

# **Environmental Best Management Practices for Urban and Rural Land Development in British Columbia**



June 2004

**The Ministry of Water, Land and Air Protection will be updating this document over time. We would really appreciate your comments and feedback to make this a more useful and user-friendly document. Please complete the questionnaire in Appendix 1-1**

**DRAFT**



**BRITISH  
COLUMBIA**

Ministry of Water, Land and Air Protection  
Ecosystem Standards and Planning  
Biodiversity Branch

## Acknowledgements

Many people provided ideas and comments in the development of this document. In particular, we would like to thank the following people:

### PROJECT TEAM:

Marlene Caskey, Bob Cox, Grant Bracher, Susan Latimer and Peter Law of the Ministry of Water, Land and Air Protection.

### WRITING AND EDITING:

Dave Polster, Polster Environmental Services and Judith Cullington, Judith Cullington & Associates.

### DESIGN:

Noreen Dennis, Dennis & Struthers Visual Communications Inc.

### DEVELOPMENT OF INITIAL VERSION:

David Reid, Harriet Rueggeberg and staff at Lanarc Consultants Ltd.. Many people reviewed and commented on this earlier draft, and their input is greatly appreciated.

### REVIEW AND COMMENTS ON JUNE 2004 VERSION:

Ted Antifeau, Dwain Boyer, Jack Bryden, David Bullus, Todd Cashin, Dan Cronin, Margaret Cuthbert, James Davies, Orville Dyer, Maureen Enser, Sharon Fletcher, Pauline Gomez, Brian Grant, Margaret Henigman, Kristi Iverson, Annemarie Koch, Gerard LeBlanc, Michael Ladd, , Rob Lawrence, Sylvia Letay, Erica McClaren, Joanne Mitchell, Peter Muirhead, Kari Nelson, Charles Newcombe, Jerry Naus, Nicole Pressey, Dianne Ramage, Susanne Rautio, Helene Roberge, Robert Ross, Simon Shutter, Erin Stoddard, Dave Sutherland, Natalie Suzuki, Ross Vennessland, Ted van der Gulik, Michael von Hausen, and Pamela Zevit.

## Table of Contents

### PDF 1

<b>Table of Contents .....</b>	<b>ii</b>
<b>1 Introduction .....</b>	<b>1</b>
1.1 Purpose of Document .....	1-1
1.1.1 Scope .....	1-2
1.2 Navigating the Best Management Practices Document.....	1-2
1.3 For Further Information .....	1-4
1.4 Tell Us What You Think .....	1-4
Appendix 1-1: Feedback Form .....	1-5
<b>2 A Shared Responsibility .....</b>	<b>2</b>
2.1 Shared Stewardship and Partnerships.....	2-1
2.2 A Results Based Approach .....	2-1
2.3 Environmental Monitoring and Compliance.....	2-2
2.4 For More Information.....	2-3

### PDF 2

<b>3 Environmental Planning at the Community Level .....</b>	<b>3</b>
Summary .....	ii
3.1 Benefits of Environmental Planning at the Community Level .....	3-1
3.2 Objectives.....	3-2
3.3 Legislation .....	3-3
3.4 Best Management Practices .....	3-3
3.4.1 Community and Landscape-level Plans.....	3-3
3.4.2 Inventory and Mapping.....	3-5
3.4.3 Appropriate Development.....	3-7
3.4.4 Ecosystem and Species Protection .....	3-9
3.4.5 Ecosystem and Species Restoration and Enhancement.....	3-13
3.4.6 Flood and Terrain Hazard Management .....	3-14
3.4.7 Erosion and Sediment Control .....	3-15
3.4.8 Wildfire Considerations .....	3-16
3.4.9 Wildlife-Human Conflicts .....	3-16
3.4.10 Pollution Prevention .....	3-17
3.4.11 Stormwater Management .....	3-17
3.4.12 Lead by Example .....	3-18
3.5 Local Government Responsibility for Environmental Planning at the Site Level.....	3-19
3.5.1 Working with Landowners and Developers.....	3-20
3.6 Useful Sources .....	3-21
Appendix 3-1: Definitions.....	3-25
Appendix 3-2: Idealised Neighbourhood Plan .....	3-28

### PDF 3

<b>4 Site Assessment and Design .....</b>	<b>4</b>
Summary .....	ii
4.1 Benefits of Environmental Protection at the Site Level.....	4-1

