

**Canadian Institute of Resources Law
Institut canadien du droit des ressources**

Biodiversity and Conservation Offsets: A Guide for Albertans

David W. Poulton

CIRL Occasional Paper #48

May 2015

MFH 3353, Faculty of Law, University of Calgary, Calgary, Alberta, Canada T2N 1N4
Tel: (403) 220-3200 Fax: (403) 282-6182 E-mail: cirl@ucalgary.ca Web: www.cirl.ca

The Canadian Institute of Resources Law encourages the availability, dissemination and exchange of public information. You may copy, distribute, display, download and otherwise freely deal with this work on the following conditions:

- (1) You must acknowledge the source of this work,
- (2) You may not modify this work, and
- (3) You must not make commercial use of this work without the prior written permission of the author(s).

Copyright © 2015

Canadian Institute of Resources Law

The Canadian Institute of Resources Law was incorporated in 1979 with a mandate to examine the legal aspects of both renewable and non-renewable resources. Its work falls into three interrelated areas: research, education, and publication.

The Institute has engaged in a wide variety of research projects, including studies on oil and gas, mining, forestry, water, electricity, the environment, aboriginal rights, surface rights, and the trade of Canada's natural resources.

The education function of the Institute is pursued by sponsoring conferences and short courses on particular topical aspects of resources law, and through teaching in the Faculty of Law at the University of Calgary.

The major publication of the Institute is its ongoing looseleaf service, the *Canada Energy Law Service*, published in association with Carswell. The results of other Institute research are published as discussion papers.

The Institute is supported by the Alberta Law Foundation, the Government of Canada, and the private sector. The members of the Board of Directors are appointed by the Faculty of Law at the University of Calgary and the President of the University of Calgary.

All enquiries should be addressed to:

The Executive Director
Canadian Institute of Resources Law
Murray Fraser Hall, Room 3353 (MFH 3353)
Faculty of Law
University of Calgary
Calgary, Alberta, Canada T2N 1N4

Telephone: (403) 220-3200
Facsimile: (403) 282-6182
E-mail: cirl@ucalgary.ca
Website: www.cirl.ca

Institut canadien du droit des ressources

L'institut canadien du droit des ressources a été constitué en 1979 et a reçu pour mission d'étudier les aspects juridiques des ressources renouvelables et non renouvelables. Son travail porte sur trois domaines étroitement reliés entre eux, soit la recherche, l'enseignement et les publications.

L'institut a entrepris une vaste gamme de projets de recherche, notamment des études portant sur le pétrole et le gaz, l'exploitation des mines, l'exploitation forestière, les eaux, l'électricité, l'environnement, les droits des autochtones, les droits de surface et le commerce des ressources naturelles du Canada.

L'institut remplit ses fonctions éducatives en commanditant des conférences et des cours de courte durée sur des sujets d'actualité particuliers en droit des ressources et par le truchement de l'enseignement à la Faculté de droit de l'Université de Calgary.

La plus importante publication de l'institut est son service de publication continue à feuilles mobiles intitulé le *Canada Energy Law Service*, publié conjointement avec Carswell. L'institut publie les résultats d'autres recherches sous forme de documents d'étude.

L'institut reçoit des subventions de l'Alberta Law Foundation, du gouvernement du Canada et du secteur privé. Les membres du conseil d'administration sont nommés par la Faculté de droit de l'Université de Calgary et le recteur de l'Université de Calgary.

Toute demande de renseignement doit être adressée au:

Directeur exécutif
Institut canadien du droit des ressources
Murray Fraser Hall, pièce 3353
Faculté de droit
L'Université de Calgary
Calgary, Alberta, Canada T2N 1N4
Téléphone: (403) 220-3200
Télécopieur: (403) 282-6182
Courriel: cirl@ucalgary.ca
Site Web: www.cirl.ca

Table of Contents

<i>Acknowledgements</i>	vii
1.0 Introduction	1
2.0 The Challenge of Biodiversity Loss	2
3.0 Biodiversity and Conservation Offsets	3
3.1 The Mitigation Hierarchy	5
3.2 Drivers of Biodiversity Offsetting	6
3.2.1 Voluntary Offsets	6
3.2.2 Individual Offsets Ordered by Regulators	7
3.2.3 Offsets Required by Regulation or Policy	8
3.3 Offset Delivery Mechanisms	9
3.3.1 Project-Specific Offsetting	9
3.3.2 Offset Credit Banking	9
3.3.3 In-Lieu Fees	10
4.0 Alberta: From Carbon to Biodiversity	10
4.1 Regional Planning and the Exploration of New Tools	10
4.2 GHG Reduction	12
4.3 Wetlands	13
4.4 Other Conservation Offsets to Come	15
5.0 Key Issues in Biodiversity Offsetting	16
5.1 Equivalency and Currency	16
5.2 Additionality and Calculating Loss and Gains	18
5.3 Timing Considerations	21
5.4 Risk Management	22
6.0 Key Issues and the <i>Alberta Wetland Policy</i>	23
6.1 Equivalency and Currency	23
6.2 Additionality, Losses and Gains	24
6.3 Timing Considerations	25
6.4 Risk Management	25
7.0 Systemic Challenges	26
7.1 Public Lands and Resources	26
7.2 Stacking of Multiple Types of Credits	27
7.3 Offsetting and Reclamation Requirements	28
8.0 Conclusion	29
<i>CIRL Publications</i>	31

Acknowledgements

The author gratefully acknowledges the financial support of the Alberta Law Foundation which made the writing of this paper possible. The work was invited and facilitated by Allan Ingelson, Executive Director of the Canadian Institute of Resources Law (CIRL), who provided advice and feedback at several stages. Arlene Kwasniak, Marian Weber, Anish Neupane, and Kay Linley all provided helpful comments on earlier drafts of this paper. Sue Parsons of CIRL provided assistance in getting the manuscript fit for publication. Much of the subject matter of the work was derived from thesis research supervised by Nigel Bankes of the University of Calgary Faculty of Law. My thanks to all of these people and institutions. Of course, any shortfalls or errors in the work are entirely my own.

1.0 Introduction

In the face of a global decline in plant and animal populations and species, and a provincial landscape increasingly crowded with multiple human activities, the Government of Alberta is exploring a suite of new policy tools to encourage better stewardship of the Province's natural heritage. This is being done as part of a move to regional planning of future land uses.

The purpose of this paper is to introduce Albertans to one of these new tools, conservation offsets. Under an offset system the negative environmental impacts of land or resource development may be compensated for by the intentional creation of corresponding positive impacts. This paper describes this tool and the approach that Alberta is taking in policy development respecting offsets. It also offers some comments on the strengths and weaknesses of the approach Alberta is taking.

The paper starts with a review of the global loss of biodiversity and how the concept of conservation offsetting may be a means of slowing or even reversing this trend. It considers the variety of ways in which it may operate.

Turning then to Alberta, the paper reviews the Province's current plans and commitments to improve the management of the landscape through regional planning and the development of new stewardship tools. As the development of those tools is still in very early stages, the paper looks at development of two types of current environmental offsets in the expectation that they will be precedents for a future umbrella offsets framework.

The two systems which are examined as probable precedents are the offset systems for greenhouse gas (GHG) emissions reductions, and for wetlands and wetland functions. The GHG system has been fully operational for several years. The wetland credit system is new and still under development. These systems share a model for the generation of environmental credits which may be applied to compensate for losses. Together they manifest some of the elements of what is becoming the Alberta template for conservation offsets.

There are series of fundamental issues which are common to all biodiversity offset systems. These will be reviewed in Section 5. In order to both fully explore those issues and to further explicate the new Alberta wetland offset policy, the treatment of those issues under the wetland policy will be discussed in Section 6. As well, some systemic issues which challenge the development of offset policy in Alberta will be touched upon.

In conclusion, some general comments will be offered on the nature and merits of the direction which Alberta appears to be heading.

2.0 The Challenge of Biodiversity Loss

Biological diversity or “biodiversity” has been defined as:

... the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.¹

It is the rich complex of life and the systems in which and with which it interacts that provide humanity with a range of “ecosystem services” including breathable air, drinkable water, and edible food.

Both the number of species and, in many cases, the range and populations of each of those species are increasingly imperilled. To refer to just a few of the plethora of studies and statistics available:

- One recent estimate found that, on average, populations of vertebrate species have declined by half in the last forty years;²
- Forty-four percent of water bird populations for which trends are known are in decline;³
- At least forty-one percent of known amphibian species are threatened with extinction;⁴
- In the last century the rate of species extinction worldwide has been between one hundred and one thousand times the rate typical over the Earth’s history.⁵

This loss is occurring in all parts of the world, and neither Canada nor Alberta are exempt. The Canadian government has recognized the seriousness of the situation in the *Canadian Biodiversity Strategy*, now nearly twenty years old, which commences with the following statement:

Biodiversity supports human societies ecologically, culturally, and spiritually. Despite its importance, however, ecosystems are being degraded and species and genetic diversity reduced at

¹ United Nations, *Convention on Biological Diversity*, 5 June 1992, 1760 UNTS 79, Art 2 (entered into force 29 December 1993).

² World Wildlife Fund International (WWF) et al, *Living Planet Report 2014: Species and Spaces, People and Places* (Gland, Switzerland & London, UK: WWF, 2014).

³ Secretariat of the Convention on Biological Diversity, *Biological Diversity Outlook 3* (Montreal: Secretariat of the Convention on Biological Diversity, 2010) at 24.

