbia should be consulted in the development of these standards.

When we reviewed how the ministry set the standards in the Special Waste Regulation, we looked for a process that identifies and retrieves information from the continually evolving body of knowledge relevant to hazardous waste. We also looked to see if the ministry was consulting on proposed standards with professional and special interest groups, industry, and other jurisdictions. We expected the ministry to use such information to set standards that minimize the hazard of special waste to human health and the environment in British Columbia.

In addition, we looked to see if British Columbia's standards were comparable to those currently in use by similar jurisdictions, such as federal and provincial governments and the Environmental Protection Agency in the United States.

Conclusion

The ministry has a process to set and update the standards contained in the Special Waste Regulation, with the objective of minimizing the potential hazard to public health and the environment. The process includes mechanisms to consult with professional and special interest groups, industry, and other jurisdictions. We concluded that, overall, the process provides the ministry with relevant information on scientific and technological developments and feedback from stakeholders.

We found that the province's standards for hazardous waste are generally comparable to those of similar jurisdictions. For this reason, and because the ministry bases the development of its standards on its policy of using the best available control technology for dealing with waste, we concluded that the standards are current and provide a level of protection of human health and the environment that is comparable to that of other North American jurisdictions. Nevertheless, we do not believe that the ministry is sufficiently documenting the scientific information it uses to determine how appropriate the standards are to British Columbia.

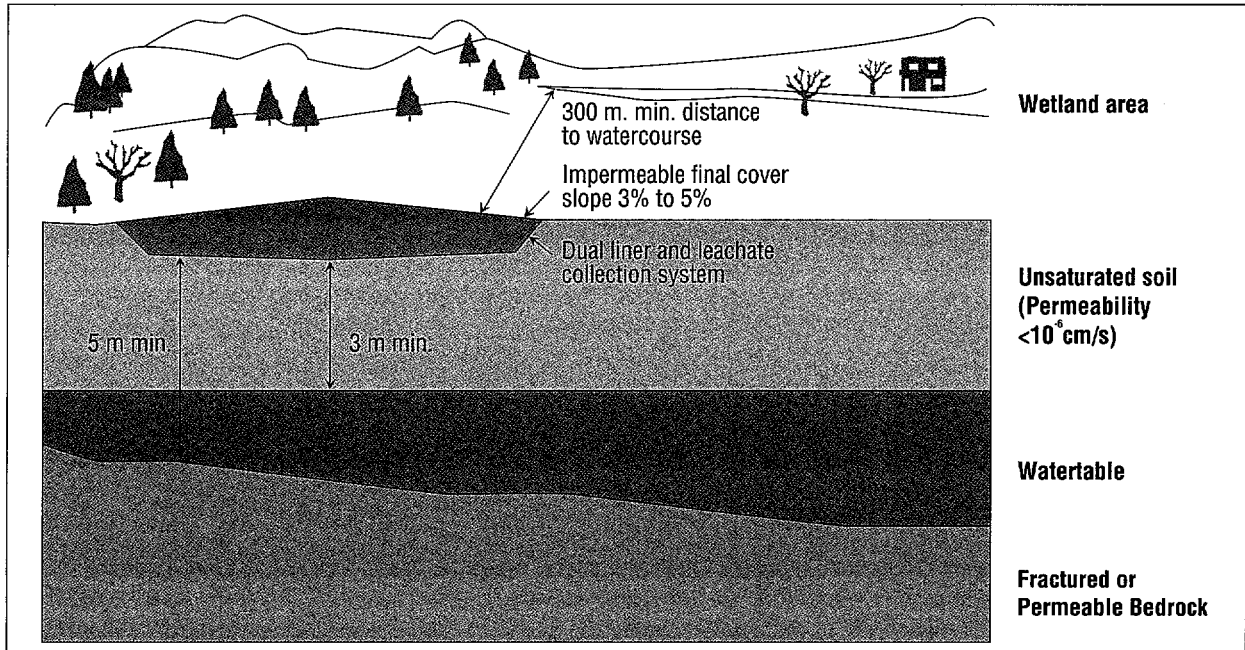
Findings

Using scientific information, regulators decide which substances are hazardous, at what concentrations, and then assess methods for safely handling and disposing of special waste. In

Exhibit 2.3

Special Waste Disposal Facility Standards

An example of some of the specifications for a special waste secure landfill



Source: Ministry of Environment, Lands and Parks: Special Waste Legislation Guide

British Columbia, the concentrations of hazardous substances in waste (for example, the parts per million of polychlorinated biphenyls—PCBs—in waste oil) and the designated methods for handling and disposing of these substances constitute the standards for special waste (Exhibits 2.3 and 2.4).

When the ministry established the Special Waste Regulation in 1988, it drew mainly on standards from other jurisdictions. It also consulted with interested parties on the proposed regulation and adopted a set of standards that would mesh smoothly with those standards already established in the rest of Canada and the United States.

In its current process for setting and maintaining standards, the ministry has continued to use consultation to review and approve amendments to the Special Waste Regulation which were most recently made in 1992 (Exhibit 2.5).

We found that the ministry develops and maintains its standards by obtaining information from other jurisdictions and industry, discussing ideas with colleagues, accessing professional and scientific journals, and using data provided by the ministry's toxicology unit and other sections. It also keeps up to date through its membership in the Canadian Council of Ministers of Environment (CCME) and its access to standards developed by



Exhibit 2.4

Special Waste Concentration Standards

An example of standards contained in the Regulation

| WASTE MANAGEMENT ACT <i>SPECIAL WASTE - Schedule 1.2 63/88</i> | SCHEDULE 1.2 [en. B.C. Reg. 132/92, s.34.] Effluent Standards for Special Waste Facilities | |
|--|---|---|
| Column 1 | Column 2 | Column 3 |
| Parameter Discharges | Standard for Discharges to the Environment or to Storm Sewers | Standard* for Directed to Municipal or Industrial Effluent Treatment Works |
| Physical | | |
| pH | 6.5 to 8.5** | 5.0 to 11.0** |
| Temperature | 32oC | - |
| Total suspended solids | 20 | - |
| Toxicity (limit bioassay - 50% survival of Rainbow trout after 96 hours) | 100% effluent | 50% effluent |
| Inorganics | | |
| Aluminum, dissolved | 0.5 | 2.0 |
| Ammonia, total (expressed as nitrogen) | 2.0 | - |
| Antimony, dissolved | 0.25 | 0.5 |
| Arsenic, dissolved | 0.1 | 0.3 |
| Barium, dissolved | 1.0 | 2.5 |
| Boron, dissolved | 10.0 | 15.0 |
| Cadmium, dissolved | 0.05 | 0.1 |
| Chromium, dissolved (hexavalent) | 0.1 | 0.2 |
| Chromium, total | 0.5 | 1.0 |
| Cobalt, dissolved | 0.1 | 0.3 |
| Copper, dissolved | 0.1 | 0.3 |
| Cyanide (weak acid dissociable) | 0.1 | 0.2 |
| Fluoride, dissolved | 15 | 18 |
| Lead, dissolved | 0.1 | 0.3 |
| Manganese, dissolved | 0.5 | 1.0 |
| Mercury, total | 0.001 | 0.01 |
| Molybdenum, dissolved | 0.5 | 1.0 |
| Nickel, dissolved | 0.5 | 1.0 |
| Selenium, dissolved | 0.05 | 0.1 |
| Tin, dissolved | 0.5 | 1.0 |
| Zinc, dissolved | 0.2 | 0.5 |
| Organics | | |
| 5 day Biochemical oxygen demand (BOD) | 20 | - |
| Dioxin TEQ | 15 pg/l | 15 pg/l |
| Oil | 10 | 60 |
| Phenol | 0.2 | 0.5 |
| Polychlorinated biphenyls, total | 0.005 | 0.005 |
| Total chlorinated phenol | 0.006 | 0.05 |
| Total organic halogens (as Cl) | 1.0 | 1.0 |

* Maximum concentration or range in (mg/l) unless otherwise specified. Pg/l is the abbreviation for picograms per litre