**ENVIRONMENTAL BEST MANAGEMENT PRACTICES FOR  
URBAN AND RURAL LAND DEVELOPMENT**

---

4.2 Objectives.....	4-2
4.3 Legal Requirements .....	4-2
4.4 Best Management Practices .....	4-3
4.4.1 Community and Watershed Context .....	4-3
4.4.2 Detailed Site Inventory .....	4-3
4.4.3 Site Planning and Design.....	4-4
4.4.4 During Development .....	4-9
4.4.5 Protection After Development .....	4-10
4.4.6 Restoration and Enhancement of Degraded Habitats.....	4-11
4.4.7 Stormwater Management .....	4-11
4.4.8 Erosion and Sediment Control .....	4-12
4.4.9 Wildfire Considerations .....	4-13
4.4.10 Wildlife Human Conflicts .....	4-14
4.4.11 Pollution Prevention.....	4-14
4.5 Useful Sources .....	4-15
Appendix 4-1: Definitions.....	4-18

**PDF 4**

<b>5 Environmentally Sensitive Areas .....</b>	<b>5</b>
Summary.....	i
5.1 Benefits of Environmentally Sensitive Areas .....	5-1
5.2 Objectives.....	5-2
5.3 Legal Requirements .....	5-2
5.4 Best Management Practices .....	5-2
5.4.1 Detailed Site Inventory .....	5-3
5.4.2 Site Planning and Design.....	5-3
5.4.3 Protection During Development .....	5-5
5.4.4 Protection After Development .....	5-5
5.4.5 Restoration of Disturbed Environmentally Sensitive Areas.....	5-6
5.5 Useful Sources .....	5-7
Appendix 5-1: Definitions.....	5-9

**PDF 5**

<b>6 Special Wildlife and Species at Risk .....</b>	<b>6</b>
Summary.....	i
6.1 Benefits of Special Wildlife and Species at Risk.....	6-1
6.2 Objectives.....	6-2
6.3 Legal Requirements .....	6-2
6.4 Best Management Practices .....	6-3
6.4.1 Detailed Site Inventory .....	6-3
6.4.2 Site Planning and Design.....	6-4
6.4.3 Protection During Development .....	6-4
6.4.4 Protection After Development .....	6-5
6.4.5 Best Management Practices for Specific Wildlife .....	6-6
6.5 Useful Sources .....	6-8
Appendix 6-1: Definitions.....	610

**PDF 6**

<b>7 Aquatic Ecosystems .....</b>	<b>7</b>
Summary .....	ii
7.1 Benefits of Healthy Aquatic and Riparian Ecosystems .....	7-1
7.2 Objectives .....	7-2
7.3 Legal Requirements .....	7-2
7.4 Best Management Practices .....	7-3
7.4.1 Detailed Site Inventory .....	7-4
7.4.2 Site Planning and Design .....	7-4
7.4.3 Protection During Development .....	7-6
7.4.4 Protection After Development .....	7-8
7.4.5 Restoration and Enhancement of Damaged Aquatic and Riparian Ecosystems .....	7-9
7.4.6 Human Access to Aquatic and Riparian Ecosystems .....	7-9
7.4.7 Ecosystem-Specific Best Management Practices .....	7-10
7.5 Useful Sources .....	7-12
Appendix 7-1: Definitions .....	7-15
Appendix 7-2: Ecological Features and Functions of Aquatic and Riparian Ecosystems .....	7-17

**PDF 7**

<b>8 Pollution Prevention and Management .....</b>	<b>8</b>
Summary .....	ii
8.1 Contaminated Sites .....	8-1
8.1.1 Identifying a Contaminated Site .....	8-2
8.1.2 Objectives .....	8-2
8.1.3 Applicable Legislation .....	8-2
8.1.4 Best Management Practices for Local Governments and Developers .....	8-3
8.1.5 Useful Sources .....	8-4
8.2 Spill Containment and Reporting .....	8-4
8.2.1 Objectives .....	8-4
8.2.2 Applicable Legislation .....	8-4
8.2.3 Best Management Practices for Developers .....	8-5
8.2.4 Useful Sources .....	8-5
8.3 Pesticides .....	8-6
8.3.1 Objectives .....	8-6
8.3.2 Applicable Legislation .....	8-6
8.3.3 Best Management Practices for Local Governments and Developers .....	8-7
8.3.4 Useful Sources .....	8-8
8.4 Groundwater and Wells .....	8-8
8.4.1 Objectives .....	8-8
8.4.2 Applicable Legislation .....	8-8
8.4.3 Best Management Practices for Local Governments .....	8-8
8.4.4 Best Management Practices for Developers .....	8-9
8.4.5 Useful Sources .....	8-9

