MESSAGE FROM THE ASSISTANT DEPUTY MINISTER

Welcome to the B.C. Ministry of Environment Land Remediation Section’s sixth report, which describes the Section and its work for the period April 1, 2013, to March 31, 2015.

In this period, British Columbia continued to make steady progress with investigating and remediating contaminated sites under the leadership of the Land Remediation Section. The Section’s overall approach is to consult with stakeholders often and meaningfully, both as a way to gauge the impact of existing policies and as a way to continually refine and develop the best policies possible: fair, understandable, and effective.

Since the Contaminated Sites Regulation was established in 1995, British Columbia has been a pioneer in the development of a standards and approvals regime for contaminated site remediation. British Columbia continues to develop progressive policies and programs with the support of our partners, the Contaminated Sites Approved Professionals Society and the Science Advisory Board for Contaminated Sites in British Columbia.

B.C.’s contaminated sites legal regime is science-based and so must keep pace with advances in the scientific understanding of toxicity and environmental risk. The numerous revisions and additions to protocols, procedures and supporting guidance documents in 2013 to 2015 are in part a response to scientific advances.

The Province places a high priority on redeveloping brownfields as a way to revitalize neighbourhoods, create sustainable communities, and derive economic benefits. This reporting period was a notable one, with B.C. projects and people winning three Canadian Urban Institute Brownie Awards for demonstrated leadership, innovation and environmental sustainability.

Dry cleaning sites, a common and often significant source of subsurface contamination, have been a recent focus for the Section. These sites and the Section’s ongoing work with the 2011 Goldstream fuel spill are profiled in the Project Highlights.

The Province encourages voluntary compliance with environmental laws and regulations. In addition, the Ministry has recently developed the framework for a more rigorous means of tracking compliance with reporting requirements. This framework is described in the Compliance Verification for Reporting section of this report.

I wish to acknowledge the contributions of all our program staff, our administrative staff and our delivery partners for their dedication and contributions and to recognize their accomplishments in 2013/2014 and 2014/2015 under the guidance of Jim Hofweber, Executive Director of the Environmental Management Branch.

Mark Zacharias
Assistant Deputy Minister
Environmental Protection Division
B.C. Ministry of Environment
THE LAND REMEDIATION SECTION

WHO WE ARE

The Land Remediation Section of the Ministry of Environment regulates the investigation and cleanup of contaminated sites in British Columbia. We are a group of approximately 30 scientists, engineers and administrators with offices in Victoria and Surrey, and from these two locations we administer the Contaminated Sites Regulation under the Environmental Management Act.

Our Section has a culture of constructive communication and hard work in which knowledgeable people produce tangible results. On behalf of all British Columbians, we are committed to working toward safe, clean land, surface water and groundwater.

WHAT WE DO

We establish standards for site investigation and remediation and set expectations for timing. We also guide people who own or are otherwise responsible for contaminated sites in B.C. and the consultants who work for them. A site may be as small as a your neighbourhood dry cleaner or as large as a wood-preserving facility or mine, but either way, it can harbour challenges and complications – scientific, technical or legal. We help stakeholders to understand and navigate the complexities: their obligations for investigating, their options for remediating or their rights as affected neighbours.

GUIDING PRINCIPLES

Our overarching goals are to simultaneously
- render previously contaminated sites safe and suitable for development or redevelopment, and
- protect human health and the environment.

These goals must be balanced against economic realities, and we work with landowners and consultants toward cost-effective remediation.

COLLABORATION AND INNOVATION

We are a national leader in land remediation, as demonstrated by our innovative policies and practices and by the award-winning brownfield redevelopments in B.C. We have attained our leadership position by collaborating and engaging with the environmental consulting community, municipalities, public organizations and other stakeholders.

CONSISTENCY

A priority for the Section is to establish consistent, scientifically defensible expectations for land remediation, including clear policy, procedures and timelines. When stakeholders are confident in the land remediation process, landowners can make informed decisions, and voluntary compliance increases.

IN THIS REPORT

This report summarizes and highlights what the Land Remediation Section has achieved from April 1, 2013 to March 31, 2015. You can find more information about our work at www.env.gov.bc.ca/epd/remediation
GLOSSARY

Some of the key terms associated with land remediation and used in this report are defined below.

APPROVED PROFESSIONAL (AP)
A person who is appointed by a Director to the Roster of Approved Professionals. Under the Environmental Management Act, ministry officials may issue a contaminated sites legal instrument (e.g., a Certificate of Compliance) based on the recommendation of an Approved Professional, without ministry review. Since November 1, 2004, the ministry has required that all applications for various services for non-high risk sites be made by an Approved Professional and that the Approved Professional recommend which legal instrument the ministry should issue.

BROWNFIELD
Abandoned, vacant, derelict or underutilized commercial or industrial property where past actions have resulted in actual or perceived contamination and where there is an active potential for redevelopment.

CONTAMINATED SITE
An area of the land in which the soil or any groundwater lying beneath it, or the water or the underlying sediment, contains (1) a hazardous waste or (2) another prescribed substance, in quantities or concentrations exceeding risk-based or numerical criteria or standards or conditions in the Contaminated Sites Regulation.

CONTAMINATED SITES LEGAL INSTRUMENT
Includes an Approval in Principle, Certificate of Compliance, Contaminated Soil Relocation Agreement, Determination of Contaminated Site, Transfer Agreement or Voluntary Remediation Agreement. Also called a “legal instrument.”

CONTAMINATED SITES LEGAL REGIME
The documents that collectively give the ministry the authority to regulate the investigation and remediation of contaminated sites in B.C. The contaminated sites legal regime includes the Environmental Management Act, the Contaminated Sites Regulation, the Hazardous Waste Regulation and a number of ministry protocols.

CSAP SOCIETY
Contaminated Sites Approved Professionals Society, established to administer the work of the Roster of Approved Professionals on behalf of the Director.

DIRECTOR
As defined in the Environmental Management Act, a person employed by the government and designated in writing by the minister as a director of waste management or as an acting, deputy or assistant director of waste management.

ENVIRONMENT
Air, land, water and all other external conditions or influences under which humans, animals and plants live or are developed.

GUIDANCE
Advice provided to stakeholders to explain the Land Remediation Section’s administrative and technical requirements where these are in addition to the Environmental Management Act and its regulations, protocols, policies and procedures.

HIGH RISK SITE
A site determined to be a high risk site under a Director’s protocol.
**HIGH RISK SITE CONDITION**

A condition at a site that renders the site a “high risk site” as defined under a Director’s protocol, such as the presence of very high concentrations of contaminants or mobile non-aqueous-phase liquids (NAPLs) and the potential for high risk to human health or the environment.