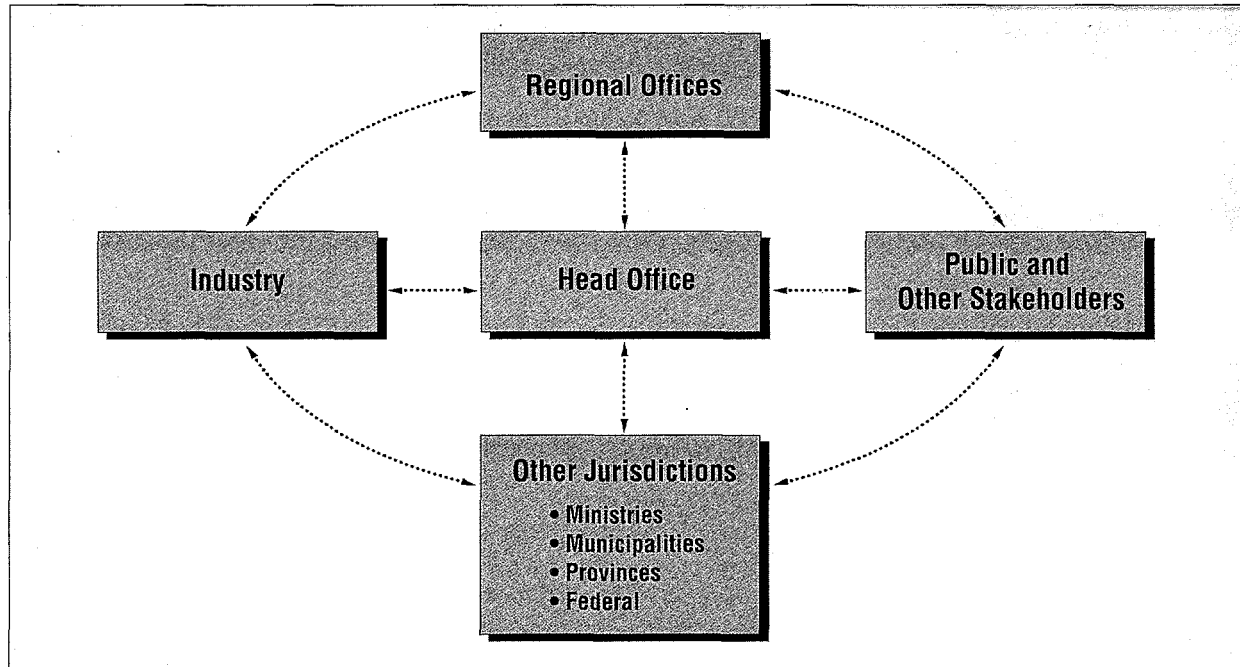
** pH units are the negative log of the hydrogen ion concentration.

Source: Ministry of Environment, Lands and Parks: Special Waste Legislation

Exhibit 2.5

Participation in the Special Waste Consultative Process

This flow chart shows the pattern of interactions between the ministry's head office, its regional offices and the other participants in the consultation process.



Source: Developed based on information from the Ministry of Environment, Lands and Parks

the U.S. Environmental Protection Agency.

While most of the evidence we gathered about the ministry's standard-setting activities was adequate, we did not find the ministry's management of scientific information to be documented well enough to show the appropriateness of the standards to the specific needs of British Columbia. The ministry attributes the lack of documentation to staffing constraints and the priority it gives to the prompt implementation of the Special Waste Regulation.

We believe that the ministry should document its evaluation of scientific data more thoroughly. This would allow it to show that it is carrying out its regulatory responsibilities adequately, and would enable ministry staff to better explain to the stakeholders the basis on which the standards are set.

Recommendation 1: We recommend that the ministry review its standard-setting process with a view to improving its documentation of scientific information.





Implementing the Regulatory Process

To implement the regulatory process successfully, the ministry should have a strategic plan that communicates priorities to staff so they can develop corresponding goals in their annual business plans and individual work plans. As well, the strategic plan should explain the basic principles of the program that govern the way decisions are made and how activities are carried out. The planning process should ensure that the ministry's efforts are coordinated with those of other ministries and jurisdictions that play a role in the regulation of special waste.

Conclusion

Overall, the ministry's planning process has provided management direction to special waste staff. The ministry has established clear program direction in its strategic plans, and has included the consideration of hazard in its planning process, and set out program goals. It has communicated this information to staff through training and the day-to-day dealings between management and staff.

Although the ministry's central planning process sets province-wide levels of activity for special waste, we noted that regions allocate their staff according to regional environmental priorities. As a result, activity levels set out in the special waste program plan are not always consistent with different regional priorities. We found that

the ministry coordinates its efforts with other ministries (such as the Ministry of Forests and Ministry of Health), municipal governments, and other jurisdictions.

Findings

Planning

The ministry's overall focus for regulating waste is expanding from that of just controlling the management of waste at the "end of the pipe". The ministry has established the Toxics Reduction Branch to promote the reduction of toxic waste by industry and the public (see Ministry descriptions following this report). It is also encouraging the handlers of special waste to use state-of-the-art techniques ("Best Available Control Technology") where practicable, to eliminate or minimize the amount of waste discharged into the environment. With initiatives such as these and, in cooperation with other jurisdictions, the ministry plans to reduce the rate at which special wastes are generated by 50%, reduce quantities of stored toxic wastes (such as PCBs), and ensure that safe disposal and treatment are available for all hazardous wastes by the year 2000.

Legislation

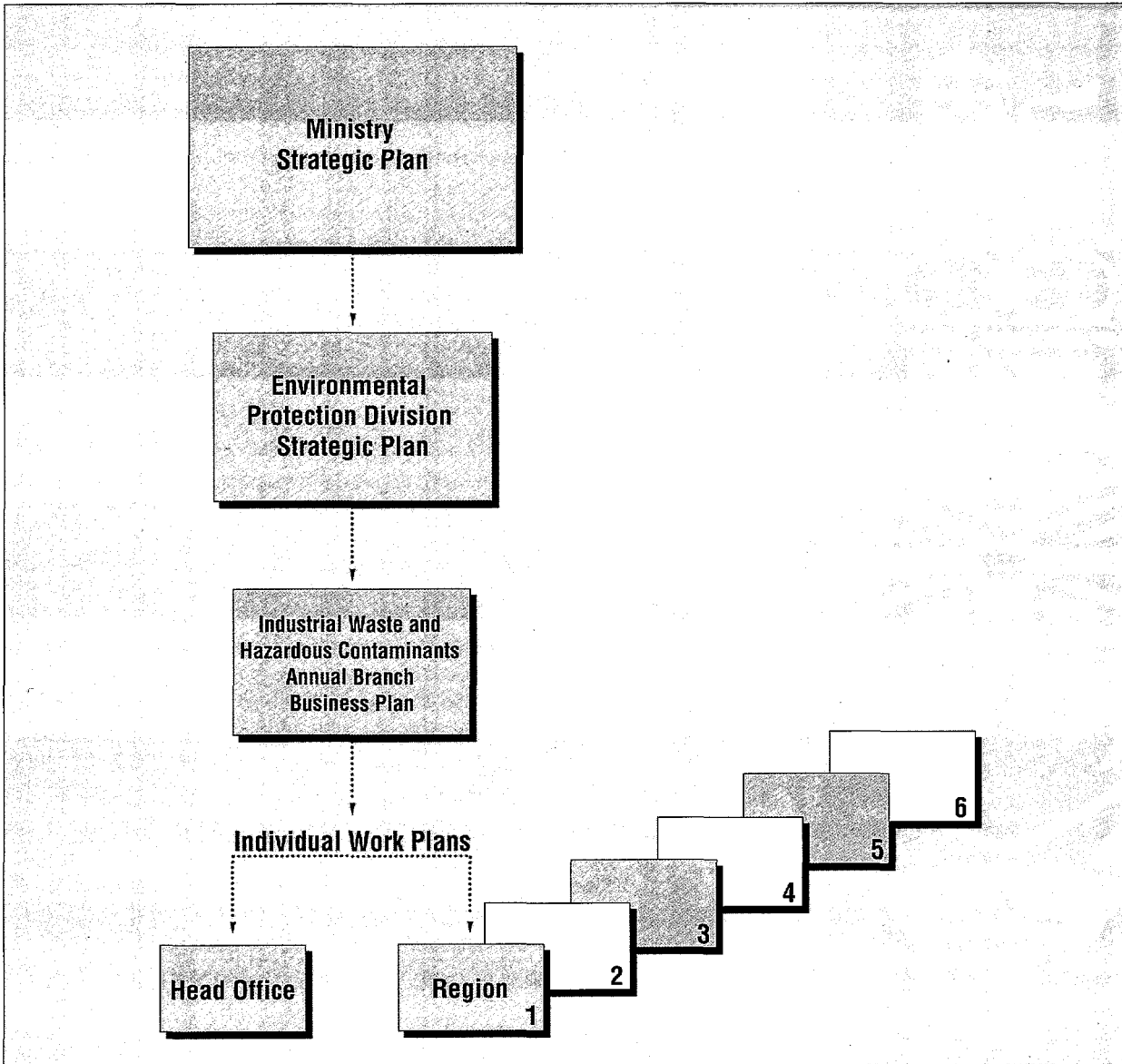
Management direction flows from the *Waste Management Act*, which provides the ministry with the authority to regulate special waste. The more detailed *Special Waste Regulation* defines special waste and sets out procedures for



Exhibit 2.6

The Strategic Planning Process

Strategies for achieving ministry-wide objectives, such as protecting human health and the environment, are developed and communicated to staff involved with special waste activities



Source: Developed based on information from the Ministry of Environment, Lands and Parks

managing that waste. The ministry generally regulates industry's management of special waste, although legislation gives the ministry the authority to manage

special waste directly (by, for example, operating waste disposal facilities).