**ENVIRONMENTAL BEST MANAGEMENT PRACTICES FOR  
URBAN AND RURAL LAND DEVELOPMENT**

---

8.5	Municipal Liquid Waste.....	8-10
8.5.1	Objectives.....	8-10
8.5.2	Applicable Legislation.....	8-10
8.5.3	Best Management Practices for Local Governments.....	8-11
8.5.4	Best Management Practices for Developers.....	8-11
8.5.5	Useful Sources.....	8-11
8.6	Solid Waste.....	8-12
8.6.1	Objectives.....	8-12
8.6.2	Legislation.....	8-12
8.6.3	Best Management Practices for Local Governments.....	8-12
8.6.4	Best Management Practices for Developers.....	8-12
8.6.5	Useful Sources.....	8-13
8.7	Air Quality.....	8-13
8.7.1	Objectives.....	8-13
8.7.2	Applicable Legislation.....	8-13
8.7.3	Best Management Practices for Local Governments.....	8-14
8.7.4	Best Management Practices for Developers.....	8-15
8.7.5	Useful Sources.....	8-15
8.8	Climate Change.....	8-16
8.9	Water Quality.....	8-16
8.9.1	Objectives.....	8-16
8.9.2	Applicable Legislation.....	8-16
8.9.3	Best Management Practices for Developers.....	8-17
8.9.4	Useful Sources.....	8-17
<b>9</b>	<b>Regional Information Packages.....</b>	<b>9</b>

**PDF 8**

<b>Glossary.....</b>	<b>GLOSS 1</b>
----------------------	----------------

**PDF 9**

<b>Bibliography.....</b>	<b>BIBLIO 1</b>
--------------------------	-----------------

**PDF 10**

<b>Appendix A.....</b>	<b>A-1</b>
------------------------	------------

**PDF 11**

<b>Appendix B.....</b>	<b>B-1</b>
------------------------	------------

**PDF 12**

<b>Appendix C.....</b>	<b>C-1</b>
------------------------	------------

## Environmental Best Management Practices for Urban and Rural Land Development



June 2004

### Section One INTRODUCTION

1	Introduction .....	1-1
1.1	Purpose of Document .....	1-1
1.1.1	Scope .....	1-2
1.2	Navigating the Best Management Practices Document .....	1-2
1.3	For Further Information .....	1-4
1.4	Tell Us What You Think .....	1-4
	Appendix 1-1: Feedback Form .....	1-5



## Introduction

British Columbia is recognised globally for its exceptional wildlife, diversity of ecosystems and rich natural resources. The Ministry of Water, Land and Air Protection helps to maintain these valuable natural assets, which provide the essentials of life as well as recreational and economic activities enjoyed by British Columbians in all regions of the province.

Rapid urbanisation, especially in the southern areas of the province, continues to have significant impacts on the natural environment, including alteration of habitats and an increase in the number of plant and animal species “at risk”. For more information on the state of the natural environment in British Columbia, see [Environmental Trends in British Columbia 2002](#).



The *anatum* subspecies of Peregrine Falcon is red-listed in B.C.

PHOTO: NEIL DAWE

### ECOSYSTEMS: ESSENTIAL TO LIFE

“[Ecological] systems provide the basic elements essential to life: fixation of solar energy; protection against harmful cosmic influences; regulation of the chemical composition of the atmosphere; operation of the hydrological cycle; water catchment and groundwater recharge; regulation of local and global climate and energy balance; formation of topsoil and maintenance of soil fertility; prevention of soil erosion and sediment control; food production by food webs; biomass production; storage and recycling of nutrients and organic matter; assimilation, storage and recycling of waste; maintenance of habitats for migration and nursery; maintenance of the scenery of the landscape and recreational sites; and provision of the historical, spiritual, aesthetic, educational, and scientific information and cultural and artistic inspiration.” (Dale 2001, citing Costanza and Folke 1996)

### FREE SERVICES

“Ecosystems regulate our climate, clean our fresh water, regulate and clean atmospheric gases, maintain genetic diversity, sustain the water cycle, recycle nutrients, and pollinate our crops. Simply put, at no cost to us, ecosystems provide the services that allow us to live on the Earth.” (McPhee et al. 2000)

## 1.1 PURPOSE OF DOCUMENT

The Ministry of Water, Land and Air Protection has prepared *Environmental Best Management Practices for Urban and Rural Land Development* to assist people who are involved in planning, implementing, reviewing and/or approving land developments in British Columbia’s urban and rural areas. Its primary purpose is to provide province-wide guidelines for the maintenance of environmental values during the development of urban and rural lands. It also provides information on ways that environmental protection and stewardship can benefit the community, the property owner and the developer, as well as the natural environment.

