

Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia



March 2006



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Thank you!

Preface to March 2006 Edition of *Develop with Care*

This March 2006 version of *Develop with Care* replaces the previous versions (June 2004 and April 2005) of *Environmental Best Management Practices for Urban and Rural Land Development in British Columbia*.

Significant changes to this version include the following:

- ♦ The name has been changed to ‘Develop with Care’.
- ♦ Ministry names and website addresses have been updated. Note that many Government of British Columbia websites are being updated, we have attempted to provide the most recent version.
- ♦ The ‘best management practices’ are now called ‘guidelines’.
- ♦ The major sections have been reorganized. Section 2 now includes all guidelines related to community planning for ecosystem, species, water and air protection, and hazard and waste management. Section 3 includes similar guidelines for site-level development and management. Section 4 includes the former sections 5–7, which dealt with the protection of ecosystems and species. The regional chapters have been completed and included, as have the fact sheets.
- ♦ Updates have been made to identify new provincial government programs and some exciting new ‘on-the-ground’ projects which reflect careful and environment-friendly approaches to development by local governments and the development community.
- ♦ The Bibliography includes a list of helpful websites.

We hope that readers will continue to find this a helpful resource.

Bowron Lakes.
PHOTO: MINISTRY OF ENVIRONMENT



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Develop with Care



Environmental Guidelines for Urban and Rural Land Development in British Columbia

March 2006

Section One

INTRODUCTION

This section provides an introduction to the *Develop with Care* document and its contents and describes the Ministry's approach to results-based management

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Introduction

A healthy natural environment is the foundation of British Columbia's economy and quality of life. We—governments, the private sector, and civil society—all have a part to play in its protection.

“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).

British Columbia (B.C.) is recognized globally for its exceptional wildlife, diversity of ecosystems, and rich natural resources. These valuable natural assets provide the essentials of life and recreational and economic activities that are enjoyed by British Columbians in all regions of the province. However, rapid urbanization, especially in the southern areas of the province, has resulted in significant impacts on the natural environment, including the alteration of habitats, an increase in the numbers of plant and animal species ‘at risk’, and a decline in air and water quality.¹

Maintaining a healthy natural environment during urban and rural land development benefits each of us in many ways.² A healthy environment enhances the quality of life for the whole community and benefits local governments by providing free ‘ecosystem services’ such as stormwater management and maintenance of clean air. The use of good environmental practices and environment-friendly techniques by the development community can reduce costs and produce superior

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” (Costanza and Folke 1996, cited by Dale 2001).

¹ For more information on the state of British Columbia's natural environment, see [Environmental Trends in British Columbia 2002](#).

² See [Appendix A: Benefits of Environmental Protection](#).



developments that have higher market value. Implementing good environmental practices also ensures compliance with federal and provincial legislation and demonstrates due diligence in environmental protection and stewardship.

1.1 PURPOSE AND SCOPE OF GUIDELINES

This document is written for

- ◆ local government decision makers
- ◆ planners
- ◆ engineers
- ◆ architects
- ◆ developers
- ◆ landscape architects
- ◆ land surveyors
- ◆ landowners
- ◆ approval officers
- ◆ parks & recreation staff
- ◆ public works staff
- ◆ real estate agents
- ◆ other agencies that make land use decisions
- ◆ others involved in land development decisions



There are many types of development.
PHOTO: JUDITH CULLINGTON

The Ministry of Environment has prepared *Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia* to provide province-wide guidelines for maintaining environmental values during the development of urban and rural lands.

This document is written for

- ◆ people who **set the stage** for development—local governments who develop community plans and supporting bylaws, as well as community groups, agencies, and consultants who provide input into those plans;
- ◆ people who **design and build** developments—the developers and the many consultants who work with them, as well as local government staff who develop and manage municipal lands and infrastructure; and
- ◆ people who **approve** the developments—local governments (both elected and staff), approving officers, community groups, and others who comment on proposed development.