Staff and industry working with the Regulation are the major sources of potential change to the Regulation. When significant proposed changes are accumulated, the ministry drafts the changes and circulates them for comment within the ministry and to industry, stakeholders, and other jurisdictions such as the Ministry of Health and the Ministry of Forests. In the past, the ministry has held regional information sessions for staff and stakeholders when significant changes to the Regulation have been made. We believe this consultative process promotes understanding and acceptance of the regulatory process among both staff and stakeholders.

Responsibility for Planning

Responsibility for the planning of the special waste program resides with the Environmental Protection Division of the ministry. The division has established a strategic planning process (Exhibit 2.6) that flows from the ministry's overall environmental strategic plan.

The division's strategic plan for 1992-1997 articulates core strategies such as pollution prevention and improved service delivery through consultation, evaluation, teamwork, and balanced decisions. The plan also clearly describes the objectives of the special waste program. The overall objective, for example, is the protection of human health and the environment and is based on the following strategies:

- minimizing the generation of special waste,

- regulating facilities that treat, store, or dispose of special waste, and
- fostering public awareness of the regulatory process.

These strategies are incorporated into the annual business plan of the Industrial Waste and Hazardous Contaminants Branch, which is responsible for the special waste program (Exhibit 2.7). In turn, this business plan is used to develop individual work plans for headquarters and regional staff.

Implementation of the Plans

We visited regional offices where permits are issued and compliance with the Regulation is monitored. Most regional staff involved in special waste carry out other activities such as emergency spill response, and their work plans include expectations for all their responsibilities. We found that the special waste activities identified in the work plans we reviewed reflect the ministry's strategic planning priorities, and those priorities are communicated to staff through the plans. However, because regional staff have multiple responsibilities, staff allocation priorities are set regionally, based on the degree of hazard each situation presents. Special waste activities may therefore not always be implemented according to the special waste business plan. When they cannot carry out all the planned special waste activities, regions inform senior management in the ministry.

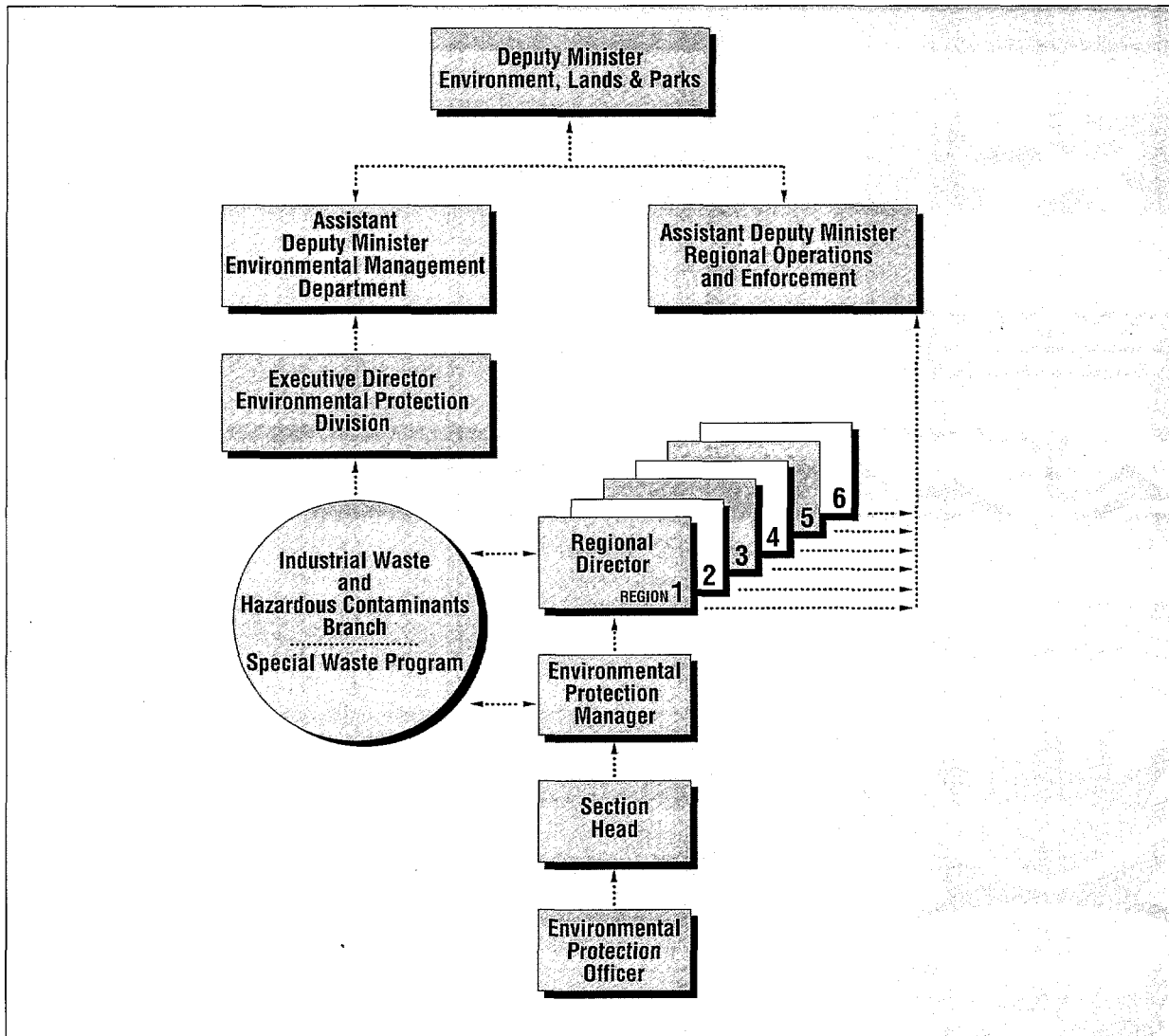
In its activities, the ministry gives priority to those situations



Exhibit 2.7

Special Waste Organization Chart

The location of the special waste program in the ministry and the reporting relationships between the staff responsible for special waste activities in the regions and at headquarters



Source: Developed based on information from the Ministry of Environment, Lands and Parks

where there is the greatest potential for special waste being discharged into the environment. Staff have been given training sessions on risk assessment to enhance their skills in this respect.

Studies provide management with information on the issues to consider when planning program direction. A number of planning initiatives are under way or have recently been completed in the ministry. For example, one project

has provided the ministry with a detailed estimate of the types and amounts of special waste existing in British Columbia.

In addition to sponsoring specific projects and initiatives, the ministry coordinates its planning activities with other jurisdictions. In writing the Regulation, for example, the ministry incorporated Environment Canada's storage requirements for PCBs—to date the only toxic substance for which Environment Canada has specified storage requirements. Now it is focusing on getting industries that generate PCB waste to comply with the Regulation. The ministry also coordinates its development of policies, goals, and practices with that of other provincial ministries, through inter ministry committees.

Communicating Program Direction to Staff

Communicating Direction and Priorities

The ministry has documented and distributed to its staff long-term objectives and strategic and operating plans for environmental protection. The Environmental Protection Corporate Committee (the Committee), made up of the Regional Environmental Protection Managers, head office program directors and managers, and the executive director, has provided a forum for discussing these plans, building consensus, and communicating with directors and managers across the province. The Regional Environmental Protection Managers bring this information to the regions where it is used to set priorities for carrying out regulatory activities and

developing individual work plans in the regions.

The Committee also provides a forum in which to negotiate work loads such as the number of permits to be issued, and to deal with issues such as conflicting priorities and staffing needs. Once a year the Committee discusses the strategic planning process. Now that the ministry is at the end of the first year of its five-year strategic plan, it intends to evaluate the process by comparing the plan to what was actually accomplished.