⁴ Richard Monastersky, “Biodiversity: Life – A Status Report” (2014) 516:7530 *Nature*, online: [Nature <http://www.nature.com/news/biodiversity-life-a-status-report-1.1652>](http://www.nature.com/news/biodiversity-life-a-status-report-1.1652)

⁵ Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Biodiversity Synthesis* (Washington, DC: World Resources Institute, 2005) at 3-4, online: [Millennium Ecosystem Assessment <http://www.unep.org/maweb/en/Synthesis.aspx>](http://www.unep.org/maweb/en/Synthesis.aspx).

an alarming rate due to the impact of our growing human population and increasing resource consumption rates. The global decline of biodiversity is now recognized as one of the most serious environmental issues facing humanity.⁶

The Committee on the Status of Endangered Wildlife in Canada has recommended, and the Government of Canada has accepted, 345 species for “at-risk” status under federal legislation, “and the list is growing.”⁷ In Alberta the vulnerability of high-profile species such as woodland caribou and grizzly bear makes headlines, but dozens of less well-known species are also officially recognized as at risk to one extent or another.⁸

This ominous trend has been addressed for several years by traditional conservation mechanisms such as species-at-risk legislation, parks and protected areas, private conservation initiatives, and others. Valuable though these measures continue to be, the threats to biodiversity continue.

There is a need to supplement our efforts with a new suite of tools. Conservation offsetting is one such tool, one which Alberta is moving to add to its toolbox. It should not be seen as replacement for others. The value of existing tools remains and grows, and it is important that the new tools not be seen as displacing them, for many approaches are needed if we are to turn the tide of biodiversity loss.

3.0 Biodiversity and Conservation Offsets

Biodiversity offsets have been defined by the Business and Biodiversity Offset Programme (BBOP)⁹ as:

⁶ Minister of Supply and Services Canada, *Canadian Biodiversity Strategy: Canada’s Response to the Convention on Biological Diversity* (Ottawa: Environment Canada, 1995) at 1, online [biodivcanada.ca](http://www.biodivcanada.ca) <<http://www.biodivcanada.ca/default.asp?lang=En&n=560ED58E-1>>. Despite its age, this document continues to be the reference by which all federal, provincial, and territorial biodiversity policies are framed.

⁷ “Species at Risk”, online: Environment Canada <<https://www.ec.gc.ca/nature/default.asp?lang=En&n=FB5A4CA8-1>>.

⁸ The Province currently recognizes forty-two species at risk. A complete list and discussion of each species and the threats it faces may be found in Alberta Environment and Sustainable Resource Development, *A Guide to Endangered and Threatened Species and Species of Special Concern in Alberta*, Version 1 (Edmonton: Alberta Environment and Sustainable Resource Development, 2014) online: Alberta Environment and Sustainable Resource Development <http://issuu.com/esrd/docs/species_at_risk_guide_book_final_for?e=12110136/8006392>.

⁹ Business and Biodiversity Offset Programme (BBOP) is an international collaboration of industries, environmental organizations, government agencies, financial institutions and researchers focusing on the development of methodologies and standards for biodiversity offsetting. For more information, see its website: <<http://bbop.forest-trends.org>>.

[M]easurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure, ecosystem function, and people's use and cultural values associated with biodiversity.¹⁰

The concept is applied when a land or resource development, which would otherwise produce a negative impact on biodiversity, is tied to an obligation to produce a separate but related positive biodiversity impact of an equivalent or greater extent. The goal is to neutralize the negative environmental impacts of the development, or to leave a net positive impact, when both the development and the offset are considered together.

While no one suggests that meeting that goal is easy or simple (some of the major challenges are discussed later in this paper), it envisions a means whereby socially and economically valuable development may proceed without producing a net loss to nature. This alignment of development and environmental protection can be thought of as one manifestation of truly sustainable development.

At this point a note on terminology is warranted. Because offsetting for biodiversity is a relatively new concept, and one which has received consideration in many parts of the world,¹¹ various terms have been used for it. In Alberta's land use policy and legislation the term "conservation offset" (or "off-set") is used. The Canadian government has coined "conservation allowance," while the Americans refer to "compensatory mitigation." While all of these terms, and others such as "habitat compensation" may not be perfectly synonymous, they have a very high degree of overlap in their meanings and can usually be used interchangeably. A recent discussion paper circulated by the Government of Alberta, however, uses "conservation offset" as a general category encompassing many environmental media, of which biodiversity offsets are merely one subset.¹² Similarly, GHG offsets and wetland offsets are treated as subsets of conservation offsets. In this paper I shall follow this usage.

Conservation offsets are considered to be one form of market-based environmental instrument in the sense that they impose on a developer the cost of its environmental footprint. Its operations and products are thereby called upon to bear their true

¹⁰ BBOP, *To No Net Loss and Beyond An Overview of the Business and Biodiversity Offsets Programme* (Washington, DC: Forest Trends, 2013) at 4 [*BBOP Overview*], online: BBOP <http://www.forest-trends.org/documents/files/doc_3319.pdf>.

¹¹ A 2011 review indicated that a total of forty-five biodiversity offset programs were active in various jurisdictions around the world, with another twenty-seven under development: Becca Madsen et al, *Update: State of Biodiversity Markets* (Washington, DC: Ecosystem Marketplace, 2011) at 2-3, online: Ecosystem Marketplace <http://www.forest-trends.org/documents/files/doc_2848.pdf>. Several more programs, including Alberta's, have been commenced in the intervening years.

¹² Government of Alberta, *Alberta Conservation Offsets Policy Framework Discussion Paper* (24 October 2014) [unpublished, on file with author] [*Offsets Framework Discussion Paper*].

environmental cost (as best we can estimate it), which influences development choices and is passed on as price signals to consumers. As well, particular forms of offsets, such as banking (discussed below), may use market exchanges which will likely recruit other economic and market forces.

3.1 The Mitigation Hierarchy

One commonly-expressed reservation about pursuing conservation offsetting is that its availability may be used as a rationalization for reducing the care and oversight that goes into development project planning and permitting and environmental mitigation. There is a fear that shortcuts may be taken by development proponents or regulators with the mindset that any environmental consequences may be made up for by use of offsets. In this view offsetting merely becomes a means of buying permission to undertake bad development, a “license to trash”.¹³

It is precisely for this reason that proponents of conservation offsetting insist that offsets be used only as the final step in the “mitigation hierarchy.” First a development project should be designed and situated (assuming it can be justified at all when all social and environmental impacts are considered, something that ought never to be taken for granted) to *avoid* all unnecessary negative impacts. Secondly, all reasonable *mitigation and restoration* efforts should be made on the development site, so as to minimize the residual impact. Only that residual impact remaining after avoidance and minimization is measured so as to establish the targets for *offsetting*. The hierarchy, then, is 1) avoidance 2) minimization (on-site mitigation and restoration), and 3) as a final step only, offsetting. In large part the mitigation hierarchy is a reflection of the risks inherent in offsetting, several sources of which will be discussed later in this paper.

Adherence to the mitigation hierarchy is a near universal requirement in policies for biodiversity offsetting. In practice, however, the application of the hierarchy can be problematic. It is challenging to define the thresholds at which one has made sufficient efforts at one level, so as to justify moving to the next. For example, both the regulatory systems for wetlands offsetting in the United States and in Canada have been criticized for being too lax in promoting avoidance.¹⁴ This is a matter which requires more research

¹³ Kerry ten Kate, Josh Bishop & Ricardo Bayon, *Biodiversity Offsets: Views, Experience, and Business Case* (Gland, Switzerland: IUCN and Insight Investment, 2004).

¹⁴ Shari Clare et al, “Where is the Avoidance in the Implementation of Wetland Law and Policy?” (2011) 19 *Wetlands Ecology and Management* 165; Bruce A McKenney & Joseph M Kiesecker, “Policy Development for Biodiversity Offsets: A Review of Offset Frameworks” (2010) 45 *Environmental Management* 165 at 173; Palmer Hough & Morgan Robertson, “Mitigation Under Section 404 of the Clean Water Act: Where it Comes From, What It Means” (2009) 17 *Wetlands Ecology and Management* 15 at 30, 33. To be fair, avoidance is a difficult matter to track, as it will often occur outside the regulatory review process, perhaps at such an early stage that it may never be recorded. An offset system may operate effectively if it deters even early consideration of some inappropriate developments.

and sustained vigilance if the application of offsetting is not to validate the fears of its critics.

3.2 Drivers of Biodiversity Offsetting

The will to undertake offsets may be motivated from a variety of sources. Some are voluntary or internal to a development proponent, while others are found in regulatory processes or policies.

3.2.1 Voluntary Offsets

Offsets may be undertaken voluntarily by a developer for a variety of reasons including stakeholder relationships, corporate reputation, or a need to manage issues while facing a regulatory process.¹⁵ Alberta has seen several such voluntary offset projects.

For example, Shell Canada Ltd. announced in 2012 that it was purchasing 740 hectares of boreal forest habitat to establish a conservation area under the joint management of Shell and the Alberta Conservation Association. On its website Shell Canada described the rationale for the action in offset terms:

The Athabasca Oil Sands Project (AOSP) has been conserving habitat in the boreal wilderness since 2007 as part of a commitment with the Oil Sands Environment Coalition (OSEC). The AOSP committed to spend \$2 million over ten years to help mitigate, *and partially offset*, land and habitat disturbances resulting from existing mining operations. With the addition of the True North Forest, we have now conserved over 3000 acres of *habitat offset land*.¹⁶

In a similar vein, Terasen Pipelines Inc., and its successor Kinder Morgan Canada, committed to create a fund of three million dollars for environmental improvements in Jasper National Park and Mount Robson Provincial Park, as part of an agreement negotiated with environmental groups concerned with its expansion of the Trans Mountain Pipeline through the two parks. The explicit goal of the parties was to create a net benefit to the ecological conditions of the two parks taking into account the residual negative impact of the pipeline expansion.¹⁷

¹⁵ ten Kate et al, *supra* note 13 at 38-45.

¹⁶ “The Shell True North Forest”, online: Shell Canada <<http://www.shell.ca/en/environment-society/true-north.html>> [emphasis added].