This Best Management Practices document is one in a series of best management practices documents prepared by the Ministry of Water, Land and Air Protection. For a complete listing of titles available, see the Ministry website <http://wlapwww.gov.bc.ca/wld/BMP/bmpintro.html>.



### 1.1.1 Scope

This document applies to land development in urban, suburban and rural areas throughout British Columbia. It has not been written for forestry, mining, or commercial agriculture on Agricultural Land Reserves, although some of the best management practices may apply to these areas.

‘Development’ as discussed in this publication includes:

- Development and/or re-development of urban or rural lands;
- ‘Greenfield’ developments—those on lands not previously built on (this may include resource lands formerly used for forestry or agriculture);
- ‘Brownfield’ developments—those on lands that have been previously developed (e.g. former mine sites, abandoned industrial or commercial sites).

There are many types of ‘development’ that are subject to local government or provincial agency regulation, including residential, commercial, industrial, institutional or ancillary activities that are subject to the [Land Title Act](#), [Community Charter](#) or [Local Government Act](#). ‘Developments’ range from commercial and residential developments, to public works and parks projects, the construction of buildings or flood protection works, development of campgrounds and any other activities that affect the natural landscape.

## 1.2 NAVIGATING THE BEST MANAGEMENT PRACTICES DOCUMENT

*Environmental Best Management Practices for Urban and Rural Land Development* is presented in eight major sections:

**Section 1: Introduction and Summary** provides an overview of the document and an introduction to its purpose.

**Section 2: A Shared Responsibility** describes the Ministry’s approach to shared stewardship and results-based management.

**Section 3: Environmental Planning at the Community Level** focuses on the roles of local governments and other approval agencies in planning at a community level, and providing the foundation for good environmental planning at the site level.

**Section 4: Environmental Planning and Development at the Site Level** describes the objectives, requirements and best management practices for good environmental planning at the site level.

**Section 5: Environmentally Sensitive Areas** describes the objectives, requirements and best management practices for land development near environmentally sensitive areas.

**Section 6: Special Wildlife and Species at Risk** describes the objectives, requirements and best management practices for land development where these species are or may be present.

**Section 7: Aquatic and Riparian Ecosystems** describes the objectives, requirements and best management practices for land development where aquatic or riparian ecosystems are present.

**THIS DOCUMENT IS WRITTEN FOR:**

- Local government decision-makers
- Planners
- Engineers
- Architects
- Developers
- Landscape architects
- Land surveyors
- Landowners
- Approval officers
- Parks & recreation administrators
- Public works administrators
- Real estate agents
- Others involved in land development decisions



Housing development.  
in a Garry Oak  
meadow

PHOTO: MARLENE CASKEY

**Section 8: Pollution Prevention** includes a number of sub-sections that address specific concerns for the prevention of environmental harm. These sections are:

- Dealing with Contaminated Sites
- Pesticides
- Liquid Waste
- Air Quality
- Water Quality
- Spill Containment and Reporting
- Groundwater and Wells
- Solid Waste
- Climate Change and

**Appendix A: Benefits of Environmental Protection** describes some of the many benefits of environmental protection for local governments, developers and the community.

**Appendix B: Sources for Environmental Mapping and Inventory** identifies some of the sources for mapping and inventory information.

**Appendix C: Terms of Reference for Bio-inventory** provides suggested terms of reference for bio-inventory work.

The different sections have been colour coded for ease of navigation.

For people using this document on-line, it has been extensively hyperlinked for easy access to the many other sources referred to in the text. These web links and references to other documents are provided in “Useful Sources” found at the end of each Section, and in the **Bibliography**.

While the Ministry has made an effort to minimise the use of technical terms, we have provided some section-specific definitions at the end of each Section for words shown in brown, and a **Glossary** in the appendices.

You can contact staff in provincial Ministries throughout the province at no charge by calling Enquiry BC. Hours of operation for Enquiry BC are 7:30 a.m. to 5 p.m. — Monday through Friday.