**INDEPENDENT REMEDIATION (IR)**

Site remediation carried out with very little ministry involvement. Commonly, the ministry is simply notified at the start and at the completion of remediation.

**LEGAL INSTRUMENT**

A contaminated sites legal instrument.

**MIGRATION**

Migration includes the migration, due to natural forces, of environmental media (e.g., air, soil, sediment or water) and substances contained in, or emanating from, environmental media.

It does not include the relocation of environmental media or substances by a person.

**NON-HIGH RISK SITE**

A site that is not classified as a high risk site, including a site that was a high risk site but at which all high risk site conditions have been removed.

**OFFSITE MIGRATION**

An informal expression commonly used to describe contamination that has gone beyond its parcel (of land) of origin, typically onto land owned by others.

**POLICY**

A written governing principle or position that influences legislation, regulations, protocols and procedures and that guides or influences decision making and the actions of ministry staff.

**PROCEDURE**

Guidance to ministry decision makers and staff about how to perform their duties.

**PROTOCOL**

A document containing contaminated sites requirements issued by a Director under the authority of section 64 of the Environmental Management Act. Typically the requirements relate to site investigations; data analysis and interpretation; and planning, conducting and reporting on remediation.

**REMEDIATION**

An action to eliminate, limit, correct, counteract, mitigate or remove (i) any contaminant from the environment or (2) the adverse effects of any contaminant on the environment or human health.

Remediation may include investigating the site and analyzing and interpreting the data; evaluating remediation methods; preparing and implementing a remediation plan; and monitoring, verifying and confirming whether the remediation efforts comply with the remediation plan, with applicable standards and with any requirements imposed by a Director under the Environmental Management Act.

**RISK-MANAGED HIGH RISK SITE**

A high risk site where high risk conditions are addressed by risk management.

**SITE REGISTRY**

An electronic database, currently accessed through BC OnLine, that documents milestones in the screening, identification and cleanup of all sites in the ministry’s records.
In 1997, British Columbia introduced a new and comprehensive framework to identify and remediate contaminated sites. Since then, British Columbia’s contaminated sites legal regime has been reviewed and amended to streamline and improve the framework.

In this illustration, statutory milestones relate to the acts, and regulatory milestones relate to the regulations under the acts.
October 21, 2003
Environmental Management Act created from Waste Management Act (Bill 57).

April 19, 2004
Environmental Management Act amended (Bill 13).

July 8, 2004
Environmental Management Act in effect.

July 8, 2004
Stage 4 amendments – Updated authority to make regulations and decisions, removed Conditional Certificates, renamed professional experts, moved Director’s standards to regulation.

January 1, 2009
Stage 6 amendments – Expanded and amended environmental quality standards, clarified site profile regime, updated Summary of Site Condition.

May 31, 2011
Stage 7 amendments – Moved Director’s standards to regulation and introduced new standards for iron, manganese, aluminum and MCPA in drinking water.

January 24, 2013
Stage 8 amendments – Allowed for background iron and manganese. New human health soil standards for industrial use.

February 1, 2014
Stage 9 amendments – Human-health soil standards for lead for industrial and other land uses.

July 1, 2007
Stage 5 amendments – Simplified fees regime, put Summary of Site Condition provisions into effect, amended environmental quality standards.

July 1, 2009
Stage 7 amendments – Expanded and amended environmental quality standards, clarified site profile regime, updated Summary of Site Condition.
PROJECT HIGHLIGHTS
Each year, Section staff offer guidance on hundreds of contaminated sites, ensuring that the investigations, remediation planning and remediation are technically sound and comply with the law. The following pages showcase some of the fascinating diversity of sites that come within our purview. For non-high risk sites, we support Approved Professionals who oversee the work, and for high risk sites, Section staff take the regulatory lead.

The Goldstream story and dry cleaner story illustrate that site contamination can occur as a result of people doing very ordinary activities:

- For most people, taking their fine clothing to the dry cleaner is no more than an errand to be run. However, this seemingly innocuous service can cause complex subsurface contamination.

- When we pump gasoline into our cars, most of us do not contemplate the risks associated with transporting fuel through sensitive habitat, but the risks exist, as stakeholders in the Goldstream area know all too well.

In communities across B.C., local businesses, local governments and ordinary residents are challenged with disused commercial and industrial lots that sit empty year after year. Encouragingly, though, such brownfields are gaining ever more attention in B.C., and our Smithers and Nanaimo case studies showcase some of B.C.’s recent successes. These stories and the profile of Eric Pringle offer inspiring examples of what people can achieve in their communities if they work toward a common purpose.

For members of the Land Remediation Section, caring about and acting to remediate contaminated sites on behalf of British Columbians is what we do every day. Our aim is to preserve the natural environment as a resource and as habitat, to safeguard human health and to render sites suitable for development and redevelopment. The following case studies illustrate some of the complexities, approaches, and successes related to our recent site remediation work.
After a tanker truck spilled thousands of litres of fuel into sensitive habitat in Goldstream Provincial Park, the Land Remediation Section was instrumental in ensuring effective long-term investigation and remediation.

THE INCIDENT

On April 16, 2011, in Goldstream Provincial Park north of Victoria, a Columbia Fuels tanker truck rolled on its side, rupturing the tanks and spilling 43,000 litres of gasoline and 700 litres of diesel into a drainage ditch. From the ditch, fuel flowed into the sensitive habitat of the adjacent Goldstream River and the surrounding environment.

The hydrocarbons in the Goldstream River coated estuary vegetation, riverbank moss and woody debris; penetrated into soil and sediments; killed fish and invertebrates; and caused some wildlife to stay away.

THE IMMEDIATE RESPONSE

The Ministry of Environment’s Environmental Emergencies group provided immediate emergency response and then established a technical working group to plan the remediation and decide how to manage long-term effects. The working group was comprised of the Land Remediation Section, Columbia Fuels and their contractors, DFO, Environment Canada, Saanich Nations, the Goldstream Fish Hatchery and the B.C. Ministry of Transportation.

Because the spill had occurred on traditional First Nations land, the technical working group drew on traditional ecological and local knowledge to plan the remediation process.

After the emergency response, the working group transitioned to a roundtable group focused on the broader health and restoration of the Goldstream River system.

LAND REMEDIATION SECTION CONTRIBUTIONS

The role of the Land Remediation Section was and is to oversee cleanup and remediation while ensuring that the Environmental Management Act and Contaminated Sites Regulation are followed and that stakeholder concerns are identified and thoughtfully considered. The Land Remediation Section’s close involvement in this challenging project has contributed to the project’s successes to date.