¹⁷ David W Poulton, “Conservation Offsets and Pipeline Construction: A Case Study of the TMX Anchor Loop Project” in *Proceedings of the 2012 9th International Pipeline Conference*, Calgary, Alberta 24-28 September 2012; David W Poulton, “Biodiversity Offsets and Pipelines: A Case Study of the TMX Anchor Loop” in Jean Doucet, ed, *10th International Symposium on Environmental Concerns in Rights-of-*

3.2.2 Individual Offsets Ordered by Regulators

In recent years several regulatory bodies have required offsets as part of the conditions they have placed on the permitting of development projects. This has largely been done on a piecemeal basis based on the particulars of the individual development before the regulator. To name just two examples:

- In 2013 the federal Joint Review Panel examining the proposed Northern Gateway Pipeline project recommended approval of the project subject to 209 conditions including nineteen conditions requiring five different types of biodiversity offsets — offsets for caribou habitat, wetlands, rare plants and ecological communities, fish and fish habitat, and Marine habitat.¹⁸
- A federal-provincial Joint Review Panel considering Shell Canada’s application to expand the Jackpine oil sands mine released its report in July 2013. The panel noted that oil sands mining and preservation of natural values on the site were fundamentally difficult to reconcile, but stated its belief that “biodiversity offsets (or allowances) provide a potentially viable mechanism for mitigating these effects without sterilizing bitumen resources” The Panel concluded this discussion with the recommendation:

... that before other provincial and federal approvals are issued, the governments of Canada and Alberta cooperatively consider the need for biodiversity offsets to address the significant adverse project effects to wetlands wetland-reliant species at risk, migratory birds that are wetland-reliant or species at risk, and biodiversity and the significant adverse cumulative effects to wetlands, traditional plant potential areas, old-growth forests, wetland-reliant species at risk and migratory birds, old-growth forest-reliant species at risk and migratory birds, biodiversity and Aboriginal traditional use ...¹⁹

and that such considerations guide the issuing of permits. Unfortunately the Government of Canada in considering the final approval for the Jackpine expansion did not address this recommendation, and thereby passed up an opportunity to clarify federal offset policy.²⁰

Way Management (Champagne, Illinois: Utility Arborists Association, 2014) 45, online: <<http://viewer.epaperflip.com/Viewer.aspx?docid=a265fdcf-5e56-4116-90f3-a37a00cf6ee8#?page=58>>.

¹⁸ Canada, National Energy Board, *Report of the Joint Review Panel for the Enbridge Gateway Project, Volume 2: Considerations* (Calgary: National Energy Board, 2013) online: NEB <<http://gatewaypanel.review-examen.gc.ca/clf-nsi/dcmnt/rcmndtnsrprt/rcmndtnsrprt-eng.html>>.

¹⁹ Jackpine Mine Expansion Project Joint Review Panel, Decision 2013 ABAER 011, 9 July 2013 at para 1828, online: Alberta Energy Regulator <<http://www.aer.ca/documents/decisions/2013/2013-ABAER-011.pdf>>.

²⁰ The Honourable Leona Aglukkaq, *Decision Statement Issued Under Section 54 of the Canadian Environmental Assessment Act, 2012*, online: Canadian Environmental Assessment Agency <<http://www.ceaa-acee.gc.ca/050/document-eng.cfm?document=96773>>; Canada, Canadian Environmental Assessment

3.2.3 Offsets Required by Regulation or Policy

Finally, offsets may be required as a matter of routine through the development and implementation of broadly applicable regulations or policy. Such a policy approach has several advantages. It allows for the development of specialized expertise and standards, making the use of offsets both more predictable, reliable, and economically efficient. It also allows for the integration of offset methods into land-use planning and the pursuit of other conservation and resource objectives. The remainder of this paper focuses mainly on the development of such an offset policy, rather than on voluntary or piecemeal regulatory initiatives.

While the main focus of this paper is Alberta, it is important to note that offset policies are not new to Canada. At the federal level, for several years offsetting has been required or encouraged with respect to fisheries and wetlands by policy or legislation. There has been an indication of interest in expanding the use of offsets in these areas, as well as with respect to species at risk and other areas of federal environmental concern.²¹

Likewise, other provinces have actively been implementing or considering offset policies. In recent years, the Province of British Columbia has developed an Environmental Mitigation Policy, which is largely based on the mitigation hierarchy, including the use of biodiversity offsets.²² As well, Ontario has allowed offsetting for measures affecting provincial species at risk, including piloting an exchange for measures benefiting such species.²³ Offsets have been applied in a more limited way in some other provinces.

Agency, “Jackpine Mine Expansion Project: Government of Canada Response to Panel Recommendations”, online: Canadian Environmental Assessment Agency <<http://www.acee-ceaa.gc.ca/050/document-eng.cfm?document=96784>>.

²¹ For a review of the current state and new developments in federal offset policy see David W Poulton, *Biodiversity Offsets: A Primer for Canada* (Ottawa: Sustainable Prosperity, 2014) at 21-24, online: Sustainable Prosperity <<http://www.sustainableprosperity.ca/article3857>>.

²² The policy is a working document, subject to refinement and updating. Current and draft versions are available online: British Columbia Department of the Environment <<http://www.env.gov.bc.ca/emop/documents.html>>.

²³ The program is established under the *Endangered Species Act, 2007*, SO 2007, c 6. For overviews of the permitting, offsetting, and benefits exchange see online: Ontario Environment and Energy <<https://www.ontario.ca/environment-and-energy/endangered-species-act-overall-benefit-permits>> and Ian Crawford, “Biodiversity Offsets and Ontario’s Endangered Species Act: We Built It, They Came and We Can Do Better” (Presentation delivered at conference “Biodiversity Offsets in Canada: Getting it Right, Making a Difference”, University of Ottawa, 14 February 2014), online: Biodiversity Offsets in Canada: Getting it Right, Making a Difference <<http://www.slideshare.net/IEUO/crawford-bioiversity-offsets>>.

3.3 Offset Delivery Mechanisms

3.3.1 Project-Specific Offsetting

The simple model of conservation offsetting outlined above matches one development project with a corresponding offset project. The offset project is selected and designed to match the specific negative impacts of the particular development (sometimes called a “bespoke offset”). Such an approach, while allowing for careful matching, is problematic when considered at a system-wide or landscape scale.

A project-specific offset may not efficiently feed into the pursuit of land-use plans or government conservation objectives. Further, the custom design and implementation of each offset project does not lend itself to the development of standards and expertise which would allow for the regular and economically-efficient production of offset measures. Finally, if an offset measure is designed based on a particular development project, that means that the conservation work cannot be undertaken until the development project is underway, or at least planned and approved in detail. As discussed later in this paper, this means that the ecological outcomes which are sought by the offset measures will likely not be produced for some significant time period, well beyond when the negative impacts of the development are felt. There is thus at least a temporary loss of biodiversity values.

3.3.2 Offset Credit Banking

One alternative to such project-specific offsetting is the allowance of offset or habitat banking. Under a banking system, conservation outcomes may be produced independent of any specific development project. The outcomes may be reviewed and credited in such a manner that they may be applied as offsets against a later development project. The developer’s obligations are met by the purchase and retirement of the appropriate amount and type of offset credits. Banking encourages the implementation of conservation measures in advance of development, thereby mitigating against the time-lag and temporary losses mentioned above.

Banking may take the form of first party (or self-) banking, where a development proponent may take offset actions and earn credits in anticipation of its own later offset needs. It may also take the form of third party banking, where any qualified person or entity, whether public or private, for-profit or not-for-profit, may proactively undertake conservation actions to earn credits, and then may subsequently make those credits available to developers, usually by commercial sale.

The United States pioneered third party offset banks, first for wetlands and later for endangered species habitat. There any party may propose a wetland or habitat bank, receive authorization, have its work reviewed and accredited, and sell the resulting

credits. Hundreds of habitat banks now operate in the United States and a directory of banks and available credits can be found online.²⁴

Banking allows for the development of specialized skills and efficiencies relevant to offsetting, making conservation more cost-effective. The necessity of matching banked credits to specific development projects requires that offset credits be easily transferable, and this may create a market in such credits. This market may bring elements of market discipline to the situation, and facilitate price discovery and other economic functions

3.3.3 In-Lieu Fees

A third form of compensation for biodiversity loss is the payment of in-lieu fees. Such fees may be paid to a designated conservation agency, with a view to the resulting funds being expended on relevant conservation work. While the amount of the fee may be derived from the extent of negative impacts from the development, the particular compensation gains resulting from the use of the funds are independent of the particular development giving rise to the payment. Under an in-lieu fee program the developer's obligation ends with the payment of the fee. It is the designated agency that has responsibility for the implementation of conservation measures. Because in-lieu fees do not directly produce enhancements in environmental quality or security which correspond to specific developments, they may not be true offsets, they though they may be another valuable tool.

4.0 Alberta: From Carbon to Biodiversity

4.1 Regional Planning and the Exploration of New Tools

Enabled by recent law and policy for land-use planning, the potential exists for conservation offsetting to become a common and important tool in maintaining important natural values and ecosystems services on Alberta's landscapes.

The *Alberta Land-Use Framework* ("the Framework"),²⁵ released by the Province of Alberta in 2008, sought to address the complex impacts of the increasing demand on the Alberta landscape from a wide variety of activities. It expressed the situation as follows:

²⁴ "Regulatory In-Lieu Fee and Bank Information Tracking System", online: US Army Corps of Engineers <https://ribits.usace.army.mil/ribits_apex/f?p=107:158:716836817964::NO:RP>.

²⁵ Government of Alberta, *Alberta Land-Use Framework* (Edmonton: Government of Alberta, 2008), online: Alberta Environment and Sustainable Resource Development <https://www.landuse.alberta.ca/Documents/LUF_Land-use_Framework_Report-2008-12.pdf>.

There are more and more people doing more and more activities on the same piece of land. This increases the number of conflicts between competing user groups and often stresses the land itself. Our land, air and water are not unlimited. They can be exhausted or degraded by overuse.²⁶

To tackle the twin problems of user conflict and cumulative environmental degradation the Framework committed to the development of regional plans. With regions roughly demarcated by the major watersheds of Alberta, the plans for each region are to define desired economic, environmental and social outcomes, determine specific trade-offs, and define an approach to cumulative effects.²⁷

The intent of the Framework was given expression in law in 2009 by the passage of the *Alberta Land Stewardship Act (ALSA)*.²⁸ *ALSA* enables regional planning, and prescribes a process for plans to be developed, including public consultation. A regional plan must contain a vision and one or more objectives for the region.²⁹ Optional elements include trends, opportunities and challenges for the region, policies to achieve or maintain objectives, the identification of thresholds and indicators, monitoring requirements, and actions to be taken.³⁰

To date two regional plans have been completed: one for the Lower Athabasca region³¹ and one for the South Saskatchewan.³² The initial round of public consultation toward the development of the North Saskatchewan regional plan is underway at the time of writing.³³ Planning for the other regions has yet to formally commence.