This document includes many ideas and suggestions on ways to achieve ‘cleaner, greener’ developments and 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. It is one in a series of guidelines documents prepared by the Ministry of Environment. For a listing of titles currently available, see the Ministry Guidelines and Best Management Practices website: <http://www.env.gov.bc.ca/wld/BMP/bmpintro.html>.

There are many types of ‘development’, including commercial and residential developments, public works and parks projects, building construction projects, flood protection works, campground developments, recreational infrastructures, and any other activities that affect the natural landscape. ‘Development’ as discussed in this publication includes

- ◆ development of urban or rural lands;
- ◆ ‘greenfield’ developments—those on lands that have not previously been built upon (this may include resource lands formerly used for forestry or agriculture); and



This former brownfield site is now a mixed residential, commercial and office space development.
PHOTO: JUDITH CULLINGTON



The Ministry of Environment has signed Memoranda of Understanding with several municipalities and regional districts which describe how these partners will share stewardship of the environment. For more information, contact your local Ministry office.

“During the course of a three-year term in office in local government, an elected official will make approximately 4,000 decisions—small and large—related to governance. They range from the position they take on a telephone call with a constituent, to a comment or suggestion to staff on a project, and to the casting of a vote on a major resolution for an item such as a budget or an OCP [Official Community Plan]” (Habitat Acquisition Trust 2004).

- ◆ ‘brownfield’ and ‘greyfield’ developments—those on lands that have been previously developed (e.g., former mining, industrial, or commercial sites). Some of these lands may be former contaminated sites which have been remediated.

This document is not intended for developments related to forestry, mining, or commercial agriculture within the Agricultural Land Reserve, although some of the guidelines may apply to those areas.

1.2 SHARED ROLES AND RESULTS-BASED DECISIONS

These guidelines contribute to the Ministry of Environment’s mission “to provide leadership and support to British Columbians to help them limit the adverse effects of their individual and collective activities on the environment, while fostering economic development and providing outdoor opportunities.”³ The Ministry works to provide the science that is needed to support environmentally sound decision making and to set out guidelines for activities that affect British Columbia’s natural environment. Decisions related to urban and rural land development in this province are shared by many; therefore, this document is intended to support and encourage good decision making by all those involved in land development in British Columbia.

The Ministry of Environment uses a results-based approach to environmental management. This means focusing on results: what has been achieved, and at what cost? It is a move away from the Ministry’s former approach which focused on rules, regulations, and prescriptions.

This approach builds on the leadership being shown by many local governments and developers to achieve shared environmental goals and it identifies the objectives, legal requirements, and guidelines for

³ Ministry of Environment 2005/06–2007/08 Service Plan Update
http://www.bcbudget.gov.bc.ca/2005_Sept_Update/sp/env/Goals,Objectives,StrategiesandResults5.htm.



THE MINISTRY OF ENVIRONMENT RISK ASSESSMENT APPROACH

In the past, the Ministry of Environment received a large number of 'referrals' from local governments and agencies asking for the Ministry's expert advice on the potential environmental impacts arising from a development and for measures that would help reduce or mitigate these impacts. The current approach fosters the Ministry's goal of helping British Columbians protect their own environment with 'less government'.

The Ministry is developing a 'risk matrix' that will help local governments and developers determine the appropriate level of environmental guidance for any given project. Projects have varying levels of environmental impact. Some activities (such as vegetation clearing along a transmission line) generally pose little risk to **environmentally valuable resources**⁴, while major developments near the habitats of species at risk would present a high risk. This model will rely on professional accountability and its attendant codes of practice and ethics.

'Risk' will be determined by assessing

- ♦ the **significance of the resource** (e.g., a species at risk),
- ♦ the **likelihood of impact** (e.g., proximity to a nest site or intensity of the activity), and
- ♦ the **significance of that impact** (e.g., likelihood of species loss).