For all the studies and testing done, the Section provided guidance and reviewed the results and reports, some of which were specifically requested by Section staff. The Section also visited the site a number of times to monitor progress, was present at a 2012 open house to talk to the public and media, and participated in the technical working group meetings and roundtable meetings.
Absorbent booms placed in the Goldstream River following the spill, June 2011.
Releasing fish into the Goldstream River as part of the remediation effort, August 2011.
INVESTIGATION AND REMEDIATION

During 2013 to 2015, Columbia Fuels’ consultants conducted extensive monitoring and sampling of groundwater, surface water and river sediment porewater, as well as several types of ecological investigation, including the following:

- Surface water was sampled from the spill site all the way down to the estuary.
- Benthic invertebrates were tested for contaminant residues in their tissues.
- The toxicity of groundwater was tested in the laboratory using an aquatic invertebrate (water fleas). This was to ensure that the residual contamination washing out from under the highway toward the Goldstream River would not affect aquatic life in the river.

Groundwater was remediated for 15 months using a soil vapour extraction system. As it was not possible to remediate groundwater near the source, the residual contamination will be addressed through a risk assessment and risk management approach.

SUCCESSES

By the end of 2014/15, dissolved hydrocarbon concentrations in groundwater were decreasing with time, and concentrations in surface water generally met water quality guidelines. As a result, monitoring and sampling were continuing, but on a reduced frequency.

Parkland Fuel Corporation (owner of Columbia Fuels) has proposed to fund environmental stewardship organizations, and habitat enhancement is planned by some other groups. These proposals are under discussion by the roundtable group.

Ministry of Environment staff at the April 2012 open house.
A WIDESPREAD LEGACY OF CONTAMINATION

Dry cleaning establishments are typically small, but their impact on the environment can be large. The contamination caused by dry cleaners tends to affect multiple property owners and to be technically complex, in part because dry cleaning solvent is denser than water and can sink deep underground and travel long distances. It is also because the solvents emit vapours that can collect under buildings or in basements and cause health risks.

Add to this the large numbers of dry cleaners in B.C., and it is easy to see why dry cleaners constitute a large proportion of the Land Remediation Section’s work.

HOW DRY CLEANING WORKS

Dry cleaning is not dry at all, but uses a non-aqueous (non-water-based) solvent. During dry cleaning, clothes are rotated on a cylinder in a cleaning tank containing solvent that is pumped in from a base tank. When the cleaning cycle is finished, the solvent is extracted from the clothes and pumped back to the base tank. After drying, the remaining solvent is vapourized and collected in a still for re-use.

RISKS TO THE ENVIRONMENT

The dry cleaning process affords numerous opportunities for solvent to be released underground and cause environmental problems, for example, when solvent is manually transferred to the cylinder or when waste solvent is stored close to a floor drain. Common routes to the subsurface are floor drains, back doors and storm drains.

PERCHLOROETHYLENE IN THE SUBSURFACE

Perchloroethylene (PCE) is the most common dry cleaning solvent. Because PCE is denser than water, even relatively small releases may sink through permeable soils and contaminate bedrock aquifers. Once PCE is in bedrock, predicting where it will migrate to is difficult, because it can flow along very narrow downward-sloping, interconnected cracks. Then, because it dissolves very slowly in water, it acts as a long-term source of groundwater contamination.

Many regions of B.C. have very sound bedrock. As a result, the few cracks that are present carry liquid PCE long distances, causing plumes of dissolved contamination that are deep and wide. To investigate these to drinking water standards requires very costly drilling programs.

TYPES OF HIGH RISK CONTAMINATION

<table>
<thead>
<tr>
<th>Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Industry</td>
<td>24%</td>
</tr>
<tr>
<td>Dry Cleaners</td>
<td>28%</td>
</tr>
<tr>
<td>Rail Yards</td>
<td>10%</td>
</tr>
<tr>
<td>Oil &amp; Gas Operations</td>
<td>7%</td>
</tr>
<tr>
<td>Sawmills/Wood Treatment</td>
<td>5%</td>
</tr>
<tr>
<td>Spill Sites</td>
<td>5%</td>
</tr>
<tr>
<td>Chemical Manufacturing</td>
<td>4%</td>
</tr>
<tr>
<td>Smelters</td>
<td>3%</td>
</tr>
<tr>
<td>Mines</td>
<td>3%</td>
</tr>
<tr>
<td>Others</td>
<td>11%</td>
</tr>
</tbody>
</table>

PROVINCE OF BRITISH COLUMBIA MINISTRY OF ENVIRONMENT
The first commercial dry cleaner opened in Paris in 1840 using turpentine, and since then, a variety of solvents have been used, including camphor, benzene, naphtha, kerosene, and white gas. Starting in the 1920s, chlorinated solvents were introduced: first carbon tetrachloride, then trichloroethylene (TCE), and finally perchloroethylene (PCE), which has been standard in commercial dry cleaning since the late 1950s.
CHALLENGES OF REMEDIATION

Remediating a dry cleaning site is not easy. Many remedial techniques commonly used for hydrocarbon or metal contamination are ineffective for dry cleaning contamination, so it is necessary to evaluate the various remediation techniques carefully. The most common are:

- **Excavation.** Works best where contamination is only in the soil.
- **Dual-phase extraction.** Physically removes solvent from the subsurface, including under buildings. It can be used on soil, groundwater and vapours.
- **In situ chemical oxidation.** Removes solvent through chemical reactions. It can be used in the deep subsurface.
- **In situ bioremediation.** Removes solvent through biological reactions and can be used in the deep subsurface.

In situ chemical oxidation. Permanganate (KMnO₄) is introduced into the contaminated subsurface via injection wells. Illustration courtesy of Lesley Reid and Christine Patterson, AECOM.

The ministry would like to acknowledge Christine Patterson and Lesley Reid of AECOM for providing photos and technical information for this section of the report.
BROWNFIELDS & COMPLIANCE
INTRODUCTION

Brownfields are nationally defined as abandoned, vacant, derelict or underutilized commercial and industrial properties where past actions have resulted in actual or perceived contamination and where there is an active potential for redevelopment. Brownfields are normally located in or near communities and can include closed service stations and other petroleum facilities, old industrial waterfronts, former railway yards and former dry cleaner sites.

Left as they are, brownfields can threaten human health and environmental quality, and they represent an untapped opportunity for economic development. Once redeveloped, brownfield sites can generate significant economic, environmental and social benefits and more sustainable communities overall.