ALSA has provisions that endorse in general terms the research and development of new legal and policy tools to pursue the objectives of *ALSA* and regional plans.³⁴ Among these are conservation offsets.

Despite the dozens of biodiversity offset programs which have operated worldwide for several years, and which might offer valuable lessons, Alberta is focussing its policy

²⁶ *Ibid* at 6.

²⁷ *Ibid* at 24-26.

²⁸ SA 2009, c A-26.8 [*ALSA*].

²⁹ *Ibid* s 8(1)

³⁰ *Ibid*, ss 7-8.

³¹ Government of Alberta, *Lower Athabasca Regional Plan 2012-2022* (Edmonton: Government of Alberta, 2012), online: Alberta Environment and Sustainable Resource Development <<https://landuse.alberta.ca/LandUse%20Documents/Lower%20Athabasca%20Regional%20Plan%202012-2022%20Approved%202012-08.pdf>>.

³² Alberta Government, *South Saskatchewan Regional Plan 2014-2024* (Edmonton: Government of Alberta, 2014), online: Alberta Environment and Sustainable Resource Development <https://www.landuse.alberta.ca/LandUse%20Documents/SSRP%20Final%20Document_2014-07.pdf>.

³³ “North Saskatchewan Region”, online: Alberta Environment and Sustainable Resource Development <<https://landuse.alberta.ca/RegionalPlans/NorthSaskatchewanRegion/Pages/default.aspx>>.

³⁴ *Supra* note 28, s 23.

development upon adapting a model of conservation offsetting which was developed in Alberta originally for very different types of environmental challenges.

The following section examines some of the policy groundwork that has been laid for the use of *ALSA*'s conservation offsets provisions. That groundwork has largely been based on precedents which have been set by regulatory and policy frameworks for GHGs and wetlands. For a guide as to how conservation offset policy is likely to develop, therefore, it is instructive to review the Province's approach to review those other two programs. From these, a profile of the major components of Alberta's approach to offsetting will be described.

4.2 GHG Reduction

Alberta regulates the GHG emissions of large industrial operations under the *Climate Change and Emissions Management Act*.³⁵ Regulations pursuant to the Act (the *Specified Gas Emitters Regulation*³⁶) provide that facilities with GHG emissions of more than 100,000 tonnes of carbon dioxide equivalent (tCO₂e) in 2003 are subject to emission intensity reduction targets of a given percentage of their baseline emission intensity. Under the current regulation the baseline is defined as the average emissions for 2003-2005,³⁷ and the prescribed reduction of twelve percent for the period 2007 to 2015.³⁸ This is currently subject to review and updating.³⁹

An emitter which exceeds its emissions target in any year may remedy that by three means. First, it may purchase "emissions performance credits" from a facility that has done better than meet its targets and therefore has surplus reductions, which it may sell.⁴⁰ Secondly, it may purchase "emission offsets," being the carbon emission reduction resulting from carbon sequestration or actions in non-regulated sectors (actions not required by law).⁴¹ For example, several agricultural practices have been recognized as producing emission offsets based on their demonstrable reduction in GHG emissions.⁴² Thirdly, the emitter may escape penalization for excess emissions by paying a levy into

³⁵ SA 2003, c C-16.7.

³⁶ Alta Reg 139/2007, as am.

³⁷ *Ibid*, s 21(1).

³⁸ *Ibid*, ss 3-4.

³⁹ The expiry date in the original regulation was 1 September 2014. This was extended to the end of December 2014 (Reg 137/2014), and then to 30 June 2015 (Reg 225/2014).

⁴⁰ *Supra* note 35, s 9.

⁴¹ *Ibid*, s 7.

⁴² A list of the protocols for the various activities that have been qualified to produce emission offsets may be found online at: Alberta Environment and Sustainable Resource Development <<http://esrd.alberta.ca/focus/alberta-and-climate-change/regulating-greenhouse-gas-emissions/alberta-based-offset-credit-system/offset-credit-system-protocols/default.aspx>>.

the Climate Change and Emissions Management Fund (CCEMF) at a rate currently set at fifteen dollars per tCO₂e.⁴³

This system creates two forms of transferable credits (emissions performance credits and emission offsets) which can be used to meet the demand from industry generated by the enforceable emission limits. The government, then, has both created the demand for beneficial outcomes through regulation, and prescribed the means by which that demand may be legitimately met. It has thus created a rudimentary market in credits for GHG reductions. Within that market supply and demand will set the price for credits, though the option of payment to the CCEMF effectively caps the price at fifteen dollars per tCO₂e. The CCEMF is not a form of offset because it does not directly generate environmental benefits (in this case, carbon reductions). Rather it uses fees in lieu of offsets to invest in longer term research and carbon management measures.

4.3 Wetlands

The *Alberta Wetland Policy*,⁴⁴ released in September 2013, follows a similar structure to the *Specified Gas Emitters Regulation*, though applying it to a very different component of the environment. In both cases a proponent is offered the options of reducing their own impact, obtaining or producing offsetting credits for collateral beneficial outcomes, or paying an in-lieu fee into a government-authorized fund.

The importance of wetlands to the Alberta landscape and environment is articulated in the opening paragraph of the *Wetland Policy*:

Wetlands are land saturated with water long enough to promote formation of water altered soils, growth of water tolerant vegetation, and various kinds of biological activity that are adapted to the wet environment. Wetlands are highly diverse, productive ecosystems that provide a host of ecological services and form an integral component of Alberta's diverse landscapes. They play an important role in sustaining healthy watersheds by protecting water quality, providing water storage and infiltration, providing habitat for wildlife, fish and plants, and sustaining biodiversity.⁴⁵

The regulation of wetlands is governed in Alberta primarily by the *Water Act*.⁴⁶ Under its provisions, anyone wishing to undertake an activity that disturbs a water body, including a wetland, must obtain an approval, which may be granted on conditions.⁴⁷ It is

⁴³ *Supra* note 35, s 8.

⁴⁴ Alberta Government, *Alberta Wetland Policy* (Edmonton: Alberta Government, 2013) [*Wetland Policy*], online: Water for Life <http://www.waterforlife.alberta.ca/documents/Alberta_Wetland_Policy.pdf>.

⁴⁵ *Ibid* at 4.

⁴⁶ RSA 2000, c W-3.

⁴⁷ *Ibid*, s 38. The broad definitions of “activity” and “water body” (which includes wetlands) are to be found in ss 1(1)(b) and 1(1)(ggg) respectively.

the *Wetland Policy* which guides how the discretion to impose conditions is to be exercised when the disturbance of a wetland is proposed.

Unlike the *Specified Gas Emitters Regulation*, the *Wetland Policy* does not commit to a specific measurable program objective, including that of no net loss.⁴⁸ Instead it refers to rather vague goals:

- To “minimize the loss and degradation of wetlands, while allowing for continued growth and economic development”;⁴⁹ and
- “To *conserve, restore, protect, and manage* Alberta’s wetlands to sustain the benefits they provide to the environment, society, and economy.”⁵⁰

This lays an unconventional foundation for offsetting. Most offsetting systems can be seen to be a tool for actively pursuing a measurable ecological objective, in compensation for development activities that would counter that objective, and doing so at a programmatic or landscape level. The *Wetland Policy* seems to be a tool without such an objective, or at least not an explicit one. The offset scheme prescribed by the policy, however, may be seen to be aimed at replacement of lost functions and values as measured at the individual project and wetland scale.

Importantly, the policy clearly prescribes the mitigation hierarchy. Avoidance and minimization of impacts to wetlands are to proceed before any consideration of replacement.⁵¹ (“Replacement” is the term the policy uses for offsetting.)

If replacement is to be resorted to, the first step is the assessment of the wetland to be lost to determine its “relative wetland value.” This metric combines measures of biodiversity and ecological health, water quality improvement, hydrological function, and human uses of the particular wetland, and relative abundance of that type of wetland in the applicable region.⁵² Based on these factors the value of the wetland to be lost is

⁴⁸ During the development of the policy the commitment to a “no net loss” goal was debated vigorously. For more on this and other background to the policy see Arlene Kwasniak, “The New Alberta Wetland Policy: White Area Wetlands, Just a Pawn in the Game?” (17 September 2013) ABlawg.ca, online: <<http://ablawg.ca/2013/09/17/the-new-alberta-wetland-policy-white-area-wetlands-just-a-pawn-in-the-game>>.

⁴⁹ *Supra* note 44 at 2.

⁵⁰ *Ibid* at 2 (emphasis in original), 4.

⁵¹ *Ibid* at 14. In a presentation to stakeholders by Alberta Environment and Sustainable Resource Development staff in November, 2014, it was suggested that an application to disrupt a wetland based on a proposal to undertake replacement will have to be accompanied by a “mitigation plan,” which will have to include a description of why avoidance is not possible, and the details of any minimization plans: Anish Neupane & Matthew Wilson, ESRD, “Wetland Policy Implementation” (Presentation delivered to the Alberta Association for Conservation Offsets, Leduc, Alberta, 24 November 2014) [unpublished, on file with author] at slide 19 [ESRD/AACO Presentation].

⁵² *Wetland Policy*, *supra* note 44 at 11-13.

assessed on a four-level (A to D) rating scale. This rating, combined with the total area of wetland to be lost, is the basis for setting the extent for the offset obligation of the developer.

Just as in the GHG system, the developer has a number of options to compensate for the wetland loss it proposes. It may undertake “restorative replacement,” which may take the form of the developer’s own restoration, enhancement, or construction of another wetland, or may take the form of payment of restitution into an in-lieu fee fund.⁵³ That fund is to be used for both restorative replacement or for “non-restorative replacement,” which encompasses a broad range of activities such as research, monitoring, and public education, as well as the securing of other existing wetlands for long-term conservation.⁵⁴ Each of these measures is subject to a “replacement ratio” dependent upon the relationship of the relative wetland values of each of the sites. (The use of such multipliers to address the shortcomings and risks of offsets is discussed further below in Sections 5 and 6.)