Special waste issues often draw a high public profile. It is important that staff be made aware of these issues so that they can express an informed and consistent ministry position to stakeholders and the public. We found that, although head office staff and the regional public relations staff do a reasonably good job of communicating current issues, communication overall could be more timely and complete. Through the Corporate Committee, the ministry has been made aware of this concern and has proposed actions to target audiences and communicate important issues to staff more quickly.

Communicating Individual Expectations

On-the-job training by supervisors is relied on to orient new staff to the special waste program. During our audit, some new staff in the regions told us they did not receive an adequate orientation to their specific jobs. An orientation package was not in use at the time we visited the



regions. We were told that one was introduced to head office staff in September 1992 and has since been introduced to the regions.

Recommendation 2: We recommend that the ministry structure job -specific orientation for staff working directly with the Regulation.

The ministry relies on job descriptions and annual work plans to communicate to staff its expectations for individual performance. Many staff also have job descriptions and individual work plans that specify activity

levels and goals for some of the major tasks they have to perform.

However, we found confusion among ministry staff as to whether the "deliverables" expected of them each year are general guidelines or performance targets for individual appraisals.

Recommendation 3: We recommend that the ministry clarify its expectations about the deliverables set in the work plans.





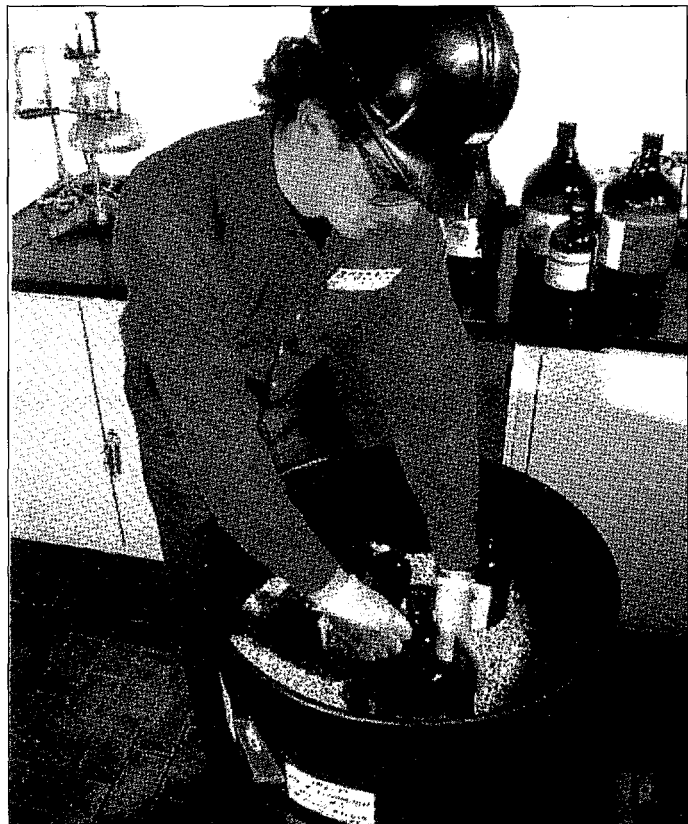
Controlling the Management of Special Waste

The Special Waste Regulation is designed to give the ministry "cradle-to-grave" control over special waste in the province.

The ministry takes steps to inform stakeholders of the Regulation and consults with those affected by the Regulation to promote acceptance and compliance with it. We expected the ministry to evaluate how well the public, industry, interest groups, and others accept special waste regulatory activities, and to assess the resulting impact on compliance and ministry operations.

The ministry controls what is done with hazardous waste in British Columbia by making sure the Regulation is complied with at key points over the life-cycle of the waste. This means, for example, registering the waste when it is created, so that it is identified and can be tracked; requiring that the ministry be notified each time waste is moved; and inspecting facilities that store special waste to verify that the standards of the Regulation are met.

We reviewed the ministry's authorization and monitoring activities to see if they followed ministry policies and procedures, and the Regulation. We looked for the regulatory activities to be managed in a way that achieves program goals. We also looked for the ministry to be identifying and acting on opportunities to improve the economy and efficiency of its authorization and monitoring processes.



Carefully packing a barrel with bottles of hazardous waste

Courtesy of Landfill Environmental Services

Conclusion

The ministry clearly communicates the Special Waste Regulation to those that deal with hazardous waste in British Columbia. The ministry's consultation process promotes and assesses acceptance of the Regulation itself and of amendment initiatives. We concluded, however, that the ministry could be more proactive in evaluating stakeholder acceptance of specific regulatory operations such as the assessment of applications for special waste permits.



The ministry's regulatory activities are consistent with legislation and program objectives. The activities of ministry staff to process permits and approvals follow the Regulation and ministry procedures. Generally, staff carry out the full range of monitoring activities consistent with program priorities. In one region, however, annual inspections of passive storage facilities were not carried out according to the workplans. We found that, as it carries out its activities in the regions, the ministry identifies and acts on opportunities to improve the economy and efficiency of its authorization and monitoring operations.

Background

A major aspect of the regulatory process is gaining stakeholder acceptance of the process itself. If those individuals and companies being regulated do not believe the process is fair, gaining their cooperation in complying with the regulations can be difficult. A consultative approach to gather and consider stakeholder comments on draft regulations and subsequent amendments has several advantages. It broadens the perspective obtained; it ensures clear communication of the Regulation and how it is applied, adding to the stakeholders' perception that it is fair; and it allows those being regulated and the public being affected to become more informed and more likely to accept the process and its outcome.

The ministry's special waste operations regulate the generation,

transport, storage, treatment, and disposal of special waste. At head office, staff develop legislation, policy, and procedures and provide the research capability.

Engineering staff provide technical expertise and support to the regions. Head office staff also look after the licensing of special waste transporters and the management of data on the movement of hazardous waste in the province.

The regional offices carry out most of the direct regulatory operations by issuing special waste authorizations in the form of permits (for more than 15 months) and approvals (for less than 15 months), and by monitoring compliance with these authorizations and the Regulation. When a permit or approval application is received by the regional office, an Environmental Protection Officer, with the appropriate scientific and engineering background, assesses it for completeness, instructs the applicant about any additional requirements, and does a site inspection. The officer assesses other pertinent information such as environmental studies, engineering proposals, requested comments from other agencies, and objections to the permit. Some applications may require the ministry to become involved in public information meetings.

Once the authorization has been issued, the ministry monitors the permittee to ensure the conditions of the permit are complied with. This includes reviewing the permittee's inspection reports, monitoring data



and any independent audit reports required by the permit, and making regular site inspections. If the permittee is found to be in non-compliance with the permit, the ministry has a number of options available for restoring compliance, ranging from resolving technical problems and implementing action plans to issuing pollution abatement orders and fines.

Since the Regulation is relatively new, staff responsible for regulatory activities identify industries producing special waste, inform them about the Regulation, and provide them with assistance to comply. The ministry works with other jurisdictions (municipalities and regional districts, for example) to identify and provide assistance to industries such as dry cleaners, photo finishers, and auto body shops.

Findings

Promoting Acceptance

The ministry believes that good communication with its stakeholders is important, and it has developed communication plans to achieve this. The requirements of the Regulation are laid out in the Regulation and further clarified in the Special Waste Legislation Guide. When the need arises, ministry staff assist industry and stakeholders in understanding the Regulation. Industry representatives we interviewed appreciated this service and commented positively on the way in which ministry staff administer the Regulation.

Although the ministry is sensitive to stakeholder reactions on specific issues, we found that it

does not have a comprehensive approach to assessing overall acceptance of the special waste regulatory process or to evaluating the relationship between that acceptance and the program's success. The ministry is in regular contact with those being regulated, but it does not maintain ongoing consultation with the public directly affected by regulatory activities. The ministry deals with acceptance when it becomes an issue in specific instances, as when there is a public outcry over a permit application, but at times, the ministry had to react quickly to public concern. We found that the ministry is not always well prepared to deal with such concerns.

Recommendation 4: We recommend that a proactive approach to promoting public acceptance of the special waste regulatory process be used to improve the efficiency of regulatory operations.

Policies and Procedures

For guidance on regulatory activities, staff look to the Regulation, ministry policies, and the procedure manual. The ministry has also produced a Special Waste Legislation Guide which aids both the staff and the stakeholders in applying the Regulation. Some staff considered the Regulation to be sufficiently detailed to provide the necessary guidance and did not refer to other policies and the procedures; other staff said they look elsewhere. While we did not find any inconsistency overall between various policies, procedures, and the Regulation, we did note that



some of the material in the procedure manual was out of date.