The matrix will assess the 'level of risk' (high, medium or low) depending on the type of activity, its location and the resources present. Once the Ministry has developed the risk matrix, it will be up to the local government or developer to determine the level of risk and consider their various options.

It is recognized that, in some cases, this approach carries a certain chance of failure. The outcomes of this approach will be monitored to determine its success, or the need to re-evaluate the process.

Once the matrix is completed, it will be available to the local governments and the development community for their use.

achieving these goals. These are discussed in Sections 2–4 of this document.

1.2.1 Objectives

The results-based approach focuses on setting clear, reasonable environmental outcomes (objectives) but allowing developers and approval agencies to use their discretion as to how to achieve them. These objectives have been promoted by Ministry staff for many years. Many are not legal requirements but are important principles that the Ministry will use when reporting on compliance by the development community and approval authorities.



Bog bird's-foot trefoil, an endangered plant in Canada.

PHOTO: DAVE POLSTER

⁴ Definitions are provided in the **Glossary**.



We all have a part to play in environmental protection.
PHOTO: JUDITH CULLINGTON

These environmental objectives may be achieved by

- ♦ following the guidelines set out in the Ministry's documents and/or
- ♦ using innovative practices that address specific issues and circumstances.

1.2.2 Legal Requirements

Laws and regulations such as the *Wildlife Act* and the ground water protection regulations provide the regulatory 'teeth' to uphold environmental protection and management in British Columbia. Information on applicable legal requirements is provided in this document. These requirements **MUST** be met for a project to be in compliance with the law.

1.2.3 Guidelines

The guidelines outlined in this document provide direction on how the stated objectives might be achieved. These guidelines are based on scientific research and/or long-term observation, and are methods that the Ministry feels will generally best achieve the desired objectives. The results-based approach, however, provides room for flexibility and creativity in terms of meeting these objectives. Objectives may also be met by using innovative practices that address specific local issues and circumstances.

The guidelines contained in this document are recommendations, not requirements; however, by following the guidelines set out in this and other Ministry documents, local governments and developers can demonstrate due diligence in striving to meet the stated objectives.

RISK MANAGEMENT AND DUE DILIGENCE

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

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

A results-based approach benefits land developers by allowing them the opportunity to use creative approaches to meet the Ministry's environmental management objectives. This approach may be less expensive and/or less time-consuming for the developer and approval agency; however, in taking on this responsibility, land developers and approval agencies will also take on risk and should identify and develop strategies for managing it. When land development is not properly planned and implemented, the developer's risks could include increased costs, delays, or legal consequences resulting from improperly managed activities. Local governments risk impacts on existing municipal infrastructure and quality of life for residents, and may risk legal consequences. In addition, long-term environmental impacts may occur.

If local governments and developers are faced with legal action, they may be expected to demonstrate that they have used *due diligence* to avoid or mitigate environmental problems created by land development activities. Demonstrating that they have followed the guidelines provided in this document will strengthen their due diligence defence.



The federal government has developed a Risk Management Framework. For more information, see http://www.tbs-sct.gc.ca/pubs_pol/dcgpubs/riskmanagement/siglist_e.asp.



Monitoring ensures objectives are being met.
PHOTO: SUSAN LATIMER

1.3 ENVIRONMENTAL MONITORING AND COMPLIANCE

Monitoring and compliance are important components of the results-based management process. Environmental monitoring can encompass a wide range of activities and levels of effort, including on-site monitoring, compliance monitoring, effectiveness monitoring, and reporting.

1.3.1 On-site Monitoring

Monitoring may be carried out by on-site environmental monitors. Where appropriate (such as on large-scale developments or on sites where sensitive habitats occur), proponents should employ qualified on-site monitors⁵ to ensure environmental objectives and legal obligations are being met. Monitors must be empowered to deal with the issues and concerns that may occur on-site and must be given the authority to modify or alter activities or 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. Adaptive management may be used for dealing with situations where management actions are unclear (see next page).