To reiterate their parallel structure, in both the carbon regime of the *Specified Gas Emitters Regulation* and in the wetland regime of the *Alberta Wetland Policy* an industrial operator or developer is first expected to reduce their environmental impact. Their residual impact is then to be measured according to an officially prescribed metric. That residual impact may then be compensated for by arranging for a corresponding positive impact (an emissions performance credit or emissions offset for carbon, a restorative replacement measure for wetlands), or by paying compensation into a fund which is dedicated to improving environmental performance with respect to the target resource (the CCEMC, or a wetland in-lieu fee fund).

4.4 Other Conservation Offsets to Come

Alberta is currently exploring the potential to use this offset framework in many other arenas and landscape types.

Sections 45 through 47 of *ALSA* enable the creation of regulations for a very wide variety of offset arrangements. These include the outlining of a “stewardship unit” metric,⁵⁵ and the possibility of an exchange for the trading of those units should the Province wish to develop a credit banking and exchange system.⁵⁶ These provisions are so broadly worded that they could apply to virtually any part of the Alberta landscape, or to any component of the Province’s ecosystems. Likely candidates for early application of conservation offset provisions of *ALSA* are native grasslands (home of many of the

⁵³ *Ibid* at 18.

⁵⁴ *Ibid* at 18.

⁵⁵ *Supra* note 28, s 46.

⁵⁶ *Ibid*, s 45.

province's species at risk), caribou habitat in the boreal forest, and grizzly bear habitat on the mountains and foothills of the eastern slopes of the Rockies.

It is expected that the development of these tools will be consistent with the model of the *Wetlands Policy*, which, as we have seen above, is similar in structure to the regime for GHG emissions management. Alberta is attempting to apply a single set of principles and design elements for conservation offsetting to a wide variety of ecosystem components, quite diverse in nature.⁵⁷ These are to be “turned on” by regional or other ecosystem management plans, and adapted to the particulars of the subject matter of each program.⁵⁸

5.0 Key Issues in Biodiversity Offsetting

While the idea of compensating for negative environmental impacts with positive environmental impacts is attractive, there are a series of issues which are inherent to the concept. Any system of biodiversity offsets, whether in Alberta or elsewhere, must grapple with these issues, and must give a credible account of how they will be handled.

5.1 Equivalency and Currency

The concept of offsetting is based on the notion that the ecosystem values or services lost at the development site can be replaced by those enhanced at the offset site. A particularly difficult issue, therefore, for offsetting for biodiversity arises from the fact that every species and every piece of habitat is unique.

This is in contrast to GHGs, where every tCO₂e is identical, at least notionally, to every other in their contribution to climate change. That means that a tCO₂e produced in one place may be directly compared to, and offset by, a tCO₂e sequestered elsewhere. This makes each tCO₂e interchangeable with any other, establishing “fungibility” in economic terms: GHGs are a uniform commodity.

Quite different from that situation, the very concept of biodiversity is based on the variety and distinctness of its individual elements. Strict devotion to the idea of the unique value of every component, however, would render offsetting wholly unacceptable. That approach would force a stark choice between stopping the impacts of all developments — and the developments themselves — or allowing developments to proceed without the benefits that might be produced by offsets, however imperfect.

⁵⁷ *Offsets Framework Discussion Paper*, *supra* note 12.

⁵⁸ *Ibid.*

To accept the legitimacy of offsetting, therefore, is to accept that ecosystem components may be acceptably interchangeable within certain parameters of proximity and similarity. Defining those parameters is a challenge, however. How similar and proximate must components be to be considered equivalent?

A first step in addressing this issue is to reflect upon and define the precise ecosystem components and services which are at stake in the development, and how we value them. Clear thought on this point will help us to determine what degree of leniency may be applicable to the particular objects of value, which may vary significantly from one circumstance to another. This is partly a process of scientific analysis, but it is important that it include a large element of community input (and not just at the local level) as to what people deem to be important in nature in that location. There may not be consensus among interested stakeholders on these foundational points, so this process may take time.

Because the valued components may not be directly observable, often it will be necessary to identify proxies and indicators which correspond to them. Finally, if we are to assure that the positive impact of the offset measures is sufficient to compensate for the negative impacts of the development, then both impacts must be measurable by the same metric. That metric will be the measure by which the quantity and the nature of the offset exchange is to be determined. Because this metric is a medium of exchange it is often referred to as the offset “currency.”⁵⁹

In the sequence of clarifying values, deriving indicators, and assigning a currency there is plenty of room for slippage and distortion. This can be a serious problem, for if the currency does not accurately reflect the underlying values, then offsets using the currency are unlikely to serve the needs of the valued components.⁶⁰

Matters of equivalency and currency may be difficult when one’s objective is to use an offset to replicate with an offset the ecological components lost to development. In some circumstances, however, one may not wish to do that. Rather, there may be an opportunity, consistent with strategic environmental goals, to enhance ecosystem components of greater value than those lost. This is often referred to as “trading up.” For example, it has been suggested by one study that it is both more ecologically and economically cost-effective to offset the disturbance caused by oil sands development in Alberta’s boreal forest, not by replacing the lost components on a like-like-like basis, but

⁵⁹ For more full discussions of the concepts and issues of equivalency and currency, see Fabien Quétier & Sandra Lavorel, “Assessing Ecological Equivalence in Biodiversity Offset Schemes: Key Issues and Solutions” (2012) 144:12 *Biological Conservation* 2991; James Salzman & JB Ruhl, “Currencies and the Commodification of Environmental Law” (2000) 53:3 *Stan L Rev* 607.

⁶⁰ *Ibid* at 624.

rather by focusing offset efforts to enhance highly-valued caribou habitat or the imperilled habitat features of the Dry Mixedwood natural sub-region.⁶¹

If equivalency and currency are difficult to determine when one is designing a like-for-like exchange, those difficulties are greatly magnified when looking at exchanging out of kind. This either calls for a loosening of equivalency and currency rules, or the development of rates of exchange between diverse currencies, a route fraught with controversy. Just consider how many hectares of boreal forest are required to equal the ecological value of a hectare of grassland? A daunting question.

5.2 Additionality and Calculating Loss and Gains

Regardless of how one resolves issues of equivalency and currency, the next step is to consider what type of ecosystem benefits are creditable on the positive side of the offset equation. A fundamental principle is that the “[g]ains in biodiversity from conservation activities at offsets sites need to be additional to those that would occur if no offset investment was made by the developer.”⁶² In other words we should not give credit for activities or outcomes which would have happened in any case. Rather the offset system should incent extra (additional) conservation actions.

Determining additionality can be a tricky business. It requires us to compare the actual and observable activity of the offset proponent with their presumed and unobservable behaviour had the offset not been pursued (i.e. their baseline behaviour). This comparison is difficult because of the speculation, subjectivity, biases, and information asymmetry which are inherent to determining the baseline.⁶³ Further, if one is to act in accordance with the notion that an offset is the measurable outcome of an action, rather than the action itself, then one must consider not only the supposed difference in the offset proponent’s behaviour, but also the difference in the outcomes which each path of behaviour would produce.

The consideration of additionality and baselines is complicated further by the fact that our legal tradition does not tend to attach clear environmental responsibilities to land or resource ownership. As Professor J. B. Ruhl has pointed out, this means that there is no

⁶¹ Thomas J Habib et al, “Economic and Ecological Outcomes of Flexible Biodiversity Offsets” (2013) 27:6 Conservation Biology 1313.

⁶² BBOP, *Resource Paper: No Net Loss and Loss-Gain Calculations in Biodiversity Offsets* (Washington, DC: BBOP, 2012) [*BBOP Loss Gain*], online: BBOP <<http://bbop.forest-trends.org/pages/guidelines>>.

⁶³ Michael Gillenwater, *What is Additionality? Part 1 – A Long Standing Problem*, Discussion Paper No 001, Version 03 (Silver Spring, Maryland: GHG Management Institute, 2012) at 5, online: GHG Management Institute <<http://ghginstitute.org/research/publications/>>. This is the first of a three-part series of papers on additionality which is recommended as a thorough and thoughtful review and critique of the concept.

legal reference for baseline behaviour, and therefore no common reference for the determination or measurement of additionality.⁶⁴

Determining the necessary amount of offsets must begin with a careful examination of the negative environmental impacts of the subject development. Typically the assessment of these impacts is limited to the direct physical footprint, including such matters as access roads. It bears consideration, however, whether there are indirect impacts which are sufficiently foreseeable that they should be taken into account. Such matters as housing for a new workforce or the impact of rare but foreseeable accidents might be appropriate to consider in particular circumstances.

Once the parameters of the negative impact have been settled upon, that impact must be characterized and quantified according to an agreed-upon currency. The result will be both a qualitative and quantitative measure of the impact. This then sets the target for the amount of offsetting required.

Generally there are two types of positive impact which are considered creditable in offset schemes. These are positive management actions and averted losses.⁶⁵ Both have strengths and weaknesses.

Positive management actions are direct physical interventions into the ecosystem in order to enhance ecosystem function that has been previously degraded by human actions. Typically this might include such actions as revegetation, restoration of hydrological flows, species reintroduction, or the provision of structures to restore connectivity to wildlife populations fragmented by earlier human actions. The strength of positive management actions is that they produce real and measurable ecological benefits, and thus clearly contribute the environmental positives which are called for by the offset model.

Unfortunately, positive management actions also often carry a good deal of risk with them. Factors such as lack of knowledge, insufficient management or financing, or stochastic events such as fire or flood may lead to the failure of an action to produce its desired outcome.⁶⁶ This raises questions about who is liable for assuring the success of the offset project, and how long that liability survives after the action has been taken and the credit granted.

⁶⁴ JB Ruhl, "Stacking and Bundling and Bears, Oh My!" (2010) 32:1 National Wetlands Newsletter 24.