In Victoria call: 387-6121

In Vancouver call: 604 660-2421

Elsewhere in BC call: 1 800 663-7867

Outside British Columbia: 604 660-2421

E-mail address: [EnquiryBC@gems3.gov.bc.ca](mailto:EnquiryBC@gems3.gov.bc.ca)



White fawn lily.  
PHOTO: MARK KAARREMAA

### 1.3 FOR FURTHER INFORMATION

For more information on other Best Management Practices documents in this series, or other Ministry business, please go to <http://wlapwww.gov.bc.ca> or contact your nearest Ministry office:

[Vancouver Island Region](#)  
[Lower Mainland Region](#)  
[Thompson and Okanagan Regions](#)  
[Kootenay Region](#)  
[Cariboo Region](#)  
[Skeena Region](#)  
[Omineca and Peace Regions](#)  
[Okanagan Region](#)



### 1.4 TELL US WHAT YOU THINK

This Best Management Practices document has been designed to provide guidance to local governments, individuals and companies that are planning any form of land development or re-development. We will be updating and improving this document over time.

In order to help us make this document work well for YOU, please take the opportunity to fill in the feedback form in Appendix 1-1. Please send your comments to:

Attn: Bob Cox, External Liaison Officer  
 Biodiversity and Wildlife  
 B.C. Ministry of Water, Land and Air Protection  
 PO Box 9338, Stn Prov Govt  
 Victoria BC V8W 9M1  
 E-mail: [Bob.Cox@gems5.gov.bc.ca](mailto:Bob.Cox@gems5.gov.bc.ca)

## APPENDIX 1-1: FEEDBACK FORM

Name: \_\_\_\_\_

Organisation: \_\_\_\_\_

E-mail address (or phone number): \_\_\_\_\_

Address (please provide city and postal code):

City: \_\_\_\_\_ Postcode: \_\_\_\_\_

Which sections of the *Environmental Best Management Practices for Urban and Rural Land Development* did you use?

- All sections or: *(please check all that apply)*
- Section 1: Introduction and Summary
- Section 2: A Shared Responsibility
- Section 3: Environmental Planning at the Community Level
- Section 4: Environmental Planning at the Site Level
- Section 5: Environmentally Sensitive Areas
- Section 6: Special Wildlife and Species At Risk
- Section 7: Aquatic and Riparian Ecosystems
- Section 8: Pollution Prevention
  - Dealing with Contaminated Sites
  - Spill Containment and Reporting
  - Pesticides
  - Groundwater and Wells
  - Liquid Waste
  - Solid Waste
  - Air Quality
  - Climate Change
- Appendix A: Benefits of Environmental Protection
- Appendix B: Sources for Environmental Mapping and Inventory
- Appendix C: Terms of Reference for Bio-inventory

---

**Did you find this Best Management Practices document helpful? Why? Why not?**

---

---

---

---

**Is the level of detail in this document**

About right    Too detailed    Not detailed enough?

Comments: \_\_\_\_\_

---

---

---

**How could we make this document more usable/user-friendly?**

---

---

---

---

**Are there recommended best management practices that you feel are inappropriate? Why?**

---

---

---

---

**Do you have suggestions for additional best management practices to include?**

---

---

---

---

**Do you have suggestions for additional sections/topics to include?**

---

---

---

---

**Do you have examples of community planning or site developments that have modelled best management practices? Please provide a contact name for more information.**

---

---

---

---

**Other comments and suggestions:**

---

---

---

---

## Environmental Best Management Practices for Urban and Rural Land Development



June 2004

### Section Two **A SHARED RESPONSIBILITY**

2.1	Shared Stewardship and Partnerships.....	2-1
2.2	A Results-Based Approach.....	2-1
2.3	Environmental Monitoring and Compliance.....	2-2
2.4	For Further Information.....	2-3



## A Shared Responsibility

The Ministry of Water, Land and Air Protection has signed memoranda of understanding with more than 52 municipalities and regional districts, describing how these partners will share stewardship of the environment.

### 2.1 SHARED STEWARDSHIP AND PARTNERSHIPS

A healthy natural environment is the foundation for British Columbia's economy and quality of life.

The mandate of the Ministry of Water, Land and Air Protection (WLAP) is to protect and enhance the quality of British Columbia's water, land and air in a way that contributes to healthy communities, recreational opportunities, a sustainable environment, and the economic well being of the province. The Ministry shares this responsibility with all British Columbians who are taking an active part in maintaining the health of our environment.

The Ministry is expanding its partnerships with all levels of government including First Nations, as well as community organisations, academic institutions, businesses and industries, and citizens. These partners bring their local knowledge, resources, legislative authorities and expertise to the stewardship of British Columbia.