Recommendation 5: If the ministry plans to continue using the procedure manual, we recommend that all sections of the procedure manual that predate the Regulation be updated to ensure consistency with the Regulation.

Permit and Approval Authorizations

Communicating policies, procedures, and information is an important part of the ministry's process for ensuring that authorizations are carried out according to the Regulation. Head office staff communicate new items and amendments to regional staff through the Regional Waste Managers.

Although regular communication exists between head office and the regions, we found that information about the practical application of the Regulation is shared only on an ad hoc basis.

Recommendation 6: We recommend that the ministry encourage the regions to share information among themselves about the practical application of the Regulation.

Determining if a substance is a special waste can often be complex. Staff need to be adequately trained to make recommendations to permit holders. They also need to be knowledgeable in up-to-date techniques for handling special waste, and able to interpret the Regulation appropriately and equitably. We found that the ministry has processes to make sure that staff who are required to make these assessments have

appropriate backgrounds, usually in the fields of engineering and environmental sciences. Generally, industry stakeholders that we visited expressed satisfaction with the level of knowledge of regional staff.

In regions where there is a waiting list to process permits and authorizations, an initial assessment of an application is made immediately and priorities are set according to the perceived hazard. All the perceived hazards being equal, applications are processed on a first-come, first-served basis.

From our review of the permit and authorization files, we found that regular checks are done for every application. As well, the ministry circulates applications to the local health unit, the regional district or municipality, Environment Canada, and other pertinent stakeholders. It also ensures that the applicants inform those who may be affected by the terms of the authorization. These activities provide the ministry with information that it uses to assess the application.

We found that each permit file we reviewed included a technical assessment of the application, in addition to correspondence with objectors and other interested parties. The files also included site investigation reports and copies of the approved permits or authorizations. Each file had been reviewed and approved by the unit head and then by the Regional Waste Manager, who has the final responsibility for granting or denying the authorization.



Monitoring Compliance

The special waste regulatory process relies to a great extent on self-reporting by the generators and handlers of special waste. The ministry has taken steps to communicate clearly to industry what it is regulating and what is required of industry to comply with the Regulation. To gain industry cooperation, the ministry must first ensure that industry understands and accepts the need for regulation. This it has done through consultative and educational activities. Monitoring also plays a key role in ensuring industry compliance with the Regulation.

The ministry monitors compliance with the Regulation at three different stages: during the authorization process, after a site has been approved and when it surveys industries that are likely to deal with hazardous materials but are not part of the regulatory system.

During the authorization process, the ministry uses on-site inspections and substance analyses to determine if the facility is in compliance with the Regulation. If it is, a permit is issued. If it is not, modifications must be made or the ministry will require the activities to be stopped until compliance is reached.

Once a site has been authorized, the ministry carries out monitoring activities such as reviewing reports and tests prepared by the permit holder and assessing independent audit reports of compliance with the permit.

The ministry also carries out regular on-site inspections of the permitted facilities. Although the Regulation does not prescribe the nature and frequency of these monitoring activities, individual work plans do. Levels of inspection are geared to a range of situations, from those that have a potential for high human health and environmental impact to those that have little. In all of the regions we visited, we found that potential high impact situations were being monitored regularly. In one region, however, inspections of permitted passive storage facilities were not being carried out to the levels set out in the work plans.

In two of the three regions we visited, the ministry was canvassing industries such as photo finishers, dry cleaners, and auto repair shops to determine if they were in compliance with the Regulation. In the region where this was not being done, a letter had been sent to all dry cleaners informing them of the Regulation. In addition, all the regions we visited were following-up on concerns raised by local municipalities involving possible non-compliance with special waste disposal requirements in their areas.

In their handling of non-compliance with the Regulation, we noted that different regions take different approaches. In some cases the ministry is actively involved in helping the party to resolve the situation, in others it takes a more legalistic approach by issuing a pollution abatement order. We talked to permit holders



with operations in more than one region who expressed some concerns about what they perceived to be an inconsistent application of the Regulation. The ministry is aware of these concerns.

In the regions we visited, we also found that staff identify aspects of their operations which could be modified to improve economy and efficiency. In some cases, initiatives are taken at the

regional level to improve permit processing and monitoring mechanisms. Summer students, for example, are hired to carry out supervised routine inspections. In other cases, regional staff initiate consultations with headquarters to streamline program procedures and so provide a more timely service to those individuals and companies being regulated.





Accounting for Regulatory Compliance and Results

To measure the economy and efficiency of its regulatory activities, the ministry needs to develop indicators of expected performance, gather information on its activity levels and compare it to expectations. From these assessments, the ministry should generate management information to allow for systematic program improvement.

The ministry also needs to measure the degree to which the Special Waste Regulation is complied with province-wide, and to evaluate the success of the regulatory process overall in minimizing the effect of special waste on human health and the environment in British Columbia.

As well, the ministry should have a process for determining whether the Regulation is being applied consistently across the province, since the Regulation allows for some discretion in its application.

Information about these aspects of performance—including the achievement of program goals—should be accumulated, summarized, and reported to the Legislative Assembly.

Conclusion

The ministry does not yet have a process in place to monitor and evaluate systematically the economy and efficiency of its activities. However, through its strategic planning process, it has begun to develop indicators of program performance and to gather

operational information that is communicated to management.

At the time of our audit, the ministry was not able to measure the extent of regulatory compliance province-wide because it did not have data on all the special waste in British Columbia. It was, nevertheless, completing an inventory of hazardous materials in the province so that it soon should know how much of the total amount of special waste in British Columbia it deals with.

Given the recency of the regulatory process, the ministry has not yet evaluated the overall achievement of its program goals, nor has it developed a process for determining whether the Regulation is being applied consistently across all regions. The ministry relies to some extent on stakeholder feedback, complaints, and appeals to gauge the latter. Consequently, to date, it has reported to the Legislative Assembly on its activities, but not on the achievement of program goals.

Findings

Evaluating the Regulatory Process

Economy and Efficiency

The ministry has developed indicators of expected performance which are communicated mainly through the strategic planning process. Permit applications processed and site inspections completed are examples of indicators being used to measure activity levels. A systematic



process of reporting performance to management is being implemented as part of the strategic and annual performance planning process. At the time of our audit, the ministry had not yet completed an annual cycle using the performance plans.

We found that the initial performance indicators that were developed are not necessarily linked to measures of success in meeting the regulatory goals of compliance and protection. The ministry recognizes this and will refine the indicators to generate more meaningful information as the strategic planning process evolves.

Achievement of Goals

A key to measuring the success of the regulatory process in protecting health and the environment is industry compliance with the Special Waste Regulation. To achieve this, the ministry needs to do a complete inventory of hazardous waste in British Columbia and see what percentage of the waste is being handled in compliance with the Regulation. At the time of our audit, the ministry was establishing methods for carrying out a provincial inventory of special waste by type of industry. Without a full inventory, the ministry can only measure compliance with the Regulation for materials that have been identified through the authorization process or are otherwise monitored by the ministry; it cannot know how successful the regulatory process is in promoting overall industry compliance with the Regulation. Without knowing the extent of industry compliance provincially,

the ministry cannot know the degree to which the regulatory process protects public health and the environment in British Columbia.

Recommendation 7: We recommend that the ministry evaluate the special waste program to determine how well the regulatory process is achieving its goals.

Consistency

The Special Waste Regulation calls for professional judgment in its application. We found that, within each region, regulatory staff consulted with one another to maintain a consistent approach within the region. On the other hand, we found some differences between regions in their approach to carrying out regulatory activities. As well, a number of people in the regulated community expressed to us their perception that the Regulation was not always applied consistently between industries or regions.

The ministry is aware of these concerns and it relies on complaints and appeals from stakeholders to be sure that the Regulation is applied consistently. However, we believe that complaints and appeals do not provide a sufficient indication of whether the Regulation is applied in a consistent manner between regions. Not every stakeholder knows what approaches the ministry uses in different regions or with other stakeholders.

We believe that the ministry should articulate decision-making guidelines to staff involved in special waste activities across the



regions. A set of principles, or a framework for decision-making with checks and balances, could allow the ministry to know that the Regulation is applied consistently across the province. Such a process would also enable the ministry to demonstrate to the regulated community that it is applying the Regulation in a manner that is consistent with regulatory objectives in all its regions.

Recommendation 8: We recommend that the ministry develop a process for determining whether the Regulation is being applied consistently in all regions.

Reporting Regulatory Results

The ministry's annual report to the Legislative Assembly contains little information on the results of the special waste regulatory process in British Columbia. A short list of activities for the year—such as the number of generator registrations made and transportation licenses issued—is typical.