⁶⁵ ten Kate et al, *supra* note 13 at 68-71; *BBOP Loss Gain*, *supra* note 62.

⁶⁶ For a brief review of the conceptual inadequacies of restoration science see Robert H Hildebrand, Adam C Watts & April M Randle, "The Myths of Restoration Ecology" (2005) 10:1 Ecology and Society 19. For a consideration of the range of uncertainties in restoration and their implications for offset policies, see Martine Maron et al, "Faustian Bargains? Restoration Realities in the Context of Biodiversity Offset Policies" (2012) 155 Biological Diversity 141.

Averted losses are actions taken to protect an existing ecosystem from a perceived threat. Unlike positive management actions, averted losses do not actually add any new positives in a physical sense to the ecosystem nor improve its function. Measured against the baseline defined by an imminent threat, however, there is a gain in that the ecosystem is maintained when it otherwise would have been lost or degraded.

Typically losses are averted through the legal designation of land under some protective status, such as a park or protected area on public land, or a conservation easement or similar instrument on private land. (A conservation easement is a statutory legal instrument which allows a party interested in conservation to secure valued ecosystem components or functions through agreement with the landowner, after which the agreement may be filed on title such that it runs with the land and is binding on all future owners.⁶⁷)

In assessing the magnitude of the ecological gain from an averted loss is important to consider the magnitude and imminence of the threat facing the subject ecosystem. The value of the protective measure is directly related to those factors. Where a threat is not tangible the value of the loss averted is both difficult to assess, and is likely to be a target of legitimate skepticism.

As an example of this consideration, it is sometimes suggested that the baseline against which loss aversion measures should be measured is the “right of conversion.” This supposed right allows a landowner to convert the land to whatever use he or she is inclined, regardless of the environmental impact. Against this baseline, any measure to restrict development options and protect natural values is seen as additional and creditable for offset purposes. This approach is based on a faulty understanding of the right of conversion, however. It is clearly established in Canadian law that a government of proper jurisdiction may place restrictions, even quite severe restrictions, on the use of private land.⁶⁸ If such restrictions were in place, or even if they were anticipated, for the purposes of protecting environmental values, then the significance of other protective measures would be reduced accordingly. As a result both additionality and the extent of any conservation gain would have to be seen in that context. Lack of clarity around this issue illustrates Ruhl’s point of the lack of a notion of environmental baseline behaviour in law.

From time to time a third category of actions are proposed for offset credit. These actions include such matters as research projects, educational programs, interpretive signage, and support for various community initiatives. In general these are not considered legitimate sources of offset credits for they do not produce any measurable

⁶⁷ *ALSA*, *supra* note 28, ss 28-35. For a full description and guide to conservation easements in Alberta, see Miistakis Institute, “Conservation Easements for Alberta: An Online Resource for Landowners”, online: Miistakis Institute <http://www.rockies.ca/ce_guide/index.php>.

⁶⁸ *Canadian Pacific Railway Company v City of Vancouver*, [2006] 1 SCR 227, 2006 SCC 5.

improvement in either ecosystem function or security.⁶⁹ In order to attain legitimacy any such programs would have to demonstrate a causal link to ecosystem enhancement or security before being considered for credit. The *Alberta Wetland Policy*, however, demonstrates a deviation from this norm. One option to compensate for the loss of a wetland to development is payment of in-lieu fees (“non-restorative replacement”), part of which may go towards educational programs.⁷⁰ In the absence of a demonstrable alleviation of stress on wetland ecosystems, the ecological value of this measure is questionable.

5.3 Timing Considerations

The matching of development and offset impacts is also complicated by disconnects in timing. This can occur at both the beginning and end points of the offset project.

At the front end the development of ecosystems rarely takes place in the same timeframe as human developments. While the negative impacts of development may occur in weeks, days, even hours — as fast as a bulldozer can move — the growth and development of complex relationships which are necessary for a fully functional ecosystem may take decades or even centuries to unfold.

This means that there is often a significant time lag between the impacts of development and offset measures. There is thus a temporary loss of ecosystem values which must be compensated for in some way. Moreover, in some cases key components of the ecosystem may be lost during the time lag and may not be capable of being re-established when conditions returned to the desired state. For example, a species which is dependent on habitat in particular age class may vacate a site, and not be available to recolonize it by the time that the site has returned to that condition.

One means of dealing with the time lag in offsetting is through banking. Under a banking system the positive measures that lead to offset credits may be initiated in advance of development and there may be requirements that the ecosystem reaches a certain level of viability and maturity before credits are recognized and available for use. This is one of the major ecological benefits of a banking system.

At the other end of the timeline, we must make sure that the duration of the offset matches that of the development impact. It is one of the principles of BBOP that an offset should match the duration of the corresponding development, or, preferably, be

⁶⁹ ten Kate et al, *supra* note 13 at 70.

⁷⁰ *Wetland Policy*, *supra* note 44 at 18.

perpetual.⁷¹ Indeed, perpetuity is a frequent requirement, or at least standard, called for by offset schemes.⁷²

Securing offsets in perpetuity or over a very long time period can be challenging. Landowners may not be amenable to outright sale of their land and may be resistant to restricting uses by future generations. This may require more work in creating landowner understanding, new tools to allay landowner concerns, or simply increased cash incentives, adding to the cost of offsetting.

5.4 Risk Management

It will be apparent from the above discussion that the process of offsetting is far from certain or precise. The combination of our incomplete knowledge of ecosystems and the difficulties in conceptualizing, planning, and executing offset measures means that offsetting inherently carries some risk.

Some measures which are frequently advocated to manage or compensate for this risk are limits on the application of offsetting, the application of a variety of offset techniques, and the use of multipliers.

Where the ecosystem values at stake are extremely rare, fragile, or not capable of replication, offsetting is not an appropriate tool for their management. Rather, it is likely necessary to protect them *in situ* and free from interference.⁷³

If we are uncertain as to the likelihood of success of any particular offset technique, then one way of mitigating that uncertainty is to mix techniques on the theory that if one fails another will succeed.⁷⁴ This means, for example, that a variety of restoration techniques may be advisable, as is a mixing of measures of positive management actions and averted losses. The weaknesses of one technique may be compensated for by the strengths of another.

⁷¹ *BBOP Overview*, *supra* note 10 at 6 (Principle 8).

⁷² For example, the United States federal wetland mitigation program sets a goal of permanent or at least “long-term” protection of offset sites: 73 Fed Reg 19594 at 19646 (2008).

⁷³ *BBOP, Resource Paper: Limits to What Can Be Offset* (Washington, DC: Forest Trends, 2012) online: Forest Trends <http://www.forest-trends.org/documents/files/doc_3128.pdf>; A recent effort to articulate a principled threshold for the application of offsets may be found in John D Pilgrim et al, “A Process for Assessing the Offsetability of Biodiversity Impacts” (2013) 6:5 *Conservation Letters* 376-384. See also Philip Gibbons & David B Lindemayer, “Offsets for Land Clearing: No Net Loss or the Tail Wagging the Dog?” (2007) 8:1 *Ecological Management & Restoration* 26, which suggests that offsets ought only be relied upon only in the most simple and low-risk circumstances.

⁷⁴ Atte Moilanen et al, “How Much Compensation is Enough? A Framework for Incorporating Uncertainty and Time Discounting When Calculating Offset Ratios for Impacted Habitat” (2009) 17:4 *Restoration Ecology* 470 at 476.

By far the most common way of addressing risk and uncertainty in offsetting, however, is the use of multiplier ratios. This requires that the offset project, as measured in the relevant currency, is some multiple larger than the development impact.

Multiplier ratios are usually determined through some rough estimate of the probability of success, the significance of time lags, and some general factor of uncertainty. They may be calculated with greater or less precision with reference to these factors.⁷⁵ Because multipliers are at best an approximation, and can have significant impacts on the cost of offsetting, they can be quite contentious.

It is important to note as well that multipliers are not necessarily an appropriate means of dealing with some sorts of risk. Where total failure of the offset action is a possibility, failing totally on a much larger scale is hardly an attractive prospect.

6.0 Key Issues and the *Alberta Wetland Policy*

A review of the application of these issues in the *Alberta Wetland Policy* of 2013 will help to both further elucidate these issues and elaborate on the nature of that policy. In this review, however, it is important to note that many of the details and application protocols of the new policy are currently under development, so some of the features and deficiencies described here are expected to be modified.

6.1 Equivalency and Currency

With respect to equivalency the 2013 policy distinguishes between different grades of wetland value, but not between differences in kind. In that respect on its face the policy seems to assume that all wetlands are interchangeable, providing the right multiplier applies. The sole statement which addresses these factors is as follows:

... where achievable, wetlands will be replaced type-for-type; where this is not achievable, wetland replacement will seek to replace wetland value. Additionally, it is preferred that replacement take place in the area of original wetland loss.⁷⁶

The policy itself does not elaborate on what is meant by “type-for-type” nor what parameters are around “the area of original wetland loss.” A plan currently under development, however, would divide the province into twenty-one “Relative Wetland

⁷⁵ *Ibid*; Jussi Laitila, Atte Moilanen & Federico M Pousols, “A Method of Calculating Minimum Biodiversity Offset Multipliers Accounting for Time Discounting, Additionality and Permanence” (2014) 5:11 *Methods in Ecology and Evolution* 1247.

⁷⁶ *Wetland Policy*, *supra* note 44 at 15.

Value Assessment Units,” based on watersheds and ecoregions., which would form the foundation for the prescription of geographic parameters for wetland replacements.⁷⁷

The qualitative distinction of “relative wetland value”, whether lost or gained, is to be assessed based upon five functional factors: biodiversity and ecological health, water quality improvement, hydrological function, human uses, and relative abundance.⁷⁸ The combination of these factors yields a relative wetland value score for any particular wetland. Again, however, that score does not differentiate between types of wetlands and seems to render all of them interchangeable, though with varying multipliers. The multipliers are applied to the actual currency of the exchange, which is area.