Those who undertake urban and rural land development bear a special responsibility to ensure that the choices they make benefit the current and future generations of people, plants and animals of British Columbia. The Ministry's results-based approach provides information to help guide those choices (through the Best Management Practices documents) and the independence to achieve the environmental objectives in the most appropriate manner.

### 2.2 A RESULTS-BASED APPROACH

The results-based approach focuses on setting clear, reasonable environmental outcomes (objectives) with discretion as to how to achieve these outcomes. Provided the stated objectives are met, these environmental outcomes may be achieved by:

- Following the guidelines set out in the Ministry's best management practices documents; and/or
- Using innovative practices that address specific issues and circumstances.

The role of the *Best Management Practices* document is to clearly set out the Ministry's expectations and requirements and to provide recommendations (best management practices) that describe how these objectives might be met.

Accordingly, each section of this document identifies:

**Objectives:** The Ministry's objectives set out the expected outcomes. Clients have the opportunity to meet those expected outcomes in the manner most appropriate to their situation.

**Legal Requirements:** These are the regulatory standards that must be met for the development to be in compliance with the law.

**Best Management Practices:** The best management practices outlined in this document provide guidance on how those objectives might be achieved. These BMPs



Pine siskin on thistle.

PHOTO: DAVE POLSTER



are based on scientific research or long term observation and are methods that the Ministry feels will generally best achieve the desired objectives. Beyond meeting legal requirements, local governments and developers may choose different approaches that suit their context to meet the objectives. The best management practices listed are provided as *recommendations* rather than *requirements*.

However, by following the guidelines set out in the various best management practices documents, the local government and developer can demonstrate *due diligence* (see box) in striving to meet the stated objectives.

#### RISK MANAGEMENT AND DUE DILIGENCE

**Due diligence:** the level of judgment, care, prudence, determination and activity that a person would reasonably be expected to undertake under certain circumstances

**Risk:** the chance of something happening that will have an impact on the achievement of objectives

A results-based approach offers benefits to land developers by providing opportunities for more creative approaches to meeting the Ministry objectives. This might be less expensive and/or less time-consuming for the developer and approval agency. However, in taking on these responsibilities, those involved in land development activities will also take on risk and should identify and develop strategies for managing this risk. When land development is not properly planned and implemented, the developer's risks include loss of profitability or the possibility of legal consequences resulting from improperly managed activities. Local governments risk impacts on existing municipal infrastructure and quality of life for residents, and may also risk legal consequences. In addition, long term environmental impacts may result.

Where there are environmental problems as a result of development, local governments and land developers may face legal action. If so, they may be expected to demonstrate that they have used due diligence to avoid or mitigate these problems. Demonstrating that they have followed the best management practices provided in this document will strengthen the 'due diligence' defence.



PHOTO: MARK KAARREMAA

### 2.3 ENVIRONMENTAL MONITORING AND COMPLIANCE

The development, implementation and **monitoring** of best management practices are part of an ongoing cycle. Environmental monitoring can encompass a wide range of activities and levels of effort. For urban and rural land development, typical monitoring would include 'environmental condition' or 'effectiveness' monitoring. These processes measure the results achieved on the ground against the stated objectives. The results of monitoring are used by agency staff and operators alike to determine what changes to the best management practices would be necessary to better achieve the objectives. Failure to achieve objectives can be because the recommended best management practices were:

- inadequate or inappropriate;
- not implemented; or
- not implemented correctly.



PHOTO: SYLVIA LETAY

Another important form of monitoring may be carried out by on-site environmental monitors. Where appropriate (such as on large scale developments or where there are sensitive habitats) proponents should employ on-site monitors to ensure environmental objectives and legal obligations are being met. Monitors must be qualified to deal with the issues and concerns which may occur on-site. To be effective, they must also have the authority to modify or alter activities or to stop work where necessary, until issues of potential or actual environmental damage are resolved. Effective use of on-site environmental monitors can contribute to a due diligence defence in the event that unforeseen environmental incidents occur.

**Compliance** monitoring will ensure compliance with appropriate legislation and regulations including permit, license and approval conditions. Compliance monitoring is generally carried out by the level of government responsible for the legislation, permit, license, etc. Staff from these agencies will work with the development community and others to improve performance where environmental or public safety goals and objectives are not being met or future environmental degradation is predicted.

#### 2.4 FOR FURTHER INFORMATION

For further information on the Ministry's approach to results-based management, see the Ministry Service Plan at <http://wlapwww.gov.bc.ca>.