BROWNFIELD BOOTCAMP PEER LEARNING PROGRAM

The Section supported the Federation of Canadian Municipalities’ Brownfield Boot Camp by lending Alan McCammon (Manager, Remediation Assurance & Brownfields) to speak at their Toronto session in October 2013. The Boot Camp is a peer learning program for municipal brownfield practitioners across Canada.

CANADIAN URBAN INSTITUTE BROWNIE AWARDS

British Columbia was honoured with three Canadian Urban Institute Brownie Awards in 2014. The CUI Brownie Awards program recognizes leadership, innovation and environmental sustainability in brownfields redevelopment.

DOWNTOWN NANAIMO TERMINAL CORRIDOR REVITALIZATION, NANAIMO, B.C.

The Downtown Nanaimo Business Improvement Association (DNBIA) won in the Communications, Marketing and Public Engagement category for their work in revitalizing a commercial strip through Nanaimo’s downtown. During this project, more than 80 landowners collaborated with the B.C. government to undertake environmental, planning and design studies along the strip.

HISTORY

The Terminal Avenue Corridor is a one-kilometre-long strip of land along the Trans-Canada Highway in downtown Nanaimo. Most of the land was created by filling the inner harbour with coal mine tailings, and it has been used for industry, auto repair and dry cleaning. The 123 properties along the corridor are a mix of underutilized commercial and light industrial properties that have had little redevelopment for 40 years.

Darren Moss accepting the Brownie award on behalf of the DNBIA, October 2014. Photo courtesy of HZD Photography and the Canadian Urban Institute
THE PROJECT

Phase 1. In May 2014, the ministry granted to the DNBIA an Area-Wide Determination for the corridor. This determination recognizes that contamination is widespread across the area and relieves individual property owners of delineating its extent beyond their property.

Phase 2. The DNBIA plans to apply to the ministry for an Area Wide Drinking Water Exemption for 120 properties. If the exemption is granted, provincial drinking water standards will no longer apply to soil or groundwater. This will increase the allowable concentrations before a site is considered contaminated and will make it less expensive for property owners to redevelop their sites.

PROVINCE OF B.C. AND LAND REMEDIATION SECTION SUPPORT

For Phase 1, a provincial Brownfield Renewal funding grant paid for $204,249 of the costs for testing and reporting, and the DNBIA paid for the remainder ($54,800). The ability to fund this phase at no direct expense to property owners was critical to moving the project ahead. Land Remediation Section staff also supported the project by meeting with the DNBIA to clarify provincial procedures, expectations and potential outcomes.

The Terminal Avenue Corridor in late 2014. Photo courtesy of Downtown Nanaimo Business Improvement Association
SMITHERS LEGACY PROJECT, BOVILL SQUARE, SMITHERS, B.C.

The Town of Smithers won in the Excellence in Project Development: Building Scale category for their work acquiring and remediating an 815-square-metre contaminated site, engaging stakeholders and creating a landmark space for public events in time for the Town’s 2013 centenary celebrations.

HISTORY

The project is in a highly visible location at 1089 Main Street in downtown Smithers. An unoccupied and derelict building remained on the site for 10 years after fire damage, and there were concerns about possible contamination from a 1940s service station.

THE PROJECT

A group seeking a location to build a performance stage, The Legacy Committee, identified the site as a potential location. The site’s purchase and remediation were funded by the Town of Smithers, who also helped lead the redevelopment project. The completed project includes parkland, a performance stage, plantings and seating.

The grand opening of Bovill Square in 2013 attracted hundreds of former Smithers residents and visitors, and the site has since brought more people downtown by hosting music, performances, rallies and festivals. This downtown vitality has fostered community pride and civic investment, and Bovill Square continues to bring together different groups and cultures within the community.

The redevelopment of this site has created a shift in the perception of brownfields in Smithers – from eyesores to opportunity sites.
BROWNFIELDER OF THE YEAR
ERIC PRINGLE

Eric Pringle, president of the Canadian Brownfields Network, is a senior environmental consultant who won the 2014 Brownfielder of the Year award for promoting the importance of innovation in brownfield redevelopment. His commitment to brownfields has a long history: in 2005, Eric created the B.C. chapter of the National Brownfield Association to provide local brownfield education with a national perspective.

The Land Remediation Section is committed to increasing the awareness and understanding of brownfields, so as to encourage their redevelopment. Eric has helped this effort through his leadership work with B.C.’s Brownfield Renewal Strategy over a period of several years, including creating the B.C. Toolkit for Former Service Station Sites, a website about how to redevelop former service station sites.

Collaboration among stakeholders, government and property owners is a key to brownfield redevelopment. Eric has earned a reputation as a brownfield champion for his lead role on many projects that epitomize the complexities of a brownfield and rely on collaboration to be successful. The following is a small sampling:

- creating the B.C. Environment Industry Association Brownfields Breakfast Series
- assembling a large contingent of brownfields speakers for the Land Remediation Section’s 2013 “Policy to Practice” conference
- advising Sole Food Street Farms as they create urban farms to employ inner-city Vancouver residents using city brownfields as farm plots (pro bono)
- undertaking an environmental assessment of the industrial oceanfront in Squamish
- facilitating charettes (community workshops) in two communities in northern and coastal B.C. to help owners, developers and municipal government understand what can be done with former service station sites

Eric worked on a research project for the Land Remediation Section that examined the legalities of transferring liability for brownfield remediation. The Section continues to use the results of this research to focus legislative reform.

A Sole Food farm. Eric Pringle provided pro bono guidance for the interim use of City of Vancouver brownfields as farm plots. Photo courtesy of Eric Pringle
Squamish oceanfront development. Photo courtesy of Eric Pringle

BCEIA Brownfields Breakfast Series event. More than 228 people from 96 organizations have attended these breakfast meetings. Photo courtesy of Eric Pringle
The Land Remediation Section is highly responsive to advances in scientific knowledge and to input from stakeholders, its key partners and other branches of government. Based on new science and new needs or information, the Section continually updates its policies and policy-related documents to provide a consistent, understandable and scientifically defensible set of requirements and guidance documents.

During the April 2013 to March 2015 reporting period, the Section amended the Contaminated Sites Regulation and introduced or updated 18 policy-related documents. Of these, seven were related to site profiles and were in response to changes in Procedure 9, “Procedures for Processing Site Profiles,” which came into effect in June 2010 and was most recently amended in January 2014.

In this reporting period, Land Remediation Section toxicologists had the satisfaction of updating the soil standards for lead, including replacing the 2013 interim standard for industrial land use.