Another problem is the lack of timeliness of the reporting. At the time of our audit, the most recent ministry annual report was for the 1991 fiscal year. This delay in reporting, we believe, does not allow the Legislative Assembly to make timely decisions about the program. The ministry has published the State of the Environment Report for British Columbia that contains some information on special waste and describes provincial targets for waste disposal. The ministry sees this as a first step towards reporting what is happening in the environment as a result of its activities.

Recommendation 9: We recommend that the ministry report annually and on a timely basis to the Legislative Assembly on the extent of regulatory compliance and protection of the public and the environment with respect to special waste.





Ministry Response

The Ministry of Environment, Lands and Parks recognizes the value and appreciates the work of the Office of the Auditor General in the Value-for-Money Audit of the Regulatory Process for Special Waste. The ministry administers the Special Waste Regulations as one component of its responsibility to protect the environment.

We interpret the Auditor-General's report to be positive. We understand the Auditor-General has found that the taxpayer is receiving good value for the resources used by the Ministry to regulate special waste.

In general terms the ministry agrees with the key findings and the recommendations of the Auditor General's report. However, it is important to recognize that it is easy to recommend areas where more work might be done in the form of studies, record keeping, evaluation and consultation. Indeed, the ministry could and does produce a much larger list of activities for enhancement each year as part of the budget process. The reality is, however, that activities and consequential expenditure of public funds must be optimized to achieve the greatest environmental protection benefit from the expenditure of those funds. In this context the ministry will consider the recommendations of the Auditor General as part of its budget and priority setting process.

Specific comments on the recommendations in Auditor General's report are as follows:

Recommendation 1: Documentation of Scientific Information

The Ministry agrees with the Auditor General about the desirability of improved documentation of scientific (and other) information in

support of the standards development process.

The ministry is currently involved in a five year program to upgrade and/or establish criteria, regulations and guidelines through a process which includes stakeholder and public involvement. The Ministry has already implemented improvements in this process which will result in better documentation of the information supporting regulatory standards in the province.

Recommendation 2: Job Specific Orientation for Staff

While the ministry has provided staff with general job orientation and specific seminars and training on the application of the Special Waste Regulation, it agrees that a deliberate and formal overall program for the orientation of new staff working with the Special Waste Regulation would be beneficial. Efforts will continue to improve the staff training program in this respect.

Recommendation 3: Deliverables in Employee Workplans

Deliverables identified in employee workplans are intended to be used as performance targets for individual appraisals. The ministry believes that there is less confusion among staff about the expectation for specified deliverables than the Auditor General may have perceived. However, managers will make greater efforts to ensure staff are aware of the ministry's expectations for performance targets.

Recommendation 4: Public Acceptance of the Special Waste Regulatory Process

The ministry has already improved its overall approach to the development of criteria, regulations,



legislation, guidelines, through greater public and stakeholder consultation. It will continue to enhance these efforts in the future to the extent that resource allocations and expenditure priorities allow.

Recommendation 5: Updating Procedure Manual

The ministry has already commenced a review to update its procedure manual. It also has in place, a compendium of all criteria, regulations, guidelines, legislation, etc. in each regional office and in its head office to assist in providing staff with current information and requirements for decision making purposes.

Recommendation 6: Regions to Share Information About Application of the Regulation

The ministry concurs with this recommendation and will continue to encourage dialogue between regions and feedback to head office on the application of the Regulation. Such dialogue occurs at various levels in the ministry through managerial and working levels.

Recommendation 7: Evaluation of Achievement of Goals

The ministry concurs with the recommendation. Various aspects of the ministry activities receive internal evaluation on the basis of perceived need and available resources. It is expected that the special waste program will be evaluated in the future.

Recommendation 8: Consistent Application of Regulation in Regions

The ministry agrees that consistent decision making across the province is important to stability and confidence in the special waste program and the administration of the regulation. The ministry does not believe that consistency of application means that all regions must operate in an identical manner. Regions must administer the regulation in accordance with the set standards but also applying the professional judgment called for in many aspects of the regulation.

The Ministry will consider this recommendation is setting its priorities for internal program evaluation.

Recommendation 9: Reporting to the Legislative Assembly

The ministry will continue to report on special waste matters to the Legislative Assembly as part of its overall ministry report. The ministry believes that other formats for reporting such as the recently published state of the Environment Report may offer a better mechanism for reporting. In any case efforts will continue to improve on the information reported to the Legislative Assembly.

Ministry Program Descriptions

The Contaminated Sites Program

Introduction

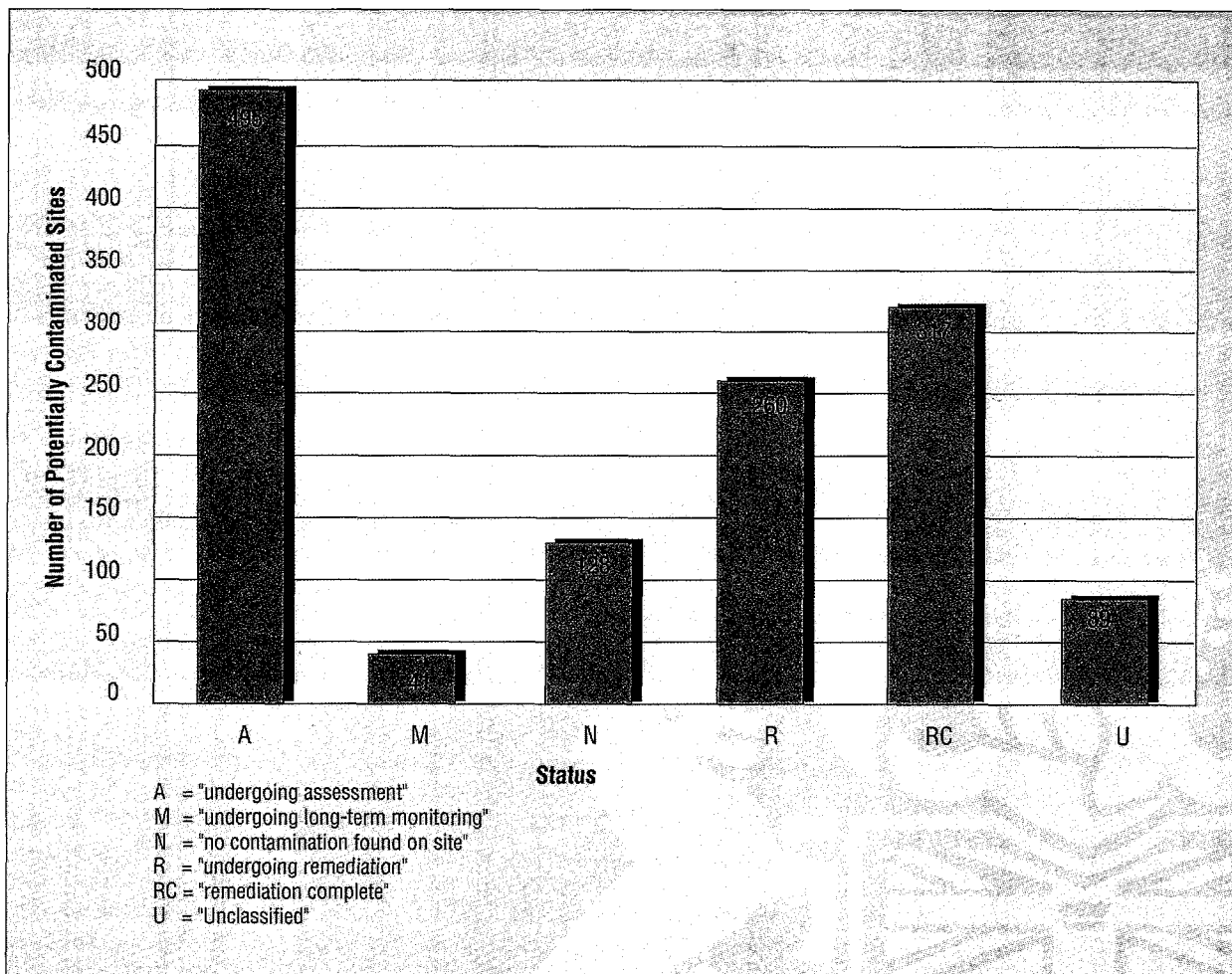
The historical contamination of land, ground water, and sediments with industrial waste has created significant pollution problems in British Columbia. As of June 1993, there were over 1300 cases of potentially contaminated sites that are either being

investigated or cleaned up or that have been cleaned up to the satisfaction of the ministry.