1.3.2 Compliance Monitoring

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

⁵ Monitors should be qualified through course work or appropriate experience. Some colleges (such as Malaspina College in Nanaimo) offer training courses for environmental monitors.



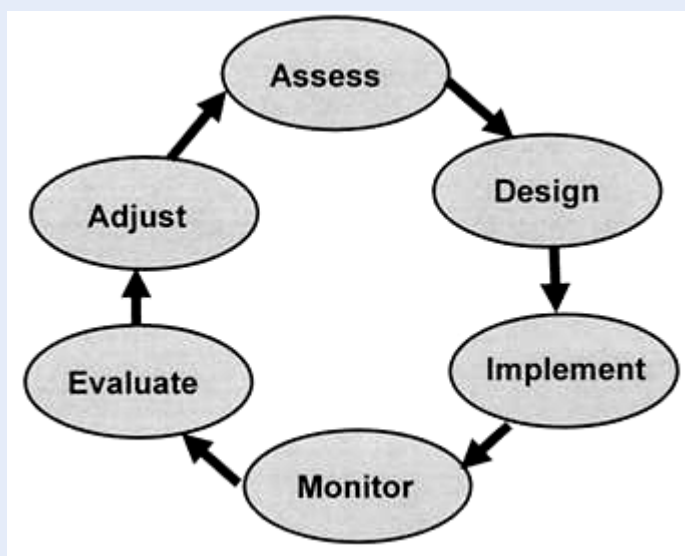
ADAPTIVE MANAGEMENT

Adaptive management (Figure 1-1) is an effective strategy for dealing with situations where management actions are unclear. Adaptive management consists of six steps:

- ♦ **Assess** the situation to gather as much information as possible. Appropriate types of information would include inventory results, information on possible management options and the positive and negative attributes of each, and other pertinent facts such as the cost and timing of implementing management actions. Assessments should include the longer term implications of the development project's design and construction, including the long-term presence of the development on the landscape and its contribution to cumulative impacts.
- ♦ **Design** an appropriate management approach. Consider all the information gathered during the assessment and prepare a management design that most effectively addresses all the management issues. Keep in mind that with most environmental matters, it is best to proceed cautiously. The precautionary principle should be applied in situations where significant impacts could arise. Small steps that can be reversed, if needed, often provide the best course of action and should be adopted for the initial design.
- ♦ **Implement** the management design. Undertake the management action, taking care to avoid environmental degradation. Keep in mind that it is important to follow the design unless it is clear that in doing so you will cause some irreparable harm.
- ♦ **Monitor** to document changes. Monitoring provides a measure of the success or failure of the management action. Monitoring procedures should be developed as part of the design phase of the project as it is difficult in some cases to obtain suitable monitoring data after the project has been implemented.
- ♦ **Evaluate** the monitoring results. Evaluations should seek to determine environmental trends and possible future outcomes of management actions, if possible.
- ♦ **Adjust** the project to fit the needs identified by the monitoring. It may be that no adjustments will be needed or that some minor changes in the project will improve the outcome significantly. Adjustments may lead to changes in the project design or may dictate that additional monitoring is needed.

Figure 1-1. Adaptive management loop.

Adapted from Murray, C., and R. K. Jones. 2002. Decision support tool for invasive species in Garry oak ecosystems. Prepared by ESSA Technologies Ltd. for the Garry Oak Ecosystems Recovery Team http://www.goert.ca/docs/goe_dst.pdf





1.3.3 Effectiveness Monitoring

Effectiveness monitoring assesses two issues:

- ♦ Is the guideline itself appropriate?
- ♦ Is the results-based management approach (using guidelines) working?

Is the guideline appropriate?