In 2011, Health Canada concluded that no minimum dose exists for chronic adverse effects of lead (i.e., lead is toxic to people even in very low doses), but at that time, the science regarding how to best update the Schedule 5 human health soil standards was still being assessed. As a result, in January 2013, we introduced an interim soil standard for lead, the “Interim Industrial Land Use, Human Health Protection – Intake of Contaminated Soil Standard for Lead.”

The following three pages provide details about the 18 new or updated policy-related documents.
**PROTOCOLS**

Protocols are technical and administrative requirements issued by the Director of Waste Management under the authority of the Environmental Management Act.

**PROTOCOL 11, “Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation” (update)**

This update changes the concentrations for lead in Table 3, “Human Health Soil Ingestion Exposure Upper Cap Concentrations,” as a result of Minister’s amendments to the Contaminated Sites Regulation human health protection soil standards for lead.

**PROTOCOL 21, “Water Use Determination” (new; in draft)**

This new protocol provides criteria for determining groundwater uses at a site and supersedes former Technical Guidance 6, “Water Use Determination.” It provides criteria and detailed flowcharts for evaluating whether any of the following water uses are present or may exist in future: drinking water, irrigation and livestock water, and aquatic life uses.

**PROCEDURES**

Procedures are used by ministry staff to guide their administration of contaminated sites legislation and regulations.

**PROCEDURE 8, “Definitions and Acronyms for Contaminated Sites” (update)**

The Land Remediation Section updated this procedure by adding definitions of the following terms: affected parcel, affected site, contaminated sites legal instrument, environment, high risk site, non-high risk site, risk-managed high risk site and migration.

**PROCEDURE 9, “Procedures for Processing Site Profiles” (update)**

This procedure guides Land Remediation Section staff who process site profiles and decide whether a site investigation is required. Two of the changes in this update are the requirements for reporting within one year of receiving a “site investigation required” letter related to decommissioning, and providing clarification for when Scenario 2 releases apply.

**PROCEDURE 12, “Procedures for Preparing and Issuing Contaminated Sites Legal Instruments” (update)**

This procedure contains guidance for Ministry of Environment staff and Approved Professionals regarding how to prepare and process contaminated sites legal instruments. This update clarifies some of the administrative requirements and responsibilities of those involved in issuing legal instruments.

**TECHNICAL BULLETINS**

Technical Bulletins provide specific technical and administrative direction to augment existing contaminated sites policy, procedure, methodologies and guidance.

**TECHNICAL BULLETIN 1, “Risk Assessment Evaluation. Occupational Dermal Exposure from Contaminated Surface Water or Groundwater” (new)**

Technical Bulletin 1 explains how to evaluate the dermal (skin) exposure pathway to workers from contaminated surface water or groundwater when assessing human-health risk at contaminated sites.
TECHNICAL BULLETIN 2, “Requirements for Human Health and Ecological Risk Assessment Reports” (new)

This bulletin provides criteria and examples to help determine whether a risk assessment report is complete or whether it contains important errors that necessitate resubmission.

TECHNICAL GUIDANCE

Technical Guidance documents advise on technical and scientific matters involving the Contaminated Sites Regulation or protocols.

TECHNICAL GUIDANCE 20, “Applicability of Sodium and Chlorine Ion Soil Relocation Standards to Dredged Marine and Estuarine Materials” (updated)

This guidance document recommends how to operate bioremediation soil treatment facilities. The expiry date was removed, and this document will remain in effect until the Director decides otherwise.

ADMINISTRATIVE GUIDANCE

Administrative Guidance documents explain the administrative aspects of completing ministry forms, submitting reports to the ministry and consulting with other stakeholders.

ADMINISTRATIVE GUIDANCE 1, “Completing and Submitting Site Profiles” (updated)

Administrative Guidance documents 1, 2 and 6 were updated to improve clarity and to reflect changes in 2014 to Procedure 9, “Procedures for Processing Site Profiles.”

ADMINISTRATIVE GUIDANCE 2, “Site Profile Processing Requirements for Municipalities and Approving Officers” (updated)

See Administrative Guidance 1, above.

ADMINISTRATIVE GUIDANCE 6, “Site Profile Decisions and Requesting Releases Where Local Government Approvals Are Required” (updated)

See Administrative Guidance 1, above.

ADMINISTRATIVE GUIDANCE 13, “Guidance on Schedule 2 Purposes and Activities” (new)

To assist those preparing site profiles for submission, this document clarifies some of the commercial and industrial purposes and activities listed in Schedule 2. It answers ten frequently asked questions regarding Schedule 2 uses, for example, “Are railway tracks a Schedule 2 activity?”

ADMINISTRATIVE GUIDANCE 14, “Performance Verification Plans, Contingency Plans, and Operations and Maintenance Plans” (new)

This document augments the guidance in Procedure 12 about reporting requirements for Certificates of Compliance. It explains what performance verification plans (PVPs) are, when they are required and how they should be prepared, implemented and used.

ADMINISTRATIVE GUIDANCE 17, “COMPLETING SUMMARIES OF SITE CONDITION” (NEW)

This document provides guidance on completing Summaries of Site Condition, focussing on substance lists. These Summaries must be submitted with applications for legal instruments and ministry review of reports and plans.

FACT SHEETS

Fact Sheets explain the requirements of regulations and legislation related to site remediation.

FACT SHEET 5, “Site Profiles: Local Government Duties” (updated)

This fact sheet and Fact Sheet 19 were updated to improve clarity and to reflect changes in 2014 to Procedure 9, “Procedures for Processing Site Profiles.”
FACT SHEET 19, “The Site Profile System” (updated)
See Fact Sheet 5, previous page.

FACT SHEET 33, “Obtaining Information from the SWIS, AMS and Compliance and Enforcement Databases” (updated)
This fact sheet explains how to obtain information from four ministry databases: Special Waste Information System (SWIS), Authorization Management System (AMS), Environmental Violations Database (EVD) and Quarterly Compliance and Enforcement Reports. This update reflects new ways in which the ministry is making information available to the public.

FACT SHEET 48, “Remediation Liability and Combining Parcels with Different Owners” (updated)
This fact sheet has been expanded to explain in detail the options for establishing site boundaries where parcels within a site have different owners. It also clarifies that approval to combine parcels with different owners into a single site can be obtained either when applying for a contaminated sites legal instrument or before applying.
WHY VERIFY COMPLIANCE WITH REPORTING REQUIREMENTS?