Some of these sites contain special wastes that are particularly hazardous to human health and the environment. For example, people may be exposed to contaminants through the ingestion of soil or contaminated ground water. Studies from the United States continue to reveal increases in cancer and other unacceptable health effects in those living near high risk contaminated sites.

Status of Contaminated Sites in British Columbia (as of June 1993)

There are 1330 known contaminated sites in British Columbia



Source: Ministry of Environment, Lands and Parks



Adverse environmental impacts may also occur. The off-site migration of contaminants in surface runoff and ground water are a particular concern. These exposure pathways, for example, can lead to contamination of lakes and rivers, which can then contaminate fish, which may ultimately be eaten by animals and humans. In this way an entire food chain may be affected.

The impacts that occur from uncontrolled contaminated sites may vary according to the type of contaminants, their concentrations, and the environmental media in which they occur. About 70% of the sites on record in British Columbia are believed to be contaminated with petroleum and other types of hydrocarbons. Another 12% contain mainly heavy metals; another 4% contain pesticides such as wood treatment chemicals.

The existence of contaminated sites in British Columbia therefore has important repercussions for British Columbians. The cost of cleanup is a concern to developers, land owners, and those responsible for creating the contamination in the first place. About 90% of the potential sites are owned privately, and the remaining 10% are under public control through Crown corporations or other public bodies.

In response, the Ministry of Environment, Lands and Parks has established a new contaminated sites program to identify problem sites and to make sure they are cleaned up properly.

History

In the mid-1980s, several former industrial sites were being decommissioned for planned redevelopment. Contamination had to be addressed and appropriate standards for clean-up were needed. As well, procedures were needed for investigating sites and managing contaminated soil and ground water. Standards from other jurisdictions were used initially, but the need was recognized for requirements appropriate to British Columbia conditions.

Expo 86 was built on the north shore of False Creek in Vancouver in early 1986. Industries operating on the site since the late 1800s had contaminated the site. Contamination did not greatly interfere with the short-term Expo use, but clean-up was required for the planned long-term redevelopment. As a condition of sale of the property, the Province committed to setting clean-up standards for the site and to remediating it to meet the standards. The standards for the Expo site clean-up were completed in November 1989. The procedures of investigation and remedial planning that were developed for the site have provided valuable information and served as a basis for developing a program for the province.

The government recognized the limitations of its legislation at the time. In concert with a national program of the Canadian Council of Ministers of the Environment (CCME) in 1988, development of "polluter pay" legislation began.

Legislation and Regulations

Contaminated sites are currently controlled under the Waste Management Act. This statute was recently amended under Bill 26, the Waste Management Amendment Act, which deals solely with contaminated sites. Bill 26 has now passed third reading, and will come into effect when the appropriate regulations have been drafted, reviewed with stakeholders, and approved by Cabinet. It is anticipated that the program will be fully operational in 1994.

Bill 26 lays out a comprehensive system for managing contaminated sites in British Columbia by implementing the "polluter pays" principle. It also addresses a number of other issues. A few of the key sections include:

- the basic characteristics of a site, as well as milestones in the process of remediation (site clean-up, to the satisfaction of the ministry);
- authority to collect fees to offset the costs of some regulatory functions;



- provision of dispute resolution panels to assist in resolving responsibility and liability issues;
- delegation of some regulatory functions to local governments where appropriate and mutually agreeable;
- a mechanism for site remediation with little involvement by regulators; and
- an accessible registry of provincial contaminated sites information.

Activities

Program development and site remediation broadly describe two areas of the Contaminated Sites Program. Program development takes place largely in the Contaminated Sites and Toxicology Section in Victoria and site remediation is regulated primarily in regional offices.

Program activities include, for example:

- review and development of remediation criteria;
- development of legislation and regulations;
- development of administrative and technical policies, procedures, and guidance documentation;
- participation in national projects (under CCME) to develop consistent standards and requirements;
- administration of federal-provincial agreements such as "orphan site" clean-up and technology development;
- staff development and training; and
- supply of information to the public and interested parties.

Site remediation activities in the regions involve, for example:

- technical review of site investigations and remedial plans;
- remediation (often through contracts) of contaminated sites for which the government is responsible;

- authorizations (for example, through permits and approvals) for waste management at contaminated sites under the Waste Management Act; and
- orders to require investigation and remediation at contaminated sites.

Staff and Resources

Environmental Protection Program staff in both Victoria and the regions are involved in contaminated sites management. In Victoria, six full-time scientists and engineers and two part-time students in the Contaminated Sites Unit work closely with four scientists in the Toxicology Unit. The latter, along with one manager, allocate their time between contaminated sites management, which primarily involves risk assessment and other activities. Eight to nine staff are dedicated to contaminated sites issues. In regional offices, the equivalent of four to five staff are assigned to contaminated sites issues and their contaminated sites work is carried out along with other environmental protection tasks. The division expects that additional staff will be required to fully implement the program.

Priorities

Cooperation between property owners, municipalities, and the ministry has resulted in identification and clean-up of numerous sites. Technical and regulatory review, together with authorizations under the Waste Management Act, have been a priority in overall allocation of staff time. Developing legislation, regulations, standards, policies, and procedures has been a priority of program development.

The Toxics Reduction Program

Introduction

In its 1992/93 budget, the British Columbia government provided funding to help solve the problem of toxic substances in the provincial waste stream. As a result, a Waste Reduction Commissioner was appointed and the Ministry of Environment, Lands and Parks was directed to establish a Toxics Reduction Program to focus on the management and reduction of harmful toxic wastes.

Purpose

Toxic chemicals such as PCBs and pesticides are found throughout British Columbia in large quantities. Each of us produces hazardous waste (special waste) every time we use the services of a dry cleaner, or film processing lab, or when we change our oil or discard a battery. Toxic pollutants from a wide variety of large and small sources contaminate British Columbia. The ministry has taken various measures to solve this problem, but a comprehensive plan is still needed.

The best technological solution to the problem of hazardous waste is to design and implement production processes that prevent this form of pollution from the outset. Source reduction, waste exchange, and recycling are the preferred options. However, it is also recognized that generating certain special wastes is unavoidable, hence British Columbia must also develop a solution to both the special waste storage and disposal problems.

Priorities

The Toxics Reduction Program focuses ministry efforts in the area of toxics reduction, in conjunction with the efforts of other branches in the Environmental Protection Division. Specific toxic reduction goals for British Columbia are to:

- reduce by 50% the rate at which toxic wastes are generated by industry, business,

institutions, municipalities, and the public by the year 2000;

- reduce the quantity of toxic wastes held in storage (such as PCBs); and
- ensure that safe disposal and treatment are available for all hazardous wastes by the year 2000.

The main objective of the Toxics Reduction Program is to reduce use of toxic substances by industry, commercial enterprises, and the public. This will be achieved by implementing initiatives that promote substitution of less toxic materials for more toxic ones, development of advanced waste reduction technologies, and use of alternatives to discharge of waste into the environment. The Toxics Reduction Program also plans to inventory the toxic wastes now being generated or stored in British Columbia and to encourage the use of the best available control technologies to reduce the environmental threat of these wastes. For toxic wastes currently in storage, the program will explore long-term storage improvements to serve until satisfactory treatment or disposal capability becomes available.

Activities

During 1992/93, the Toxics Reduction Branch carried out the following activities:

- an initial province-wide estimate of the types and amounts of special waste existing in British Columbia;
- development of an options discussion paper for use by the Waste Reduction Commissioner to consult with the public and other stakeholders on managing household hazardous waste;
- maintenance of the household hazardous waste collection events held once every one or two months in eight communities in the province: Nanaimo, Victoria, Surrey, Nelson, Penticton, Kamloops, Prince George, and Smithers;



- development, in partnership with some local governments, of household hazardous waste educational material primarily to promote waste reduction/minimization; and
- maintenance of a provincial recycling hotline.

The Toxics Reduction Branch was provided six staff and \$1.4 million in the 1993 fiscal year.