6.2 Additionality, Losses and Gains

The policy does also not explicitly deal with the matter of additionality. It suggests, but does not make explicit, that restorative replacement projects must be of a nature that they would not have been undertaken otherwise. The point is covered, however, in the *Offset Framework Discussion Paper* which is currently being circulated for feedback. That document states “any proposed conservation offset package should demonstrate a verifiable contribution to the achievement of an environmental outcome that would not otherwise be achieved.”⁷⁹ The application of the principle of additionality is complicated with respect to “non-restorative replacement”, the type of offsetting which includes averted losses through long-term securement. Non-restorative replacement is one possible use of the funds from in-lieu fees, which developers have the option of paying into.⁸⁰ The funds may be used for a variety of activities including “wetland securement for the purposes of long-term conservation.”⁸¹ The additionality challenge here is that the bed and shores of all permanent and naturally occurring wetlands in Alberta are already owned by the Province.⁸² Further, under the provisions of the Province’s *Water Act* it is illegal to drain or modify wetland without a permit from the Province.⁸³

If, as a matter of general law, it is illegal to interfere with any naturally occurring wetland, then what additional value is provided by wetland securement from an in-lieu fee fund? It may be that securement by a conservation easement may involve a landowner in a more voluntary arrangement (hopefully yielding better compliance), may involve a conservation organization of particular dedication and expertise as holder of the

⁷⁷ ESRD/AACO Presentation, *supra* note 51, slides 21-22.

⁷⁸ *Wetland Policy*, *supra* note 44 at 11-12.

⁷⁹ *Offset Framework Discussion Paper*, *supra* note 12 at 11.

⁸⁰ *Ibid* at 18.

⁸¹ *Ibid* at 18.

⁸² *Public Lands Act*, RSA 2000, c P-40, s 3. The section provides for certain specific exceptions which are not commonly applicable.

⁸³ *Supra* note 46, s 34.

easement, may spell out obligations more explicitly, and may provide more enforcement options (including third party enforcement by an interested organization) than are provided for under the *Water Act*. These factors, however, speak as much to the challenges of effective enforcement under the *Water Act* as they do to the relative merit of securement by a conservation easement. If the *Water Act* provisions were capable of being rigorously and systematically enforced, and this were done in keeping with the goals of the *Alberta Wetland Policy*, then little additionality would be provided by an easement. Given the apparent limitations on the government's capacity or willingness to enforce the Act securement by an easement does seem to add value.

The concept of non-restorative replacement under the policy is questionable on other grounds as well. The in-lieu fee fund may expend resources on research, monitoring, data acquisition, and public education and outreach programs. As discussed above in Section 5.2, research and education are typically not recognized as valid offset credits. For Alberta to credibly move in this direction it will have to show some direct on-the-ground benefit to wetland ecosystems from these activities. The proposal currently being floated by policy designers is that the amount of funds to be allocated to non-restorative replacement be capped at ten percent of in-lieu fees collected.⁸⁴

6.3 Timing Considerations

With respect to the timing issues of time lag and duration, the *Alberta Wetland Policy* makes no clear requirement. No timeframe has yet been set for the provision of restorative replacement wetlands, nor has there any explicit requirement of duration, much less permanence. It is to be expected, however, that these matters will be clarified as the implementation protocols are developed.

6.4 Risk Management

As discussed above in Section 4.3, the *Alberta Wetland Policy* is commendably clear in its articulation of the mitigation hierarchy. This is an important part of not being overly dependent on offsetting to protect ecosystem values. The policy makes no mention, however, of any conditions under which a particular wetland would be considered too rare or fragile to be beyond consideration for development and replacement. Presumably any such situation would be dealt with by other statutory tools, such as parks and protected areas legislation.

The wetland policy is heavily dependent upon the use of multiplier ratios, as means of managing risk and uncertainty, as well as the disparity between development and offset sites. Here the time lag in developing new wetlands is stated as one of the rationales for

⁸⁴ ESRD/AACO Presentation, *supra* note 51 at slide 27.

the multipliers, together with the likelihood that a restored wetland will achieve the same level of function as the natural one it replaces, and the risk that some restore wetlands will fail altogether over time.⁸⁵ Having articulated those factors the policy goes on to assign replacement ratios from 8:1 to 1:8 based on the relative wetland value of the lost and replacement wetlands.⁸⁶ Curiously, the replacement ratio for wetlands of the same relative value (i.e. high-value for high-value, low-value for low-value) is 1:1. This does not appear in any way to take into account the risk factors which are acknowledged in the policy and given as rationales for the replacement ratios.

Like other types of conservation offsets that might be developed in Alberta, the *Alberta Wetland Policy* imports general offset principles and tools in a manner which the Province has deemed appropriate for the particular circumstances of wetlands. We must be cautious not to assume that the details of the wetland policy constitute a restrictive template that will apply to all other types of offsets. Nevertheless, the application of those principles and tools in the case of wetlands can properly be treated as an indication and testing grounds for concepts applicable to other offset programs that the Province may develop.

7.0 Systemic Challenges

The particular approaches and deficiencies of the *Alberta Wetland Policy* illustrate some of the conceptual and practical challenges which must be addressed in the development of any conservation offset system. Beyond these particular issues, however, there are some larger systemic issues in Alberta and many other jurisdictions which may complicate the effective use of offsets to protect biodiversity. These include the capacity of private parties to implement offsets on public land or with public resources, the question of whether to allow stacking of credits in various offset systems, and the relationship between offsetting measures and reclamation duties. I do not seek to address any of these issues at length, much less comprehensively, but rather to alert the reader to their existence and the need for further thought to be dedicated to them.

7.1 Public Lands and Resources

The application of conservation offset tools on Alberta's varied landscapes may be frustrated by the different legal regimes which apply to various parts of the province. Over sixty percent of Alberta is public lands, with those lands being largely concentrated in the boreal forest and the Eastern slopes of the Rocky Mountains. Many of Alberta's newest and most contentious opportunities for resource development are found on these

⁸⁵ *Wetland Policy*, *supra* note 44 at 19.

⁸⁶ *Ibid* at 19.

lands, including the oil sands. These developments may well have the greatest need to use offsets to counterbalance their environmental impact.

Alberta's public land regime, however, has developed over the past century with a strong emphasis on making lands and resources available for economic development by private actors. Similar tools which would allow those private actors to undertake conservation actions, and secure them for the long-term, have not been developed in law and policy. There is no tool equivalent (capable of being initiated by a private party) for public land to the conservation easement, which only applies on private lands. The lack of such tool is a significant policy gap which the Province will have to address if offsets are to be an effective mechanism in large areas of the province.

On a similar note, Alberta is one of many jurisdictions where title to property is split between the surface owner and the owner or owners of subsurface mineral rights. In order to allow for the development of subsurface minerals, we have a regime whereby surface interests must yield, in return for proper monetary compensation, access to the subsurface. This is a long-standing burr under the saddle of many landowners, but it poses an even more serious challenge when those landowners are committed to enduring conservation actions. The long-term security which is called for by a doctrine of offsets is difficult to achieve if the tools providing that security are subordinated to subsurface interests.

7.2 Stacking of Multiple Types of Credits

As was discussed in Section 3 and 4 above, there are several types of conservation offset systems which are either in existence or under development by Alberta, or by the federal government, which are to be applicable in Alberta. As these systems gain greater prominence and number, the potential exists for overlaps in their targets, concerns, and programs. It may be that a single conservation project on a single piece of land may be creditable under more than one system. For example a landowner working to restore a wetland may also be creating habitat for a species at risk, and, further, creating a sink for carbon sequestration. As a result a single project may at some point be eligible for a wetland credit, a species at risk credit, and, potentially, a carbon credit. This recognition of multiple transferable credits on a single piece of property is colloquially known as "credit stacking." The *Alberta Conservation Offsets Policy Framework Discussion Paper* circulated recently suggested that the Province may take a liberal approach to stacking, recognizing multiple credits from action on a single piece of land.⁸⁷

One of the claimed virtues of credit stacking is that it allows recognition and reward for a greater range of ecosystem functions and values, and thereby incents in more comprehensive range of conservation actions. On the other hand, if stacking is permitted

⁸⁷ *Offsets Framework Discussion Paper*, *supra* note 12 at 3.

too liberally it holds the potential to double count positive ecological outcomes and thereby permit excessive development, development out of proportion to offset measures actually taken.

The issue of stacking is subtle and complex, drawing on both economics and ecology. It is not amenable to simple answers. Both policymakers and citizens are advised to approach this issue with caution and rigor and avoid the temptation to look for easy answers.⁸⁸

7.3 Offsetting and Reclamation Requirements

It is a standard requirement of many of our resource and development permits that the developer commit to reclaiming the development site once the resource is depleted and the development complete. Often this requirement is paired with the need to post a financial bond to assure compliance. The purpose of such reclamation is to return the landscape and ecosystem to a stable and functional state or even to an approximation of its state prior to the development (i.e. restoration). In a sense, therefore, reclamation is an attempt to achieve no net loss, at least in a very approximate way,⁸⁹ though accepting of the temporary disturbance of the development.

Offsetting aims for a similar goal, though in a different timeframe. Acknowledging the time lag in offset development, and offset system attempts to minimize and compensate for that, seeking to neutralize any loss in the shortest possible timeframe. This raises the question of whether a successful offset program should relieve a developer of its reclamation obligations.

There are several possible ways which this issue may be handled. A developer may be required to both offset and reclaim, with the goal of creating a net improvement in the landscape in the long term. Alternatively it might be allowed a choice between the two obligations. Offsetting (perhaps even temporary offsetting) might be used as a means of compensating for the temporary loss of ecosystem values which is implied by

⁸⁸ For more on this issue see Royal C Gardner & Jessica Fox, “The Legal Status of Environmental Credit Stacking” (2013) 40:4 Ecological LQ 101, online: Social Science Research Network <<http://ssrn.com/abstract=2375858>>; Morgan Robertson et al, “Stacking Ecosystem Services” (2014) 12:3 Frontiers in Ecology and Environment 186; David W Poulton, “Stacking of Multiple Environmental Credits: An Alberta Discussion Paper” (2014) [unpublished], online: Social Science Research Network <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2560656>.