As part of the Section’s commitment to effectively manage contaminated sites, it has developed a new system to verify compliance with reporting requirements related to legal instruments* such as approvals, certificates, or permits. All of these legal instruments commonly require that the landowner perform ongoing site monitoring and reporting. The two types of reporting requirement are:

- Approved Professional statements (AP statements)
- monitoring reports

Whereas monitoring reports describe the status of a site, AP statements confirm whether the conditions and requirements in a legal instrument have been met during the reporting period.

AP statements and monitoring reports have specific due dates, but these due dates are not always met, and for this reason the ministry has developed a new system to verify compliance with its reporting requirements. This new system provides significantly increased assurance that site owners or tenants are fulfilling their reporting requirements. The system reduces risk to the general public because important site information is in the hands of the ministry, and it reduces the risk to purchasers and other stakeholders who need to know the status of a site with confidence.

* The following types of legal instruments may require reporting: Approvals, Approvals in Principle, Certificates of Compliance, Contaminated Soil Relocation Agreements, Director’s requirements, permits, protocols, site profiles, site risk classification requirements and any other legal instruments issued by the Land Remediation Section that require monitoring reports to be submitted to the ministry.

VERIFYING AND ENFORCING COMPLIANCE

The Site Registry states the reporting requirements for each legal instrument, including due dates. Under the new system, if the required AP statements or monitoring reports are not received by the due date, Land Remediation Section staff follow up with the responsible parties by telephone or email. If the statement or report is still not received, the ministry sends a follow-up advisory or warning letter and, if necessary, takes legal action.

The Site Registry is queried monthly by Land Remediation staff to determine which AP statements or monitoring reports are overdue.

ASSESSING THE NEED FOR CHANGES TO MONITORING

Upon review of an AP statement or monitoring report, ministry staff determine whether a change to monitoring frequency is required and whether reporting is still necessary. Based on their review, ministry staff may invite the responsible person to apply to change or discontinue monitoring.
### REMEDIATION BY THE NUMBERS

#### LEGAL INSTRUMENTS & SITE RISK CLASSIFICATION

<table>
<thead>
<tr>
<th>Certificates of Compliance Issued</th>
<th>Approvals in Principle Issued</th>
<th>Final Determinations Issued</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerical 128</td>
<td>Risk-based 15</td>
<td>Not contaminated 74</td>
</tr>
<tr>
<td>Contaminated 143</td>
<td></td>
<td>Contaminated 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CSRAS Approved</th>
<th>Site Risk Classifications: Non-high Risk</th>
<th>Site Risk Classifications: High Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>903</td>
<td>97</td>
</tr>
</tbody>
</table>

#### LEGEND

**Certificate of Compliance**
A certificate, issued by a Director under the *Environmental Management Act*, stating that a site has been remediated in accordance with the standards prescribed for the use of the site and with any orders issued, any remediation plan approved by the Director and any requirements imposed by the Director. If he or she sees fit, the Director may impose conditions as part of the certificate, such as monitoring or financial security. Certificates of Compliance may be issued using risk-based or numerical standards.

**Approval in Principle**
A legal instrument under the *Environmental Management Act*, issued by a Director, stating that a remediation plan for a contaminated site has been reviewed and approved by the Director. The Approval in Principle may specify conditions that must be implemented during remediation.

**Final Determination of Contaminated Site: Site Contaminated/Not Contaminated**
A decision made under the *Environmental Management Act* by the Director of Waste Management as to whether a site is or is not a contaminated site.

**Contaminated Soil Relocation Agreement (CSRA)**
A legal agreement required when soil is to be moved from one site (the source site) to another (the receiving site). It is an agreement between the owner of a source site and the owner or operator of a receiving site and is co-signed by the Director.

**Site Risk Classification Report**
A method for classifying site risk levels that requires simple, objective measurements for characterizing primary contributors to environmental and human health risk (contaminant toxicity, exposure pathways and receptors). Risk classifications apply to toxicological risks associated with substances listed in the Contaminated Sites Regulation.

**Site Risk Classification: High Risk**
High risk sites are properties with conditions that pose a high risk to the environment and human health. They require high standards of care and responsiveness in investigation and remediation, and they warrant ministry involvement to ensure that appropriate and timely action takes place.

**Site Profile**
A screening form in Schedule 1 of the Contaminated Sites Regulation for identifying potentially contaminated sites. The profile is a summary created from readily available information about a site and includes a basic description of the site and of its past and present uses.

**Notice of Independent Remediation (NIR) Initiation**
A notice in writing issued by a person to a Director promptly once the person has started independent remediation.

**Notice of Independent Remediation (NIR) Completion**
A notice in writing issued by a person to a Director within 90 days of completing independent remediation.

**Notification of Likely or Actual Substance Migration to Neighbouring Site (NOM)**
Written notification by a responsible person to the person or persons who own neighbouring sites and to a Director regarding migration or likely migration of contamination.
Past report statistics for notification of independent remediation initiation included only those sites undertaking remediation of the entire site. Statistics for this report reflect all sites initiating remediation, even if for only a part of the site.

## SITE PROFILES

<table>
<thead>
<tr>
<th>SITE PROFILE – RECEIVED</th>
<th>SITE PROFILE – INVESTIGATION REQUIRED</th>
<th>SITE PROFILE – RELEASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>629</td>
<td>207</td>
<td>265</td>
</tr>
</tbody>
</table>

## SITE-SPECIFIC REQUIREMENTS IMPOSED

Under the authority of the *Environmental Management Act* (Part 4 and elsewhere), the Director of Waste Management has imposed remediation requirements at certain sites to ensure the adequate protection of human health and the environment. In 2013 to 2015, for several sites, the Section administered and ensured compliance with active orders (e.g., for site investigation, remediation, or pollution prevention) and requirements (related to independent remediation).

## NOTIFICATIONS

<table>
<thead>
<tr>
<th>NIR INITIATION SUBMITTED</th>
<th>NIR COMPLETION SUBMITTED</th>
<th>NOM RECEIVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,460</td>
<td>1,345</td>
<td>350</td>
</tr>
</tbody>
</table>

## INFORMATION

<table>
<thead>
<tr>
<th>SITE REGISTRY SEARCHES THROUGH BC ONLINE</th>
<th>SITE REGISTRY SEARCHES FOR PUBLIC BY MINISTRY</th>
<th>FILE CONTENTS RETRIEVALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>28,500</td>
<td>215</td>
<td>601</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTAMINATED SITE E-LINK SUBSCRIBERS (AT END OF FISCAL)</th>
<th>SITE PROFILE E-LINK SUBSCRIBERS (AT END OF FISCAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,346</td>
<td>454</td>
</tr>
</tbody>
</table>

*e-Link is a mailing list from the Land Remediation Section to subscribers.*
**REVENUE**

The Land Remediation Section generates revenue by charging fees for its services. **Service requests** are requests for ministry staff to review case files, monitoring reports or other documents as a step toward issuing a legal instrument, or to review documents submitted in connection with a non-compliance issue. **Site Registry queries** are requests for ministry staff to search the ministry’s site database. **Site information and file contents retrievals** are requests for information.