Appendices

Contents

| | |
|---|----|
| A Value-for-Money Audits Completed to Date | 85 |
| B Office of the Auditor General: | |
| Audit Objectives and Methodology | 88 |



Appendix A

Value-for-Money Audits Completed to Date

1993/94: Report 1

Ministry of Environment, Lands
and Parks:

Habitat Protection Function

Regulatory Process for Special
Waste

1993 Annual Report

Ministry of Government
Services:

British Columbia Archives
and Records Service

Ministry of Energy, Mines and
Petroleum Resources:

Natural Gas Royalty Revenue:
Follow-up

Ministry of Attorney General:

Licensing and Control of
Public Gaming: Follow-up

1992 Annual Report

Ministry of the Attorney
General:

Family Maintenance
Enforcement Program

Ministry of Environment, Lands
and Parks:

Purchase of Environmental
Laboratory Services

Ministry of Social Services:

Programs for Independence

Residential Services

Managing Professional
Resources

Ministry of Forests:

Human Resource Needs and
Allocation

British Columbia Year of Music

Crown Societies

1991 Annual Report

Ministry of Forests:

Monitoring of Forest Roads

Monitoring of Timber
Harvesting

Monitoring of Major
Licensees' Silviculture
Activities

Ministry of Transportation and
Highways:

Highway Planning

Protecting Roads and Bridges

Monitoring of Maintenance
Contractors

Minor Capital Construction
and Rehabilitation Projects

The Industrial Incentive Fund:
An Audit of the Loans Process

1990 Annual Report

Ministry of Transportation and
Highways:

Road and Bridge Maintenance

Major Capital Projects

Development Approvals

Gravel Management



Buying Signs

Services, Facilities and
Attractions Signs

Annual Report

Privatization:

Monitoring Environmental
Laboratory Services

British Columbia Enterprise
Corporation Westwood Plateau
Property

Acquisition and Disposition of
Land

Accountability of Crown
Corporations to the Legislative
Assembly

The Lottery Fund: An Audit of
the Granting Process

Reporting the Results of
Privatization Transactions

1989 Annual Report

Privatization:

The Process

Early Initiatives

Highways

British Columbia Enterprise
Corporation Loans

Ministry of Health:

Hospitals

Medical Services Plan

Continuing Care

Public Health

Control of the Public Purse by
the Legislative Assembly

1988 Annual Report

Ministry of Education:

Funding

Special Education

Facilities

Curriculum

Ministry of Energy, Mines and
Petroleum Resources:

Organization Structure

Natural Gas Royalty Revenue

Petroleum Resources Division

Mineral Resources Division,
Engineering and Inspection
Branch

1987 Annual Report

Government Purchasing

Ministry of Attorney General:

Corrections Branch

Legal Services Branch

Management of Buildings and
Office Accommodation

Management of the Financial
Function

1986 Annual Report

Ministry of Lands, Parks and
Housing:

Crown Land Administration

Crown Land Special Account
Computerization

Social Housing

Parks and Outdoor Recreation

Financial Management and
Control

Passenger Vehicle Travel

**1985 Annual Report**

Ministry of Agriculture and
Food:

Strategic Direction and
Accountability

Financial Assistance
Extension

Financial Management and
Control

Ministry Annual Reports

1982 Annual Report

Review of Internal Audit in the
Government of British Columbia

Expenditure Review (Travel
Expenses)

1981 Annual Report

Ministry of Environment:

Waste Management Program

Financial Management and
Control

Ministry of Forests:

Financial Management and
Control

Ministry of Health:

Financial Management and
Control

1980 Annual Report

Ministry of Human Resources:

Income Assistance Program

Financial Management and
Control

Ministry of Education:

Financial Management and
Control

Ministry of Finance:

Financial Management and
Control

Ministry of Lands, Parks and
Housing:

Financial Management and
Control



Appendix B

Office of the Auditor General: Audit Objectives and Methodology

Audit work performed by the Office of the Auditor General falls into three broad categories:

- Financial statement auditing;
- Value-for-money auditing; and
- Compliance-with-authorities auditing.

Each of these categories has certain objectives that are expected to be achieved, and each employs a particular methodology to reach those objectives. The following is a brief outline of the objectives and methodology applied by the Office for value-for-money auditing.

Value-for-Money Auditing

Purpose of Value-for-Money Audits

Value-for-money audits look at how organizations have given attention to value for money—to economy, efficiency and effectiveness.

The concept of value-for-money auditing is based on two principles. The first is that public business should be conducted in a way that makes the best possible use of public funds. The second is that people who conduct public business should be held accountable for the prudent and effective management of the resources entrusted to them.

The Nature of Value-for-Money Audits

A value-for-money audit has been defined as:

... the independent, objective assessment of the fairness of management's representations on performance, or the assessment of management systems and practices, against criteria, reported to a governing body or others with similar responsibilities.

This definition recognizes that there are two primary forms of reporting used in value-for-money auditing. The first—referred to as attestation reporting—is the provision of audit opinions on reports that contain representations by management on matters of economy, efficiency and effectiveness.

The second—referred to as direct reporting—is the provision of more than just auditor's opinions. In the absence of representations by management on matters of economy, efficiency and effectiveness, auditors, to fulfill their mandates, gather essential information with respect to management's regard for value for money and include it in their own reports along with their opinions. In effect, the audit report becomes a partial substitute for information that might otherwise be provided by management on how they have discharged their essential value-for-money responsibilities.

The attestation reporting approach to value-for-money auditing has not been used yet in



British Columbia because the organizations we audit have not been providing comprehensive management representations on their value-for-money performance. Indeed, until recently, the management representations approach to value for money was not practicable. The need to account for the prudent use of taxpayers' money had not been recognized as a significant issue and, consequently, there was neither legislation nor established tradition that required public sector managers to report on a systematic basis as to whether they had spent taxpayers' money wisely. In addition, there was no generally accepted way of reporting on the value-for-money aspects of performance.

Recently, however, considerable effort has been devoted to developing acceptable frameworks to underlie management reports on value-for-money performance, and public sector organizations have begun to explore ways of reporting on value-for-money performance through management representations. We believe that management representations and attestation reporting are the preferred way of meeting accountability responsibilities and are actively encouraging the use of this model in the British Columbia public sector.

Presently, though, all of our value-for-money audits are conducted using the direct reporting model, therefore, the description that follows explains that model.

Our value-for-money audits are not designed to question government policies. Nor do they assess program effectiveness. The *Auditor General Act* directs the Auditor General to assess whether the programs implemented to achieve government policies are being administered economically and efficiently. Our value-for-money audits also evaluate whether members of the Legislative Assembly and the public are provided with appropriate accountability information about government programs.

When undertaking value-for-money audits, auditors can look either at results, to determine whether value for money is actually achieved, or at managements' processes, to determine whether those processes should ensure that value is received for money spent.

Neither approach alone can answer all the legitimate questions of legislators and the public, particularly if problems are found during the audit. If the auditor assesses results and finds value for money has not been achieved, the natural questions are "Why did this happen?" and "How can we prevent it from happening in future?" These are questions that can only be answered by looking at the process. On the other hand, if the auditor looks at the process and finds weaknesses, the question that arises is "Do these weaknesses result in less than best value being achieved?" This can only be answered by looking at results.



We try, therefore, to combine both approaches wherever we can. However, as acceptable results information and criteria are often not available, our value-for-money audit work frequently concentrates on managements' processes for achieving value for money.

We seek to provide fair, independent assessments of the quality of government administration. We conduct our audits in a way that enables us to provide positive assessments where they are warranted. Where we cannot provide such assessments, we report the reasons for our reservations. Throughout our audits, we look for opportunities to improve government administration.

Audit Selection

We select for audit either programs or functions administered by a specific ministry or public body, or cross-government programs or functions that apply to many government entities. There are a large number of such programs and functions throughout government. We examine the larger and more significant ones on a cyclical basis.

We believe that value-for-money audits conducted using the direct reporting approach should be undertaken on a five- to six-year cycle so that members of the Legislative Assembly and the public receive assessments of all significant government operations over a reasonable time period. Because of limited resources, we have not been able to achieve this schedule.

Our Audit Process

We carry out these audits in accordance with the value-for-money auditing standards established by the Canadian Institute of Chartered Accountants.

One of these standards requires that the "person or persons carrying out the examination possess the knowledge and competence necessary to fulfill the requirements of the particular audit." In order to meet this standard, we employ professionals with training and experience in a variety of fields. These professionals are engaged full-time in the conduct of value-for-money audits. In addition, we often supplement the knowledge and competence of our own staff by engaging one or more consultants, who have expertise in the subject of that particular audit, to be part of the audit team.

As value-for-money audits, like all audits, involve a comparison of actual performance against a standard of performance, the CICA prescribes standards as to the setting of appropriate performance standards or audit criteria. In establishing the criteria, we do not demand theoretical perfection from public sector managers. Rather, we seek to reflect what we believe to be the reasonable expectations of legislators and the public. The CICA standards also cover the nature and extent of evidence that should be obtained to support the content of the auditor's report, and, as well, address the reporting of the results of the audit.