PHOTO: SYLVIA LETAY

The Ministry will be reviewing the guidelines in this and other documents, to ensure that the direction provided is appropriate and helping local governments and developers achieve the stated objectives. Failure to achieve the stated objectives may occur if the recommended guidelines are

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

This monitoring could be conducted by Ministry staff, local government staff, the development community, non-government organizations, and/or partnerships between these groups. The results can be used by governments and developers alike to determine what changes to the guidelines are necessary to better achieve the stated objectives.

Is the results-based management approach (using guidelines) working?

The Ministry will also be reviewing the results-based approach to better understand its effectiveness. Where there are concerns, the Ministry will use an adaptive management approach to improve the service provided.

1.3.4 Reporting Out

The Ministry will be reporting out to the public on monitoring projects that assess the effectiveness of the results-based approach and/or compliance with it in urban and rural landscapes. This will be an opportunity for the public to review the effectiveness of the results-based approach as well as the approach taken by their local government towards environmental issues. These reports will be made available on the Ministry Ecosystem Branch Website.⁶

⁶ <http://www.env.gov.bc.ca/wld/index.htm>



1.4 NAVIGATING *DEVELOP WITH CARE*

Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia is presented in five major sections:

Section 1: Introduction provides an overview of the document and an introduction to its purpose, and describes the Ministry of Environment's approach to results-based management.

Section 2: Community Planning describes the objectives, requirements, and guidelines for local governments and other approval agencies in environmental planning at a community level, thereby providing the foundation for good environmental planning at the site level.

Section 3: Site Development and Management describes the objectives, requirements, and guidelines for good environmental planning, development, and management at the site level.

Section 4: Environmentally Valuable Resources describes the objectives, requirements, and guidelines for land development where high environmental values are present on or near the development site.

Section 5: Regional Information Packages provides information that is specific to the Ministry's nine regions.

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

Appendix B: Checklists provides checklists for local governments and developers to use during community planning and site development.

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

Appendix D: Site Inventory and Conservation Evaluation provides guidelines for conducting site assessments and using scientific information to develop lot layouts.

Appendix E: Protection and Conservation Tools provides information on tools that local governments and developers can use to protect natural areas.

Appendix F: Fact Sheets includes a series of fact sheets on aspects of urban and rural land development.



Wildlife viewing is a popular activity in urban and rural areas.
PHOTO: MARK KAARREMAA



The different sections have been colour coded for ease of navigation and an **Index** is provided at the back of the document.

This document has been extensively hyperlinked to provide easy access to the many information sources referred to in the text. These web links and references to other documents are provided in the **Bibliography**.

The Ministry has made an effort to minimize the use of technical terms; however, we have provided definitions where needed at the end of each section and in the **Glossary**.

1.5 FOR FURTHER INFORMATION

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

[List of regional offices⁷](#)
[Vancouver Island Region](#)
[Lower Mainland Region](#)
[Thompson Region](#)
[Okanagan Region](#)
[Kootenay Region](#)
[Cariboo Region](#)
[Skeena Region](#)
[Omineca Region](#)
[Peace Region](#)



You can contact staff in provincial ministries throughout the province at no charge by calling Enquiry BC. Hours of operation are 7:30 a.m. to 5:00 p.m. Monday through Friday.

In Victoria call: **387-6121**

In Vancouver call: **604 660-2421**

Elsewhere in B.C. call: **1 800 663-7867**

Outside British Columbia call: **604 660-2421**

E-mail address: EnquiryBC@gov.bc.ca

⁷ Links to Ministry regional offices are being updated. If you have difficulty with the link provides, go to <http://www.env.gov.bc.ca/main/prgs/regions.htm>.



1.6 TELL US WHAT YOU THINK

The Ministry will be updating these guidelines from time to time. We would like to hear your comments and suggestions for improving the document. Are there guidelines or case studies that should be added to this document? What would make it more useful for you? Please send your comments and suggestions to:

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[Section 2: Community Planning](#)

PHOTO: DAVE POLSTER