**EXPENDITURES**

**Staff travel** includes travel for site visits; for meetings with clients, consultants, the public, other stakeholders, and other ministry staff; and for professional development. **Professional services** are work that is contracted out. Examples are reviews of case files by Approved Professionals and specialized expertise in mapping or policy development. **Other expenditures** include staff training, office expenses and professional membership fees.

### REVENUE

<table>
<thead>
<tr>
<th>Service requests</th>
<th>Fiscal Year 2013/14</th>
<th>Fiscal Year 2014/15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$2,094,972</td>
<td>$1,918,557</td>
</tr>
<tr>
<td>Site Registry queries</td>
<td>$515,000</td>
<td>$570,000</td>
</tr>
<tr>
<td>Site information and file contents retrievals</td>
<td>$15,142</td>
<td>$28,435</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$2,625,114</strong></td>
<td><strong>$2,516,992</strong></td>
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</table>

### EXPENDITURES

<table>
<thead>
<tr>
<th>Salaries and benefits</th>
<th>Fiscal Year 2013/14</th>
<th>Fiscal Year 2014/15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$2,035,063</td>
<td>$2,495,629</td>
</tr>
<tr>
<td>Staff travel</td>
<td>$52,741</td>
<td>$58,311</td>
</tr>
<tr>
<td>Professional services</td>
<td>$116,247</td>
<td>$134,239</td>
</tr>
<tr>
<td>All other expenditures</td>
<td>$43,602</td>
<td>$56,562</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$2,247,653</strong></td>
<td><strong>$2,744,741</strong></td>
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</tbody>
</table>
ORGANIZATIONAL UNITS
B.C. MINISTRY OF ENVIRONMENT LAND REMEDIATION SECTION

RISK ASSESSMENT & REMEDIATION
The two Risk Assessment and Remediation Units primarily oversee the investigation and cleanup of high risk and high-priority contaminated sites. For these sites, Section staff with expertise in hydrogeology, toxicology, engineering, risk assessment and remediation review the documents and reports submitted and issue legal instruments (e.g., Certificates of Compliance) or decision letters.

To help stakeholders and staff understand their obligations, these Units develop technical guidance, procedures and protocols related to all aspects of contaminated site assessment and remediation. Staff also process applications for waste and hazardous waste authorizations related to remediation.

OPERATIONS MANAGEMENT
The Operations Management Unit leads the development of policy, legislation and regulations for contaminated sites. The Unit oversees the Approved Professional system of delivering ministry services for non-high risk contaminated sites and meets regularly with the CSAP Society to confer with them about the contaminated sites legal regime.

This Unit develops procedures for processing site profiles, processes site profiles, maintains and updates the Site Registry and administers the site risk classification system. For sites classified as high risk, it is authorized to require financial security.

REMEDIATION ASSURANCE & BROWNFIELDS
The Remediation Assurance and Brownfields Unit promotes and verifies compliance with the Environmental Management Act and Contaminated Sites Regulation. This includes identifying when ministry intervention is needed and imposing enforcement measures for parties who are out of compliance. It also includes educating industry about proper procedures for relocating contaminated soil.

The Unit plays a key role in brownfield remediation and redevelopment. It partners with other government agencies and non-government organizations to increase economic, social and environmental benefits through the revitalization of brownfield sites. It also oversees the contaminated site aspects of environmental assessments for large projects such as the Evergreen SkyTrain line.

The Remediation Assurance and Brownfields Unit performs administrative functions related to its mandate:

⁻ Staff in this Unit process applications for legal instruments, respond to requests for site information, conduct Site Registry searches, maintain the Land Remediation Section site database (SITE) and train Section staff to use the database.

⁻ Unit staff also check that applications to the Land Remediation Section for various services are complete, help applicants if needed, identify case files requiring Land Remediation Section review and provide information to clients regarding review services options.

⁻ This Unit maintains a system of accounting and auditing for contaminated sites services applications, and it reports on application and case file reviewer workloads.

SCIENCE & STANDARDS
The Science and Standards Section develops scientifically defensible environmental quality standards. Staff continually update the ministry’s risk assessment methodology for human and ecological health and contribute to developments in contaminated sites policy and guidance. They provide expert advice to the Environmental Management Branch and the Environmental Protection Division, and they represent the ministry on several scientific committees.

The Science and Standards Section reviews case files for contaminated sites that have undergone risk assessment, and it advises ministry staff on the remediation of high risk contaminated sites.

PROGRAM SUPPORT AND RECORDS MANAGEMENT
Program support and records management staff from the Corporate Services Division provide key administrative support services to Land Remediation Section staff and the public. A significant area of service involves retrieving and managing contaminated site files. These files are needed by Section staff for their technical and compliance reviews and by Business Services to respond to stakeholders’ requests for information related to contaminated sites.
ORGANIZATIONAL ROLES
B.C. MINISTRY OF ENVIRONMENT LAND REMEDIATION SECTION

RISK ASSESSMENT & REMEDIATION

UNIT 1 STAFF

→ Colm Condon (until November 2014)
  Unit Manager/Risk Assessment Officer (risk assessment)

→ Peter Kickham (from November 2014)
  Unit Manager/Risk Assessment Officer (risk assessment/vapours)

→ Aimee Brisbois
  Risk Assessment Officer

→ Julia Brooke
  Sr. Officer (hydrogeology)

→ Liliana Jerade
  Sr. Officer (high risk review)

→ Dave Lockhart (retired May 2015)
  Sr. Officer (Approved Professional submissions/authorizations)

→ Amy Sloma
  Sr. Officer (hydrogeology)

→ Lavinia Zanini
  Sr. Officer (hydrogeology)

UNIT 2 STAFF

→ Peggy Evans
  Unit Manager (hydrogeology)

→ Steve Dankey
  Sr. Officer (hydrogeology)

→ Ardith Gingell
  Sr. Officer (external review coordination/authorizations)

→ Annette Mortensen
  Sr. Officer (hydrogeology)

→ Heather Osachoff
  Risk Assessment Officer

OPERATIONS MANAGEMENT

UNIT STAFF

→ John Ward (retired May 2015)
  Unit Manager (legislation/policy development)