⁸⁹ Alberta law specifies that the objective of reclamation is “to return the specified land to an equivalent land capability,” which is defined to mean “that the ability of the land to support various land uses after conservation and reclamation is similar to the ability that existed prior to an activity being conducted on the land, but that individual land uses will not necessarily be identical ...”: Alta Reg 115/93, ss 1(e), 2. This is a much broader and looser concept of equivalency than is typically applied in a consideration of offsetting.

reclamation, and for the permanent losses allowed by the lower standards of reclamation. Or finally, the successful attainment of offset objectives may enable a developer to apply for relief from its reclamation obligations when the time for reclamation comes. No doubt other options might offer themselves when this issue receives the attention it needs and deserves.

8.0 Conclusion

Alberta is exploring the use of conservation offsets as a means of encouraging, and perhaps mandating, better stewardship of the province's landscapes and ecosystems. This is a potentially valuable tool, which might yield real ecological benefits while maintaining opportunities for appropriate development. To fulfill its promise, however, the issues described in Section 5 of this paper have to receive careful thought and a well-reasoned approach. The Province has based its efforts upon the model of conservation offsets which it developed for the management of GHGs, and which it is currently adapting for application to wetlands.

The nature of the object of concern is very different between GHGs and biodiversity. The uniform and fungible character of GHGs is ideally suited to the offset exchange and calculation. Biodiversity, however, requires a much closer attention to how equivalency can be drawn between similar, but quite diverse elements of the ecosystem. Alberta's new wetland offset system is currently grappling with some of the key issues. It is not clear yet whether it will do so successfully, or whether it will yield significant positive results for the provincial landscape.

If the wetlands offset system is to be the model for other types of biodiversity offsets, then much depends on getting the wetlands system right. The process of developing implementation tools for the wetland policy should be watched carefully because the current track of policy development may mean that the strengths and weaknesses of our approach to wetlands may be amplified on any number of other types of landscape and habitat.

If Alberta is to succeed in protecting its biodiversity it must be willing to confront weaknesses that become apparent as the policy development process proceeds. It also must be willing to face up to some of the systemic issues which plague its environment and resource policies more generally. Tackling all of the pieces of this large and complex picture at once is a formidable task, and probably carries too many risks to be wise. Nevertheless, the Province ought to set a clear agenda for itself and proceed to address these issues one by one, learning from our experience as we go. To do that the Province must be clear about its commitments and its objectives, and that is probably a good place to start.

CIRL Publications

Occasional Papers

Biodiversity and Conservation Offsets: A Guide for Albertans

David W. Poulton

\$15.00 sc
(Free online) 2015 29 pp.
Occasional Paper #48

The Nuclear Fuel Waste Act and Canada's Plan for the Long-Term Management of its Nuclear Fuel Waste

Ramona Sladic

\$15.00 sc
(Free online) 2015 26 pp.
Occasional Paper #47

Environmental Sentencing Policy in Alberta: A Critical Review

Chilenye Nwapi

\$15.00 sc
(Free online) 2015 32 pp.
Occasional Paper #46

Assessing the Environmental Integrity of Emissions Trading Schemes

Ana Maria Radu

\$15.00 sc
(Free online) 2014 33 pp.
Occasional Paper #45

Alberta First Nations Consultation & Accommodation Handbook

David Laidlaw and Monique Passelac-Ross

\$35.00 sc
(Free online) 2014 118 pp.
Occasional Paper #44

Environmental Assessment of Nuclear Power Plants in Alberta

Astrid Kalkbrenner

\$20.00 sc
(Free online) 2013 41 pp.
Occasional Paper #43

For a complete list of Occasional papers, see CIRL's website: www.cirl.ca

Canadian Wildlife Law Project Papers

Wildlife Management Beyond Wildlife Laws

Arlene J. Kwasniak

\$10.00 sc
2006 27 pp.
Wildlife Law Paper #7

Wildlife Stewardship

Arlene J. Kwasniak

\$10.00 sc
2006 19 pp.
Wildlife Law Paper #6

Legal and Economic Tools and Other Incentives to Achieve Wildlife Goals

Arlene J. Kwasniak

\$10.00 sc
2006 25 pp.
Wildlife Law Paper #5

For a complete list of Canadian Wildlife Law Project papers, see CIRL's website: www.cirl.ca

Human Rights and Resource Development Project Papers

Public Access to Information in the Oil and Gas Development Process

Linda McKay-Panos

\$20.00 sc
(Free online) 2007 118 pp.
Human Rights Paper #6

The Potential Application of Human Rights Law to Oil and Gas Development in Alberta: A Synopsis

Nickie Vlavianos

\$20.00 sc
(Free online) 2006 70 pp.
Human Rights Paper #5

Protecting Environmental and Health Rights in Africa: Mechanisms for Enforcement

Ibironke Odumosu

\$20.00 sc
(Free online) 2006 78 pp.
Human Rights Paper #4

For a complete list of Human Rights and Resource Development Project papers, see CIRL's website: www.cirl.ca

Books and Reports

Environmental Agreements in Canada: Aboriginal Participation, EIA Follow-Up and Environmental Management of Major Projects
Ciaran O'Faircheallaigh

\$35.00 sc
2006 217 pp.
ISBN-13 978-0-919269-50-7

A Guide to Impact and Benefits Agreements
Steven A. Kennett

\$35.00 sc
1999 120 pp.
ISBN-13 978-0-919269-48-4

Forest Management in Canada
Monique Ross

\$20.00 sc
1995 388 pp.
ISBN-13 978-0-919269-42-2

Canadian Law of Mining
Barry J. Barton

\$20.00 hc
1993 522 pp.
ISBN-13 978-0-919269-39-2

The Framework of Water Rights Legislation in Canada
David R. Percy

\$20.00 sc
1988 103 pp.
ISBN-13 978-0-919269-21-7

Aboriginal Water Rights in Canada: A Study of Aboriginal Title to Water and Indian Water Rights
Richard H. Bartlett

\$30.00 sc
1988 237 pp.
ISBN-13 978-0-919269-23-1

For a complete list of Books and Reports, see CIRL's website: www.cirl.ca

Conference Proceedings

Resource Development and the Mackenzie Valley Resource Management Act: The New Regime
John Donihee (Contributing Editor), Jeff Gilmour and Doug Burch

\$20.00 sc
2000 281 pp.
ISBN-13 978-0-919269-49-1

Mineral Exploration and Mine Development in Nunavut: Working with the New Regulatory Regime
Michael J. Hardin and John Donihee, eds.

\$15.00 sc
1998 160 pp.
ISBN-13 978-0-919269-46-0

For a complete list of Conference Proceedings, see CIRL's website: www.cirl.ca

Other Publications

Resources: A publication of the Canadian Institute of Resources Law

Free online
ISSN 0714-6918

Annual Report

Free online
sc

Available from Carswell

Canada Energy Law Services

Canada Energy Law Service (Federal) · 2 vols. · ISBN: 0-88820-409-4
Canada Energy Law Service (Alberta) · 1 vol. · ISBN: 0-88820-410-8
Canada Energy Law Service (Full Service) · 3 vols. · ISBN: L20146

Order from:

Carswell, a Thomson Reuters business
One Corporate Plaza
2075 Kennedy Road
Toronto, Ontario M1T 3V4
Canada

For more information, call Customer Service:

(toll free Canada & US) 1-800-387-5164
(Toronto & Int'l) 416-609-3800
(Toll Free Canada) Fax: 1-877-750-9041
Fax: 416-298-5082

Customer Relations:

carswell.customerrelations@thomsonreuters.com

Website: www.carswell.com

CIRL Order Information

All book order enquiries should be directed to:

Canadian Institute of Resources Law
Murray Fraser Hall, Room 3353 (MFH 3353)
Faculty of Law, University of Calgary
Calgary, Alberta, Canada T2N 1N4
Tel 403-220-3200; Fax 403-282-6182
E-mail cirl@ucalgary.ca Website www.cirl.ca

Business Hours

0830 to 1630 (MST except MDT April-October)

Discount Policy for Bookstores and Book Wholesalers

20% on 1 to 4 books

40% on 5 or more books

GST/HST

All Canadian orders are subject to the Goods and Services Tax (GST) or the Harmonized Sales Tax (HST) for participating provinces. If GST exempt, please indicate in writing. CIRL's GST Registration No. 11883 3508 RT.

Payment Terms

Net 60 days.

- Payment or numbered, authorized purchase order must accompany all orders.
- MasterCard or Visa account number with expiry date will be accepted.

Shipping

Please allow two to four weeks for delivery.

Return Policy

(Applies ONLY to bookstores and book wholesalers.)

All books may be returned for credit within one year of the invoice date, provided that they are in a clean and resaleable condition. Please write for permission to return books and supply original invoice numbers and discounts. Returns must be shipped prepaid. Defective books are replaceable at no charge.

Please note:

- All books are softcover unless otherwise noted
- All prices are subject to change without notice
- Make cheque or money order payable to the *University of Calgary*

CIRL Order Form

Method of Payment

Payment or purchase order must accompany order.
Please make cheques payable to **University of Calgary**

- Cheque Money Order
 Visa MasterCard

Please return completed order form to:

Canadian Institute of Resources Law
MFH 3353, Faculty of Law
University of Calgary
Calgary, Alberta, Canada T2N 1N4
Tel 403.220-3200; Fax 403.282.6182
E-mail cirl@ucalgary.ca;
Website www.cirl.ca

Credit Card Number _____
Expiry Date _____
Cardholder Name _____
Daytime Telephone _____
Name _____
Company Name _____
Address _____
City _____ Province/State _____
Postal/Zip Code _____ Country _____

Please send me the following books

Title	Quantity	Price	Subtotal
Subtotal			
Add Shipping and Handling*			
Add GST/HST for orders placed in Canada (CIRL GST No. 11883 3508 RT)			
Total (All prices subject to change without notice)			

*Add Shipping and Handling

Within Canada: first book \$5.00; each additional book \$2.00
Outside Canada: first book \$10.00; each additional book \$4.00

May 2015