→ Kelli Larsen
  Sr. Officer (site profiles/authorizations)

→ Tyler O’Grady
  Sr. Officer (site risk classification/authorizations)

REMEDIATION ASSURANCE & BROWNFIELDS

UNIT STAFF

→ Alan McCammon
  Unit Manager (brownfields lead/hydrogeology)

→ Janet Barrett
  Sr. Officer (hydrogeology)

→ Coleen Hackinen (until August 2013)
  Sr. Officer (compliance lead/policy development)

→ Vince Hanemayer
  Sr. Officer (Site Registrar; ministry representative on CSAP Society Board of Directors)

→ Lucy Hewlett
  Team Lead, Site Administration

→ Jennifer Samways
  Site Information Advisor

→ Kerri Skelly
  Sr. Officer (compliance outreach lead)

→ Michael Macfarlane
  Director (risk assessment)

→ Michele Parker
  Administrative support
In the Land Remediation Section, we draw upon the expertise of staff in our various Units to address the many diverse issues, sites and regulatory requirements for which we are responsible. Areas of particular focus for Section staff members are shown in parentheses following their titles.

**SCIENCE & STANDARDS**

**SECTION STAFF**

- Glyn Fox  
  Branch Science Advisor (toxicology)
- Jessie Givner (until August 2014)  
  Sr. Policy Advisor (legislation/policy development)
- Lizzy Mos  
  Risk Assessment Specialist  
  (human health/ecological risk assessment)
- Remi Odense  
  Risk Assessment Officer (ecological risk assessment)
- Jennifer Puhallo  
  Risk Assessment Officer
- George Szefer  
  Sr. Officer (hydrogeology)

**PROGRAM SUPPORT AND RECORDS MANAGEMENT**

**STAFF**

- Barb Dickey (until May 2015)  
  Administrative Support
- Stephanie Gustafson  
  Administrative Support
- Wendy Lojstrup  
  Filing Clerk

**CO-OP STUDENT**

The Section was fortunate in having a knowledgeable and hard-working co-op student, Russell Prentice, who worked on groundwater mapping for an eight-month term.

**STAFF RETIREMENTS**

Coleen Hackinen retired from the ministry in August 2013 after 22 years of devoted service. She was an invaluable resource for compliance-related matters and left as her legacy a compliance framework for the Section.

Dave Lockhart retired in early 2015 after a remarkable 47 years of service to the Province, most recently as a Senior Officer specializing in Approved Professional submissions and authorizations.

John Ward retired in early 2015 after devoting 33 years to the Province, most recently as the Manager of the Operations Management Unit. In this role, John led the development of policy, legislation and regulations for contaminated sites.
CONTAMINATED SITES APPROVED PROFESSIONALS SOCIETY

The Contaminated Sites Approved Professionals (CSAP) Society is one of the Land Remediation Section’s primary partners in ensuring best practices for site investigation and remediation in B.C. The Society is comprised of professionals from outside the ministry who are approved to review applications for legal instruments and other submissions required by the ministry. They are authorized to do so under Protocol 6 of the Environmental Management Act, “Eligibility of Applications for Review by Approved Professionals.”

Approved Professionals are increasingly responsible for making recommendations on low- and medium-risk sites, freeing up Section staff to focus on high risk sites.

The Society undertakes the credentialing process that qualifies professional engineers, geoscientists, chemists, biologists and agrologists for appointment to the Roster of Approved Professionals. The Society sets qualifying exams and conducts member performance assessments to ensure that best practices are being met.

CSAP and the ministry work collaboratively to promote industry best practices. For example:

➤ The CSAP Board of Directors includes a Land Remediation Section member who attends the Board’s regular bimonthly meetings.

➤ The Board executive meets with the Land Remediation Section Management Team on alternate months.

➤ In 2013/14 and 2014/15, Section staff presented at CSAP’s Annual General Meeting (AGM) in June and at the fall professional development workshop. The AGM is well attended by CSAP members, and the fall workshop is open to other interested stakeholders.
SCIENCE ADVISORY BOARD

The Science Advisory Board for Contaminated Sites in British Columbia (SAB) is a non-profit foundation that provides science education and a science-based forum for the contaminated sites community in British Columbia.

From its formation in 2006 until 2011, the SAB provided science-based strategic advice on the direction of contaminated sites management in British Columbia and developed scientific reports, procedures and assessment protocols. The SAB depended largely on Ministry of Environment funding to deliver its mandate.

Starting in 2011, the SAB shifted away from generating scientific tools (reports, methodologies and guidance) toward providing science education and facilitated communication on scientific issues to B.C.’s contaminated sites community. This shift was, regrettably, necessitated by B.C. government-wide fiscal restraints that ended ministry funding of the SAB and severely curtailed the SAB’s ability to generate new scientific tools.

Since 2011, the SAB has fulfilled its new function through its annual conference and workshop on contaminated sites. These conferences and workshops have provided for invaluable scientific discussion and advice on a wide range of emerging issues related to the advancement of science-based contaminated site investigation, remediation and management in B.C.

The ministry would like to acknowledge the very significant contribution our key partners have made to ministry policies, procedures and protocols.
What would YOU like this space to be?

- not a gas station
- low income housing
- public workout space
- sculpture
- open graffiti wall
The Section is proud of British Columbia’s contaminated sites legal regime and the results we have achieved within it, but we are never complacent. Rather, we continually strive to improve our laws, policies and procedures so we can better meet our mandate of protecting human health and the environment while respecting fiscal realities and stakeholders’ interests.

The Section has recognized our soil relocation requirements and site profile process as two areas that warrant improvement, and we have begun formal consultations with stakeholders – local governments, environmental consultants and many others – regarding possible changes.

In fulfilling our mandate, we are helped by the significant contributions of many individuals and groups. For their contributions, I want to recognize Section staff and the Contaminated Sites Approved Professional (CSAP) Society, the Science Advisory Board for Contaminated Sites, other provincial and federal ministries, local governments and First Nations. These parties continue to play an important role as the Section works to set priorities for the contaminated sites program and identify opportunities to improve on the current regulatory regime.

Mike Macfarlane
Director, Land Remediation
Environmental Emergencies and Land Remediation Branch
B.C. Ministry of Environment
FOR FURTHER INFORMATION

www.env.gov.bc.ca/epd/remediation

Contact list: www.env.gov.bc.ca/epd/remediation/contact.htm

Email: site@gov.bc.ca
Phone: 250-387-4441

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Land Remediation Section
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